ANALYSIS OF INCOME INEQUALITY IN ASEAN COUNTRIES

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ABSTRACT

The purpose of this study is to examine income inequality in ASEAN countries. Income inequality is the dependent variable in this study, whereas the independent variables are FDI, GDP per capita, personal remittances, and economic openness. The scope of this research is ASEAN countries from 2009 to 2021. This research uses the panel data regression method. The estimation results in this study show that FDI and GDP per capita variables significantly affect income inequality in ASEAN. Meanwhile, personal remittance and economic openness have no significant effect.

Keywords: *Income, Remittance, FDI, Gini Index, Income Inequality*

ABSTRAK

Tujuan dari penelitian ini adalah untuk menganalisis ketimpangan pendapatan di negara-negara ASEAN. Variabel dalam penelitian ini meliputi ketimpangan pendapatan sebagai variabel dependen dan FDI, PDB per kapita, remitansi perseorangan, dan keterbukaan ekonomi sebagai variabel independen. Lingkup penelitian ini adalah negara-negara di ASEAN pada kurun waktu 2009 hingga 2021. Analisis data dilakukan dengan menggunakan metode regresi data panel. Hasil estimasi pada penelitian ini menunjukkan bahwa variabel FDI dan GDP per kapita berpengaruh secara signifikan terhadap ketimpangan pendapatan di ASEAN. Sementara itu, variabel personal remittance dan keterbukaan ekonomi tidak berpengaruh secara signifikan.

Kata Kunci: *Pendapatan, Remitansi, FDI, Indeks Gini, Ketimpangan Pendapatan*

Introduction

One indicator of successful development in every country is economic growth. The economic growth that can be achieved is a reflection of the government's efforts to improve the standard of living of its people. The higher the economic growth, the better the level of social welfare (Dondo et al., 2019). It can be said that improving community welfare requires the government's role in utilizing resources so that it can increase economic growth. Every

country strives to increase economic growth to reduce poverty and unemployment. High levels of poverty and unemployment will cause economic inequality in a country. Several problems occur in developing countries, such as those in ASEAN. Some of the problems that occur cannot be separated from income inequality between high-income and low-income groups, as well as the poverty level or the number of people below the poverty line.

According to Suryana (2000), economic growth is a process that causes an increase in the per capita income of a population or society in the long term. Todaro & Smith (2003) explain that a significant increase in GDP can indicate rapid economic growth. Equal distribution of development outcomes is the main goal of rapid economic growth. However, increasingly high economic growth causes income inequality in each region. Income inequality is often a serious problem, and if it is not addressed carefully, it will give rise to more complex crises, such as population, economic, social, and political problems, and can be detrimental to the economic growth process that a region wants to achieve (Todaro & Smith, 2003).

According to the World Bank (2020), the average economic growth of countries in the ASEAN region tended to increase from 2017 to 2019 before experiencing a decline in 2020. One of the factors influencing growth trends in ASEAN countries is global economic conditions. From 2017 to 2019, global economic growth tended to be stable, and recovery was experienced after the 2008 global financial crisis. This creates favorable conditions for ASEAN countries to increase exports and investment.

The trend in per capita income of ASEAN countries in 2020 experienced a significant decline. This is due to the spread of the COVID-19 pandemic, which has impacted the global economy. Several economic sectors, including international trade, tourism and investment, have been negatively impacted by the COVID-19 pandemic. This has caused ASEAN countries and other countries in the world to experience a decline in exports, FDI, and economic growth.

Per capita income is assessed based on purchasing power parity. Purchasing power parity determines economic productivity and living standards between countries at a certain time (Todaro & Smith, 2003). Based on the World Bank (2021), the average per capita income of ASEAN countries from 2017 to 2020 tends to decline. The decline in the trend of per capita income in ASEAN countries from 2017 to 2020 was caused by several interrelated factors (Fasikha & Yuliadi, 2018). The influence of the global financial crisis, which began in 2008 and lasted many years, was one of the key factors. According to Nguyen et al. (2018), the global financial crisis slowed global economic growth and impacted many countries, including ASEAN countries. A clear indication of the impact of the global financial crisis on ASEAN countries can be seen from the decline in exports and foreign direct investment (FDI) during that period. The decline in exports and FDI has a negative impact on income inequality and per capita income in ASEAN countries. Another contributing factor was the slowdown in global economic growth, which affected the global demand for products exported from ASEAN countries.

Income inequality refers to the unequal distribution of income within a country. Higher-income inequality means greater income inequality in society (Milanovic, 2016). Due to this, the gap between those with low incomes (the poor group) and those with relatively good economic levels (the rich group) will widen. Income inequality is a concern facing developing countries in ASEAN. Income inequality in ASEAN is a complex problem and is a severe concern for countries in the region. This problem arises because of the inequality in income between different populations and regions in ASEAN. Even though a region's economic growth level continues to increase, income inequality is still an unresolved problem. Based on Gini index data compiled by the World Bank, income inequality in ASEAN is still relatively high.

Foreign direct investment (FDI) is one factor that influences income inequality (Shopia & Sulasmiyati, 2018). FDI is direct investment by a company or foreign investor into a country to build, expand, or acquire a new company or business in that country. Nguyen et al. (2018) found that although FDI contributes positively to economic growth, it needs to be more effective in reducing income inequality in Vietnam. The study also indicates that FDI is only concentrated in some regions of Vietnam and is not evenly distributed across the country. Therefore, although foreign investment has had a positive impact on Vietnam's economy, it has yet to be able to reduce income inequality effectively.

Apart from FDI, personal remittances are one of the factors that influence income inequality. Personal remittances are remittances made by migrant workers. Personal remittances influence income inequality and poverty in ASEAN countries (Ratha et al., 2011). Trade openness is also an important factor influencing income inequality in ASEAN. Trade openness measures a country's involvement in international trade by reducing trade barriers, encouraging exports, and attracting foreign investment. This can affect how the economies of ASEAN countries are shaped and can significantly impact income inequality.

A more open economy could increase income inequality in ASEAN countries. When countries implement trade liberalization, they will gain access to broader markets, both regionally and globally. This more comprehensive market access can bring greater export opportunities, ultimately stimulating economic growth and creating jobs. Participating in international trade allows a country to exploit its comparative advantages, specialize in producing products and services in areas that have advantages, and attract foreign direct investment (Dollar & Kraay, 2004). These factors can lead to more even distribution of income inequality by generating higher incomes and job opportunities for broader segments of society.

Based on the background above, this research aims to examine the influence of GDP per capita, FDI, personal remittances, and trade openness on income inequality in ASEAN. This study differs from previous studies in several ways. The difference lies in the variables used and the scope of analysis. In addition, while the previous study conducted by Song et al. (2021) applied the DOLS analysis method, this study applies the panel data regression method.

Literature Review

Income Inequality

The theory of income inequality explains how the distribution of income in a society can become unequal and why there is inequality in economic welfare between individuals or groups. This theory is based on the assumption that even though most countries have developing economies, inequality is still a significant problem in many countries. Karl Marx argued that inequality occurs as a result of conflict between different classes in society (Foley & Michl, 1999). In general, the theory of income inequality is related to poverty and social injustice (Atkinson, 2015). Income inequality is defined as a large income gap between the top and bottom groups of society in the social pyramid. Apart from that, income inequality can also be seen in the form of relative inequality, namely the comparison of the percentage of income received by certain groups with the income received by other groups.

Income inequality has severe social and economic impacts. Socially, this inequality can give rise to injustice and social tension in society. Low-income individuals often struggle to achieve basic needs such as food, shelter, education, and health. Social injustice can also occur when opportunities and access to economic resources and opportunities are unequal,

which can strengthen existing income disparities (Atkinson, 2015). In an economic context, income inequality can have a negative impact on economic growth and macroeconomic stability. When most income and wealth are concentrated in a few individuals or groups, society's consumption potential and aggregate demand are limited. This can hinder sustainable economic growth and create economic instability. In addition, extreme income inequality can also lead to unequal access to education, skills, and employment opportunities, which, in the end, can hinder social mobility and increase the cycle of poverty.

Milanovic (2016) explains that one technique for measuring a region's income inequality is using the Gini index. It measures how much income distribution among people or households in an economy deviates from equal distribution. The Gini index can be obtained by calculating the area between the Lorenz curve and a hypothetical line of absolute equality. It is expressed as a percentage of the maximum area below the line. The value of the Gini Index is between 0 and 1. A higher level of inequality is indicated by a Gini Index value close to 1. A Gini Index value of zero means that there is perfect equality of income, where everyone's income is the same.

On the other hand, a Gini Index of 1 indicates perfect inequality. This is a situation where someone has everything while another person has nothing. In other words, to show an even distribution of income inequality between the population, the Gini Index must be close to 0.

The Lorenz curve represents the cumulative income distribution function. This curve depicts the quantitative relationship between the percentage of population and the percentage of income earned during a certain time period (Todaro & Smith, 2009). The Lorenz curve is square, with the cumulative percentage of population on the horizontal axis and the cumulative percentage of national income on the vertical axis (Todaro & Smith, 2009). The Lorenz curve shows a more equal distribution of national income, which approaches the diagonal line (straight Lorenz curve). On the other hand, if the Lorenz curve becomes increasingly curved and moves away from the diagonal line, national income distribution will become more uneven and unequal.

On the Lorenz curve, total revenue is a cumulative percentage and not an absolute value located on the horizontal axis. The percentage of income each community group receives is displayed on the vertical axis, which is the same length as the horizontal axis. Because both axes have the same length, the Lorenz curve is square. The greater the degree of inequality is indicated by the Lorenz curve, which is increasingly away from the diagonal line. The intersection of the Lorenz curve with the lower horizontal and right vertical axes shows the most extreme case of perfect inequality (Todaro & Smith, 2009).

Several previous studies have discussed factors that influence income inequality in various countries. Bayar & Günçavdı (2021) conducted research on the impact of economic reforms on income inequality in Turkey. The findings of this study show that the economic reforms carried out by Turkey have a significant effect on income inequality. Economic reforms involving trade liberalization, labor market deregulation, and fiscal policy positively influence income inequality. Although overall income inequality has decreased, some groups still experience high levels of inequality following economic reforms.

Paweenawat & McNown (2014) conducted research using a synthetic cohort analysis approach to examine the factors that influence income inequality in Thailand. The data in this study were obtained from the Thai Socio-Economic Survey for the period 1986–2006.

Based on research findings, income inequality in Thailand is significantly influenced by education, where the higher the level of education, the lower the level of inequality. The level of urbanization, employment status, and shifts in a country's economic structure are other factors that influence income inequality.

Finally, using data from various countries over a certain period, Latzer & Mayneris (2021) examined the relation between average income, income inequality, and the value of export units. Research findings obtained through the regression method show a significant relationship between average income, income inequality, and the value of export units in the countries studied. The findings show that countries with higher average incomes and lower levels of income inequality tend to produce higher export unit values. This shows that the level of economic prosperity of a country and the quality of goods exported are positively correlated.

Foreign Direct Investment

Foreign Direct Investment (FDI) is a type of direct investment whose source of financing comes from abroad. The flow of FDI from one host country (home country) to the investment destination country (host country) marks the development of global flows in the real sector today. FDI positively influences income inequality (Song et al., 2021). This shows that increasing FDI will increase the value of a country's Gini Index, which means income inequality is getting higher.

One study by Nguyen et al. (2018) in Vietnam demonstrates that while foreign direct investment (FDI) contributes positively to economic growth, it is not yet successful in lowering income inequality. The study shows that FDI tends to be concentrated in specific regions and is spread uneven across Vietnam. This causes income inequality to increase between regions that receive foreign direct investment and regions that do not receive foreign investment.

A study conducted by Rivera & Castro (2013) highlights foreign direct investment in Mexico, the factors that influence it, and its impact on income inequality. This study shows that infrastructure, macroeconomic stability, and economic growth significantly increase FDI inflows into Mexico. Evidence also shows that FDI can significantly reduce income inequality.

Gross Domestic Product (GDP)

Gross domestic product (GDP) is one metric that can be utilized to measure the welfare of society. GDP measures a country's total expenditure on products and services produced by the economy and the total income of all individuals in the economy. Because income and expenditure must be equal in the economy as a whole, GDP can measure total income and expenditure.

One factor that can affect income inequality is GDP. Song et al. (2021) stated that GDP per capita negatively influences income inequality. This demonstrates that a country's Gini index will decrease when GDP per capita rises. A study conducted by Majeed (2013) concluded that high economic growth in the long term tends to reduce income inequality. In other words, sustainable economic growth will improve people's welfare and reduce income inequality. However, a study shows a trade-off between ASEAN economic growth and income inequality. Research by Raeskyesa (2020) shows that rapid economic growth in several ASEAN countries is only sometimes accompanied by equal income distribution.

Personal Remittance

One theory that explains remittances is dependency theory. According to this theory, developing countries highly depend on developed countries in importing consumer goods and exporting natural resources. Dependency theory explains that developing countries depend on developed countries in terms of investment, technology, and markets. However, this theory also emphasizes that there is a financial dependence on international migration and remittances. According to this theory, personal remittances could reduce economic dependence on developed countries. In this case, remittances are a flow of funds generated by migrants working in developed countries and transferred to their home countries. This remittance can help families in their country of origin meet their living needs or build a small business that can help improve the local community's economy (Yuniarto, 2015).

Personal remittances refer to money individuals send to family members or friends abroad. Personal remittances are becoming a global phenomenon that is increasingly important as a source of income for many countries worldwide. Personal remittances can be explained using an economic approach. From an economic perspective, personal remittances are assumed to be part of important international transactions. According to this approach, migrants send personal remittances as compensation for their hard work abroad. Theoretically, the recipient's family welfare and household income are expected to increase with money sent through personal remittances. According to an economic perspective, the economies of both receiving and sending countries can benefit from personal remittances (Ratha et al., 2011).

Personal remittances positively impact income inequality (Song et al., 2021). This indicates that a country's Gini Index will increase in response to an increase in private remittances so that the level of income inequality becomes higher. Research conducted by Chami et al. (2018) demonstrates that the effects of personal remittances on income inequality in ASEAN countries may vary. The findings of this research indicate that personal remittances can reduce income inequality by increasing consumption and providing access to economic resources to families receiving remittances who are in low-income groups. However, the impact of efforts to reduce these gaps can differ depending on other factors, including institutional characteristics, initial income gaps, and education levels in each ASEAN country.

Other research by Sirkeci et al. (2012) also shows that personal remittances can help lower income inequality in ASEAN countries. The study's findings also demonstrate that personal remittances give recipient families access to direct economic resources, which can reduce income inequality.

Trade Openness

Trade openness is a concept that refers to a country's international trade policy, which allows the country to open its domestic market to foreign trade by reducing or eliminating trade barriers such as tariffs, import quotas, and other regulations Krugman et al. (2017). International trade has the potential to significantly reduce income inequality in countries involved in trade (Krugman et al., 2017). International trade will allow poor countries to utilize their comparative advantages, which in turn can increase productivity and economic growth.

According to Wacziarg & Welch (2008), trade openness can accelerate economic growth and reduce poverty. The results of his research show that increasing exports and imports can trigger faster economic growth thereby increasing people's welfare. In ASEAN, trade

openness provides more comprehensive market access for countries in the region. Through exports, ASEAN countries can expand product markets at the global level, increase economic sector growth, and create more jobs. Apart from that, imports also play an important role in providing goods and commodities needed for domestic production and consumption, which ultimately increases economic efficiency and enriches consumer choices.

Stiglitz (2002) states that trade openness will only provide benefits if it is carried out well and fairly. Stiglitz also emphasized the importance of focusing on aspects such as the quality of regulations and balanced trade policies to ensure everyone can enjoy the advantages of trade openness, not just some people. Trade openness that needs to be balanced with appropriate policies and regulations can lead to increasingly large income gaps. If there is adequate attention to worker protection, social justice, and equal access to economic opportunities, trade openness can positively impact weaker sections of society. For example, uncompetitive economic sectors can face greater pressure and cause job losses, increasing income inequality (Stiglitz, 2002).

Meanwhile, Dollar & Kraay (2004) in their research concluded that trade openness has a positive impact on reducing poverty in developing countries. By increasing exports and imports, trade openness can provide broader economic opportunities for these countries, expand product markets, and create new jobs. In ASEAN, trade openness drives economic growth and contributes to reducing poverty levels in several countries in the region.

Hypothesis

Based on the theoretical basis and previous research, the hypothesis in this study is that FDI, GDP per capita, trade openness, and personal remittances have a significant effect on income inequality in ASEAN countries in 2009-2021.

Data and Research Methods

This research uses a quantitative approach to analyze the influence of GDP per capita, FDI, personal remittances, and trade openness on income inequality in ASEAN from 2009 to 2021. The method used is the panel data regression method. The analytical tool used in this research is STATA 14.0.

The data used in this research is secondary data obtained from various sources. Table 1 shows the variables used in this research and their definitions and sources.

Table 1: Variables, Definitions, and Sources

Variable	Definition	Source
Income inequality	In this study, income inequality is measured using the Gini index, which has a range of 0 to 1. The closer to 1 the Gini index value, the greater the inequality.	Standardized World Income Inequality Database (SWIID)
GDP per capita	Gross domestic product per capita measures the economy based on individual income.	World Bank
Foreign direct investment	Foreign direct investment (FDI) is the value of foreign investment that enters the country.	World Bank
Personal remittance	Personal remittances are flows of foreign funds received personally or individually.	World Bank
Trade Openness	Trade openness in this research is measured through the net export value of each country in ASEAN.	World Bank

This research uses a panel data model, which refers to several previous research journals; then this research develops and modifies the model by considering data availability. The model used in this research is as follows:

$$GINI_{it} = \beta_0 + \beta_1 \ln GDP_{it} + \beta_2 \ln FDI_{it} + \beta_3 \ln RMT_{it} + \beta_4 \ln OPEN_{it} + \varepsilon_{it} \qquad (1)$$

Where:

$GINI_{it}$: Income inequality

$lnGDP_{it}$: GDP per capita

$lnFDI_{it}$: Foreign direct investment

$lnRMT_{it}$: Personal remittance

$lnOPEN_{it}$: Trade openness

ε_{it} : Error term

$\beta_1, \beta_2, \beta_3$: Regression coefficient

β_0 : Constant

i : Cross section (10 ASEAN countries)

t : Time series (2009 – 2021)

The data analysis technique used in this research is panel data regression. Regression analysis is needed to determine which independent variables relate to the dependent variable. In panel data regression, there are three methods that can be used, namely Pooled Least Square (PLS), Fixed Effect Model (FEM), and Random Effect Model (REM) (Gujarati & Porter, 2009).

Of the three models, the best model will be selected. The best model was selected through several tests, namely the F-Restricted test, Hausman test and LM test. The F-Restricted test is carried out to choose between PLS and FEM models. If the F-Restricted test results show that the FEM model is the best, it is necessary to carry out the Hausman Test to test the FEM and REM models. However, if the F-Restricted test shows that the PLS model is the best model, then after carrying out the F-Restricted test, an LM test is carried out to choose between the PLS and REM models.

After getting the best model, the classical assumption test consists of the autocorrelation, multicollinearity, and heteroscedasticity tests. Next, a model feasibility test (F test) is carried out to measure the level of accuracy of the regression function sample in estimating the true value statistically. In addition, a partial significance test (t test) is also carried out to test whether the independent variable influenced the dependent variable.

Finding and Discussion

Descriptive statistics

Descriptive statistics for each variable in this study are summarized in Table 2. Descriptive statistics explain the number of observations in this study, the average value of each variable used in this study, the standard deviation of each variable, as well as the lowest and highest values for each variable.

Table 2: Descriptive statistics

Variable	Unit	Obs.	Mean	Std. Dev.	Min	Max
GINI	%	130	0.547	0.063	0.397	0.679
GDP	Ln	130	21.623	0.996	18.620	23.023
FDI	Ln	130	22.088	2.677	15.516	36.890
OPEN	Ln	130	21.526	1.053	17.418	23.021
RMT	Ln	130	20.620	2.137	15.333	23.024

Estimation Results

Table 3 shows the estimation results of this research. The estimation model chosen based on the model selection test is the REM model. Based on these estimation results, GDP per capita and FDI significantly influenced income inequality in countries in the ASEAN region from 2009 to 2021. Meanwhile, the variables of remittance receipts and trade openness do not significantly influence income inequality.

Table 3: Panel Data Regression Estimation Results

Dependent Variable: Income Inequality						
Variable	**PLS**		**FEM**		**REM (Selected Model)**	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
GDP	0.1132**	0.0054	0.0039**	0.0018	0.0041**	0.0018
FDI	0.0014	0.0028	-0.0041*	0.0021	-0.0038*	0.0021
RMT	0.0164***	0.0026	0.0005	0.0024	0.0011	0.0023
OPEN	0.0083	0.0052	0.0033	0.0021	0.0033	0.0029
Constant	-0.2431	0.1989	0.4701	0.0944	0.4499	0.0963
Number of Observations	115					
Number of Countries	9					
R-Squared Value	0.2897		0.4381		0.5152	
Prob>chi2	0.0000		0.0204		0.0170	

Significance: ***$p<0.001$, **$p<0.05$, *$p<0.1$

Model Selection Test Results

Table 4: Model Selection Test Results

Estimation Model Selection Test	Prob > Chi²
Chow test	0.0000
Hausman test	0.4350
Lagrangian Multiplier test	0.0000

The estimation model used in this research was selected through a model selection test consisting of the Chow test, Hausman test, and Lagrange Multiplier test. These tests are used to choose which model is the best between PLS, FEM, and REM. The Chow test is carried out first to select the best model between PLS and FEM. The Chow test results show that the Prob > Chi2 value is lower than the 5% significance level, so that H_0 is rejected and the FEM model is the chosen model compared to PLS. The next test is the Hausman test which is carried out to choose between the FEM and REM models. The test results show that the Prob > Chi2 value is greater than the 5% significance level, so H_0 is accepted and the best model

is REM compared to FEM. Because the REM model was chosen in the Hausman test, the Lagrange Multiplier test will then be carried out to choose between the REM or PLS model. The test results show that the Prob > Chi2 value is lower than the significance value of 5%, so H_0 is rejected, and the REM model remains the model chosen in this study.

Classical Assumption Test Results

Before carrying out estimates using panel data regression, several classical assumption tests, consisting of heteroscedasticity, autocorrelation, and multicollinearity tests, are first carried out. The results of the classical assumption test are summarized in Table 5. The heteroscedasticity test in this study shows a prob>chi2 value of 0.0852, where this value is greater than the 5% significance level. These results indicate that heteroscedasticity does not occur in this research model. The next test is the autocorrelation test, which shows a Prob>F value of 0.5152, which is greater than the 5% significance level, so there is no autocorrelation in this research model. The final test is the multicollinearity test which is indicated by the VIF value. The VIF value of each variable and the average VIF value of all variables in this study are smaller than 10, so there is no multicollinearity in the variables used.

Table 5: Classical Assumption Test Results

Classical Assumption Test	Prob > Chi^2	Prob > F
Heteroscedasticity	0.0852	-
Autocorrelation	-	0.5152
Multicollinearity		**VIF**
GDP		1.11
FDI		1.11
OPEN		1.07
RMT		1.11
Mean VIF		1.10

Hypothesis Proof

The hypothesis of this study that FDI has a significant negative influence on income inequality is acceptable. The subsequent hypothesis that GDP per capita has a significant positive influence on income inequality is also acceptable. This hypothesis can be accepted because the estimation results show that the p-value of the FDI and GDP per capita variables is lower than the significance level of 10% and 5%, respectively. However, the hypothesis that personal remittance and trade openness significantly negatively influence income inequality is unacceptable. This happens because the p-value of these two variables is at least the significance level of 10%, 5%, and 1%. Thus, personal remittances and trade openness variables do not significantly affect income inequality in ASEAN countries from 2009 to 2021.

In this estimation result, the R-squared value is 0.5152. Based on these results, the variations in the independent variables in this model are likely to explain 51.52 percent of income inequality in countries in the ASEAN region from 2009 to 2021. Meanwhile, the rest is explained by variables outside the model or errors affecting income inequality in ASEAN countries.

The objective of the F test is to simultaneously examine the influence of the independent variables utilized in this study on the dependent variable. The significance level must be less than 0.05 to confirm that the independent variable in the study simultaneously affects the

dependent variable. Based on the study's results, the F test value is 0.017, indicating that the independent variables in this study (GDP per capita, FDI, personal remittances, and trade openness) affect income inequality simultaneously.

Discussion

Based on the estimation results, if GDP per capita increases by 1% from 2009 to 2021, then income inequality in ASEAN countries will increase by 0.41%. Furthermore, a 1% increase in FDI reduces income inequality in ASEAN nations by 0.38% during the same period. Then, when remittance receipts increase by 1%, income inequality in ASEAN countries from 2009 to 2021 will increase by 0.11%. Meanwhile, when trade openness as represented by net exports increases by 1%, income inequality in ASEAN countries from 2009 to 2021 will increase by 0.33%.

The findings of this study are consistent with the findings of Song et al. (2021), who found that GDP and FDI significantly affect income inequality. This study shows that GDP and FDI significantly affect income inequality in ASEAN countries from 2009 to 2021. However, personal remittance and trade openness did not have a significant influence on income inequality in ASEAN countries during the same period.

Gross Domestic Product (GDP) is a common measure of a country's economy. It represents the total value of goods and services a country produces in a given year. GDP is a measure utilized to measure the prosperity of a country. However, the impact of GDP on income inequality is still being debated by academics and practitioners. The estimation results in this study show that increasing GDP will increase income inequality in countries in the ASEAN region from 2009 to 2021.

Several studies show that increasing GDP can increase income inequality in ASEAN countries. According to research by Sala-i-Martin (2006), income inequality in ASEAN countries increases along with high economic growth. This happens because high economic growth tends to provide greater benefits to communities that have stronger economic resources, while less well-off communities do not receive the same benefits.

Foreign Direct Investment (FDI) is an investment by a foreign company from abroad by purchasing or building production facilities in a country. Policymakers and economists have focused on the influence of FDI on income inequality. Based on the estimation results, FDI significantly and negatively affects income inequality. This implies that income inequality will decrease as FDI increases.

Several studies show that FDI can worsen income inequality because investors focus their investments on profitable sectors, such as manufacturing and service industries, which impact economic growth. Meanwhile, FDI inflows do not provide equal benefits for all levels of society (Aitken & Harrison, 1999). In addition, foreign investors tend to gain greater economic profits than local people because they have access to better technology and capital. This research also shows that foreign direct investment (FDI) significantly affects income inequality in ASEAN countries, such as Singapore, which has the highest FDI receipts in ASEAN.

However, several studies show that FDI can reduce income inequality by creating jobs, increasing productivity, and improving technological and management capabilities (Smarzynska, 2002). Research conducted by Borensztein et al. (1998) shows that FDI can reduce income inequality by giving local people access to jobs and training, increasing income and skills.

Private remittances are financial transactions between individuals working abroad and their family or relatives in their home country. Transactions can be in the form of money or goods sent via transfer agents or postal services. Studies on the effect of private remittances on income inequality in ASEAN countries have produced different findings. The estimation results in this study show that personal remittances had no impact on income inequality in ASEAN countries from 2009 to 2021.

Several studies have examined the relationship between personal remittances and income inequality in ASEAN countries. However, the findings from these studies are inconsistent. Chami et al. (2018) found that personal remittances can reduce income inequality. However, Kugler & Rapoport (2005) found that personal remittances do not impact income inequality.

Although personal remittances can affect the income of individuals and possibly the families who receive them, their impact on income inequality in society is relatively small. This is because personal remittances tend to be aimed at families who are relatively well off or whose economic conditions are stable and do not always cover all levels of society. In addition, expenditures made by recipient families only sometimes lead to increased economic productivity in that country (Kugler & Rapoport, 2005).

Overall, personal remittances do not affect income inequality in ASEAN countries. This is caused by several factors, such as lack of access to financial services, informal money transfer problems, and the recipient family's lack of ability to utilize the funds received (Kugler & Rapoport, 2005).

Another factor considered to affect a country's income inequality is trade openness. However, research findings on the impact of trade openness on income inequality are still debated. Research conducted by Milanovic & Yitzhaki (2002) shows that trade openness can increase income inequality in developing countries. Meanwhile, research by Majeed (2013) shows that trade openness negatively affects income inequality in East Asia.

In conclusion, although trade openness is an important factor influencing income inequality, research results only sometimes show consistent results. The research results in ASEAN show that trade openness has no significant effect on income inequality. Therefore, ASEAN governments must also consider variables other than trade openness to minimize income inequality, such as income inequality policies and access to resources for underprivileged communities.

Conclusion

The findings of this study show that GDP per capita and FDI significantly impact income inequality in ASEAN countries. However, private remittances and trade openness do not impact income inequality in ASEAN countries. The findings show that expanding the economic base in the form of investment and exports can not only increase national income but also increase income inequality. In some countries, increased government spending and foreign investment contribute to rising income inequality. However, the results of this research do not mean that increasing GDP always results in greater income inequality because many factors can influence income inequality.

In contrast, increasing FDI can reduce income inequality in ASEAN. Research results show that FDI positively influences economic growth and increases employment opportunities in ASEAN countries. In addition, foreign investment can also help improve skills, technology, and management practices in the recipient country. This contributes to reducing income

inequality between regions and economic sectors. Thus, the government can reduce income inequality in ASEAN by encouraging FDI.

Meanwhile, private remittances do not affect income inequality in ASEAN. The findings indicate that the impact of personal remittances varies greatly depending on the national context. Some studies show that remittances can help reduce income inequality. However, other studies show that remittances do not affect income inequality in ASEAN countries.

In addition, trade openness does not affect income inequality in ASEAN. Some research shows that trade openness can lead to greater income inequality, but some research also shows that trade openness can help reduce income inequality. Trade openness can help create new jobs and increase production efficiency, which can then help increase society's overall income. However, it should be emphasized that the effect of trade openness is highly dependent on other factors, such as trade policy, economic structure, and education level.

By the findings of this study, several recommendations can be made to reduce income inequality in ASEAN. First, appropriate income inequality policies are needed to reduce the negative impact of increasing GDP on income inequality. This can be done by increasing taxes for high-income groups and strengthening social assistance programs for the poor. In addition, the government can strengthen labor market regulations to ensure workers' wages are in line with economic growth. Second, to enhance the positive effect of FDI on income inequality, governments can increase investment in sectors that employ low-income workers, such as agriculture and manufacturing. This will help increase employment and economic prosperity among low-income groups. Third, although trade openness does not affect income inequality in ASEAN countries, governments can strengthen policies to increase public participation in global trade. This can be done by providing the training and resources necessary to enter global markets, increasing access to technology and productive resources, and strengthening fair trade regulations.

This study has several limitations that need to be considered before interpreting the results. First, the study analyzed only four factors that influence income inequality. There may be other factors that could influence income inequality in ASEAN apart from these four factors. Second, the Gini Index was the only measurement tool used in the study to measure income inequality. Although the Gini Index is frequently utilized to measure income inequality, differences in quality of life between income groups may not be considered. Therefore, it is necessary to consider using more holistic indicators of income inequality. Third, it is essential to consider the specific economic circumstances of each country when evaluating the impact of the four factors studied on income inequality in ASEAN. Therefore, the results of this research cannot be applied directly to other countries with different conditions. Fourth, the study focuses only on the effect of GDP per capita, FDI, personal remittances, and trade openness on income inequality in ASEAN. Future research could consider other factors such as inflation, interest rates, per capita income, and household consumption to explain income inequality in ASEAN.

References

Aitken, B. J., & Harrison, A. E. (1999). Do Domestic Firms Benefit from Direct Foreign Investment? Evidence from Venezuela. *American Economic Review, 89*(3), 605–618. https://doi.org/10.1257/aer.89.3.605

Atkinson, A. B. (2015). *Inequality: What Can Be Done?* Cambridge: Harvard University Press.

Bayar, A. A., & Günçavdı, Ö. (2021). Economic reforms and income distribution in Turkey. *Economic Systems, 45*(1), 100778. https://doi.org/10.1016/j.ecosys.2020.100778

Borensztein, E., De Gregorio, J., & Lee, J.-W. (1998). How does foreign direct investment affect economic growth? *Journal of International Economics, 45*(1), 115–135. https://doi.org/10.1016/S0022-1996(97)00033-0

Chami, R., Ernst, E., Fullenkamp, C., & Oeking, A. (2018). *Are Remittances Good for Labor Markets in LICs, MICs and Fragile States? Evidence from Cross Country Data* (IMF Working Paper WP/18/102).

Dollar, D., & Kraay, A. (2004). Trade, Growth, and Poverty. *The Economic Journal, 114*(493), 22–49. http://www.jstor.orgURL:http://www.jstor.org/stable/3590109

Dondo, T. C., Benu, N. M., & Manginsela, E. P. (2019). Faktor-Faktor yang Mempengaruhi Ketimpangan Distribusi Pendapatan Rumah Tangga di Kabupaten Minahasa [Factors that Influence the Inequality of Household Income Distribution in Minahasa Regency]. *Jurnal Agribisnis Dan Pengembangan Pedesaan, 1*(1), 60–70.

Fasikha, Y., & Yuliadi, I. (2018). Analisis Pengaruh Perubahan Lingkungan terhadap Pendapatan Per Kapita di Negara-Negara ASEAN Periode 2005-2015 [Analysis of the Effect of Environmental Change on Per Capita Income in ASEAN Countries for the 2005-2015 Period]. *Journal of Economics Research and Social Sciences, 2*(1), 34–43.

Foley, D. K., & Michl, T. R. (1999). *Growth and Distribution*. Cambridge: Harvard University Press.

Gujarati, D. N., & Porter, D. C. (2009). *Basic Econometrics (5th ed.)*. New York: McGraw-Hill.

Krugman, P. R., Obstfeld, M., & Melitz, M. J. (2017). *International Trade: Theory & Policy (11th ed.).* Harlow: Pearson Education.

Kugler, M., & Rapoport, H. (2005). S*killed Emigration, Business Networks and Foreign Direct Investment.* (CESifo Working Paper No. 1455). www.CESifo.de

Latzer, H., & Mayneris, F. (2021). Average income, income inequality and export unit values. *Journal of Economic Behavior & Organization, 185,* 625–646. https://doi.org/10.1016/j.jebo.2021.03.002

Majeed, M. T. (2013). *Inequality, Trade and Development: Evidence from Developing Countries.* (MPRA Paper).

Milanovic, B. (2016). *Global Inequality.* Cambridge: Harvard University Press. https://doi.org/10.2307/j.ctvjghwk4

Milanovic, B., & Yitzhaki, S. (2002). Decomposing World Income Distribution: Does The World Have A Middle Class? *Review of Income and Wealth, 48*(2), 155–178. https://doi.org/10.1111/1475-4991.00046

Nguyen, C. P., Su, T. D., & Nguyen, T. V. H. (2018). Institutional Quality and Economic Growth: The Case of Emerging Economies. *Theoretical Economics Letters, 08*(11), 1943–1956. https://doi.org/10.4236/tel.2018.811127

Paweenawat, S. W., & McNown, R. (2014). The determinants of income inequality in Thailand: A synthetic cohort analysis. *Journal of Asian Economics, 31–32,* 10–21. https://doi.org/10.1016/j.asieco.2014.02.001

Raeskyesa, D. G. S. (2020). Sectoral Growth and Income Inequality in ASEAN-5 Countries: Case of Low-Middle Income Economies. *JAS (Journal of ASEAN Studies), 8*(1), 1–13. https://doi.org/10.21512/jas.v8i1.6435

Ratha, D., Mohapatra, S., & Scheja, E. (2011). Impact of Migration on Economic and Social Development: Review of Evidence and Emerging Issues. *Artha Vijnana: Journal of The Gokhale Institute of Politics and Economics, 53*(3), 205–229. https://doi.org/10.21648/arthavij/2011/v53/i3/117558

Rivera, C. G. J., & Castro, G. Á. (2013). Foreign direct investment in Mexico. Determinants and its effect on income inequality. *Contaduría y Administración, 58*(4), 201–222. https://doi.org/10.1016/S0186-1042(13)71239-7

Sala-i-Martin, X. (2006). The World Distribution of Income: Falling Poverty and… Convergence, Period. *The Quarterly Journal of Economics, 121*(2), 351–397.

Shopia, A., & Sulasmiyati, S. (2018). Pengaruh Foreign Direct Investment, Ekspor dan Utang Luar Negeri Terhadap Pertumbuhan Ekonomi ASEAN (Studi pada Produk Domestik Bruto Indonesia, Malaysia dan Thailand Periode Tahun 2007–2016) [The Influence of Foreign Direct Investment, Exports and Foreign Debt on ASEAN Economic Growth (Study on Gross Domestic Product of Indonesia, Malaysia and Thailand for the 2007–2016 Period)]. *Jurnal Administrasi Bisnis, 61*(3).

Sirkeci, I., Cohen, J. H., & Ratha, D. (Eds.). (2012). *Migration and Remittances during the Global Financial Crisis and Beyond.* Washington, D.C.: The World Bank https://doi.org/10.1596/978-0-8213-8826-6

Smarzynska, B. (2002). *Does Foreign Direct Investment Increase the Productivity of Domestic Firms? In Search of Spillovers through Backward Linkages.* (Policy Research Working Papers). https://doi.org/10.1596/1813-9450-2923

Song, Y., Paramati, S. R., Ummalla, M., Zakari, A., & Kummitha, H. R. (2021). The effect of remittances and FDI inflows on income distribution in developing economies. *Economic Analysis and Policy, 72*, 255–267. https://doi.org/10.1016/j.eap.2021.08.011

Stiglitz, J. E. (2002). *Globalization and Its Discontents.* New York: W.W. Norton & Company.

Suryana. (2000). *Ekonomi Pembangunan: Problematika dan Pendekatan [Development Economics: Problems and Approaches]*. Jakarta: Salemba Empat.

Todaro, M. P., & Smith, S. C. (2003). *Pembangunan Ekonomi di Dunia Ketiga (8th ed.) [Economic Development in the Third World (8th ed.)]*. Jakarta: Erlangga.

Todaro, M. P., & Smith, S. C. (2009). *Economic Development*. Boston: Pearson Education Limited.

Wacziarg, R., & Welch, K. H. (2008). Trade Liberalization and Growth: New Evidence. *The World Bank Economic Review, 22*(2), 187–231. https://doi.org/10.1093/wber/lhn007

World Bank. (2020). *World Development Indicators 2020.* World Bank.

World Bank. (2021). *GDP per capita (current US$). https://data.worldbank.org/indicator/NY.GDP.PCAP.CD*

Yuniarto, P. R. (2015). Siasat Bertahan, Model Pengelolaan Remitansi, dan Usaha Mikro Keluarga Buruh Migran. *Populasi, 23*(1), 71–87. https://doi.org/10.22146/jp.8571