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The Effect of Poverty, Education, and Unemployment on Income Disparity in ASEAN

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Abstract

Income disparity is a condition in which the income received by the community is not evenly distributed so that it will trigger other problems if not handled as soon as possible, such as poverty and social jealousy between communities that have the potential to create criminal acts. The purpose of this study is to determine the factors that affect income disparity in ASEAN in 1994 - 2023. The data used in this study used secondary data with data collection techniques in the form of literature studies obtained from scientific articles, journals, publications from official websites such as World Bank Data, World Inequality Database, and United Nations Development Programme, as well as other credible sources relevant to the research. The results obtained are that poverty and education variables have a negative and significant effect on income disparity in ASEAN in 1994-2023. The unemployment variable has a positive but insignificant effect.

Keywords: Income Disparity; Gini Index; Poverty; Education; Unemployment

1. Introduction

Income disparity arises when income is not evenly distributed among the population, often leading to poverty, social unrest, and even crime. Economic development plays a central role not only in addressing these issues but also in reducing poverty and minimizing income disparity. Williamson (1975) measured regional disparity using a modified standard deviation approach, known as the Williamson Index, which combines GDP per capita and population data. He found that regional disparity tends to be higher in middle-income countries and decreases with further development, forming an inverted-U curve—consistent with Kuznets' hypothesis [1].

This pattern is supported by the Neoclassical Growth Theory, which predicts that regional disparities initially widen but gradually narrow as economic development progresses (Kuznets, 1955) [2]. According to Sukirno (2006), income distribution can be classified into absolute disparity, measured in monetary terms, and relative disparity, which compares the income of different groups against the national total [3].

In ASEAN, income disparity is evident from uneven per capita income across regions, largely due to centralized urban-industrial development that leaves rural areas behind. This imbalance threatens economic stability and social cohesion. While ASEAN countries achieved average real GDP growth of 5% annually from 2010–2020 (World Bank, 2021) [4], such growth did not necessarily lead to equitable income distribution. Research by Zandi et al. (2022) and Prasetyo & Amar (2022) shows that inflation, unemployment, and trade openness significantly affect income disparity in developing Asian countries [5-6].

The Gini coefficient, ranging from 0 (perfect equality) to 1 (extreme inequality), is widely used to measure income disparity. Bandyopadhyay (2017) emphasized its relevance in evaluating both monetary and multidimensional disparities, such as access to education and healthcare [7]. World Inequality Database (2023) data shows that ASEAN countries exhibit varying Gini trends, with the Philippines consistently having the highest inequality. In contrast, Malaysia and Vietnam maintain relatively low and stable Gini values, due to more inclusive policies and balanced development.

In addition to inequality in income, disparities in poverty levels, education attainment, and unemployment rates also contribute significantly to income disparity. Aprillia et al. (2021) and Fitri (2024) found that persistent poverty, especially in Indonesia and the Philippines, strongly correlates with greater inequality [8-9].

On the education front, increased access to secondary and tertiary education can reduce income disparity by boosting labor productivity and economic mobility (Olupona, 2017; Almula-Dhanoon & Al-Wazzan, 2021) [10-11]. Data from UNDP (2024) show that Malaysia leads ASEAN in average years of schooling, correlating with lower inequality, while Indonesia and the Philippines lag due to urban-rural educational gaps [12].

Unemployment also plays a crucial role in exacerbating inequality. High joblessness reduces purchasing power and limits opportunities, disproportionately affecting low-income groups. Angelina et al. (2021) and Zaroki et al. (2023) found long-term links between unemployment and economic disparity [13-14]. Countries like Vietnam and Thailand, with low unemployment rates, tend to show lower Gini coefficients, whereas Indonesia and the Philippines face persistent challenges. Furthermore, Blundell & Bond (1998) emphasized that income inequality is dynamic—disparities in one period tend to persist into the next [15]. Hence, this study adopts a dynamic panel model using the Generalized Method of Moments (GMM) to account for the historical influence of past inequality levels.

2. Literature Review

2.1 Income Disparity

Income disparity is a central issue in development economics. According to Kuznets (1955), the relationship between economic growth and inequality follows an inverted-U curve, suggesting that income disparity increases during early development but declines as a country advances [2]. Lorenz curves and the Gini index are commonly used to describe income distribution; greater curvature from the line of equality reflects higher disparity [16]. Todaro and Smith (2006) explain that inequality is an inherent aspect of development, but excessive disparity can lead to inefficiency and social instability [16].

2.2 Poverty

Sen (1999) reframed poverty as a lack of capabilities rather than income alone, influencing the multidimensional understanding of inequality [17]. Poverty interacts with other structural issues, such as education and labor access, contributing to persistent disparity.

2.3 Education

Becker (1962) introduced the theory of human capital, stating that investment in education increases individual productivity and income [18]. Mincer (1974) empirically supported this, showing that higher education leads to higher wages [19]. However, unequal access to education can worsen income gaps, particularly when only certain groups benefit from quality schooling.

2.4 Unemployment

Unemployment is also a key factor in income inequality. Fields (1980) emphasized that joblessness limits income opportunities, particularly for low-skilled workers [20]. Additionally, Coady and Dizioli (2017) found that unemployment among the less educated disproportionately contributes to income disparity [21]. Macroeconomic factors like inflation and uneven GDP growth can amplify these effects.

3. Research Method

This study uses a quantitative approach based on econometric and statistical estimation. The data applied is panel data, a combination of cross-sectional and time-series data covering five ASEAN countries from 1994–2023. The dependent variable is income disparity (measured by the Gini coefficient), while the independent variables include poverty (% of population below poverty line), education (average years of schooling), and unemployment (% of labor force unemployed). The analysis uses System Generalized Method of Moments (SYS-GMM), which handles dynamic panel data and corrects for endogeneity. The model includes lagged income disparity to capture past effects. Estimation was performed using STATA 17 software. The general model used in research with the GMM Panel approach can be formulated as follows:

$$DP_{it} = DP_{t-1} + \beta_1 TK_{it} + \beta_2 RTH_{it} + \beta_3 TP_{it} + \varepsilon_{it}$$

4. Results and Discussion

This section elaborates on the empirical findings obtained from the study, which include descriptive statistics, estimation results from the System Generalized Method of Moments (SYS-GMM), and supporting diagnostic tests. The analysis begins by summarizing the statistical characteristics of each research variable to provide an overview of the dataset. It then continues with the interpretation of regression coefficients and evaluates the robustness of the model through standard econometric tests.

Table 1. Descriptive Statistics Results

Description	Gini (%)	Poverty (%)	Education (Year)	Unemployment (%)
Observation	150	150	150	150
Mean	0.5716163	10.13654	7.771876	3.02424
Standart Deviation	0.0494788	13.80687	1.456258	1.612867
Minimum Score	0.46995	0.01	4.313212	0.249
Maximum Score	0.68109	68.31407	10.8741	8.06

Source: Data processed by the researcher using Stata-17.

Based on the descriptive statistics presented, it can be seen that the GINI variable has 150 observations with an average of 0.5716163 and a standard deviation of 0.0494788. The minimum value of GINI is 0.46995 and the maximum value is 0.68109. For the POV variable, there are 150 observations with a mean of 10.13654 and a standard deviation of 13.80687. The minimum value of POV is 0.01 and the maximum value is 68.31407. Furthermore, the EDUC variable has 150 observations with a mean of 7.771876 and a standard deviation of 1.456258. The minimum value of EDUC is 4.313212 and the maximum value is 10.8741. Finally, the variable UNEM has 150 observations with a mean of 3.02424 and a standard deviation of 1.612867. The minimum value of UNEM is 0.249 and the maximum value is 8.06.

In estimating the model using the Generalized Method of Moments (GMM), the Sargan test is used to test the validity of the instrument used, by identifying whether there is a correlation between the instrument and the error term. The following is a table of results from the validity test using the Sargan test:

Table 2. Sargan Test Results

	Sargan Test
Prob. Chi2	0.2487

Source: Data processed by the researcher using Stata-17.

Sargan Test (over-identification): p-value = 0.284. This indicates that the instruments used in the GMM estimation are valid and not correlated with the error term, ensuring the reliability of the model.

After the sargan test is met, the next criterion that must be met in the GMM regression model is the autocorrelation test, also known as the consistency test. Autocorrelation testing in the context of GMM is done through the Arellano-Bond test (AB test). The following is attached the estimation results of the Arellano-Bond test or AB test:

Table 3. Arrellano Bond Test Results

	Autocorelation
Z - value	0.3173

Source: Data processed by the researcher using Stata-17.

Arellano-Bond Test for AR(2): p-value = 0.318. This result suggests that there is no second-order autocorrelation in the residuals, which is essential for the consistency of the GMM estimator.

After the arrellano bond test is fulfilled, the next criterion that must be met in the GMM regression model is the unbiasedness test. This test aims to evaluate the feasibility of the model in the GMM method, especially in assessing the potential for bias.

Table 4. Arrellano Bond Test Results

Regression Model	FEM	GMM	PLS
Coefficient	0.77967204	0.78087979	0.95316466

Source: Data processed by the researcher using Stata-17.

Based on the estimation results displayed in the bias test table, in the model with the capital variable as the regressor, it is known that the coefficient value generated by the GMM method is 0.78087979, while the coefficient value of the Fixed Effect Model (FEM) method is 0.77967204, and from the Pooled Least Squares (PLS) method is 0.95316466. It can be concluded that the estimated model has met the bias-free criteria and can be considered a statistically good model

The Arellano-Bond GMM approach is able to produce estimators that are free from bias, consistent, and efficient, through the utilization of instruments derived from deeper lags of the dependent variable and other independent variables. After testing, the results are obtained as in the following table.

Table 5. GMM Estimation Results

Variable	Coefficient	Std.error	z	$P > |z|$
Gini (t-1)	0.7808798	0.0358823	21.76	0.000***
Poverty	- 0.0010416	0.0002204	- 4.73	0.000***
Education	- 0.0079415	0.001992	- 3.99	0.000***
Unemployment	0.002708	0.0016125	1.68	0.093***

Source: Data processed by the researcher using Stata-17.

Based on the test results using the Generalized Method of Moment (GMM) estimation, the lag variable of income disparity (GINI L1) has a coefficient of 0.7808798 and is statistically significant at the 1% significance level (p-value = 0.000). This means that there is a strong positive effect of income disparity in the previous period on current income disparity in ASEAN countries. The variable Percentage of Poor Population has a coefficient of -0.0010416 and is statistically significant at the 1% significance level (p-value = 0.000). From these results it can be concluded that the Percentage of Poor Population (PM) has a negative and significant influence on income disparity in ASEAN in 1994 - 2023. Based on the test results using the Generalized Method of Moment (GMM) estimation, the Average Years of Schooling (RTS) variable has a coefficient of -0.0079415 and is statistically significant at the 1% significance level (p-value = 0.000). From these results it can be concluded that the Average School Year (RTS) has a negative and significant influence on income disparity in ASEAN in 1994 - 2023. The Unemployment Rate variable has a positive coefficient of 0.002708 with a significance level of 10% (p-value = 0.093). Thus, the Unemployment Rate has a positive but insignificant effect on income disparity in ASEAN in 1994-2023.

5. Conclusions

Based on the previously identified problems and the results of data analysis through testing and estimation that have been carried out on the effect of poverty, education, and unemployment on income disparity in ASEAN, the following conclusions can be drawn:
1. The percentage of poor people has a negative and significant effect on income disparity in ASEAN.
2. Average Years of Schooling (AYTS) has a negative and significant effect on income inequality in ASEAN.
3. Unemployment Rate has a positive but insignificant effect on income inequality in ASEAN.

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