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Original Article

The Impact of Income Inequality, Human Development, Gender Development and Open Unemployment on Economic Growth in Indonesia

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Abstract: Good economic growth reflects equitable income distribution and high labour absorption, leading to job creation. Addressing economic development is a government priority in Indonesia to tackle poverty, inequality, income disparity, and unemployment. This study investigates the impacts of income inequality, human development, gender development, and open unemployment on economic growth in Indonesia using panel data regression from 34 provinces (2015-2022). Data on income inequality, the human development index, the gender development index, and the open unemployment rate are from the Central Bureau of Statistics Indonesia, while economic growth data are from the SIMREG Bappenas. The results indicate that the fixed effects model is optimal. Income inequality, the human development index, and the open unemployment rate negatively and significantly affect economic growth, while the gender development index has a positive and significant effect. This study proposes that the Indonesian government should consider implementing measures to reduce income inequality through taxation policies and enhance education, healthcare, and infrastructure in remote areas.

Keywords: Economic growth; Income inequality; Human development index; Gender development index; Open unemployment rate.

1. Introduction

Good economic growth represents that economic activity encourages equitable distribution of people's income and encourages high absorption of labor growth, which results in the growth of new jobs. Economic development is a government priority to minimise economic problems in Indonesia, such as poverty, inequality, income, unemployment, and other economic issues that are still the government's task to solve. According to Todaro & Smith (2015), economic development is a process of economic transition from stagnation to growth, from low-income to high-income status, and overcoming absolute poverty. Economic growth also highlights income inequality. This income inequality is also a concern for the governments of developed and developing countries. According to the United Nations (2016), the Sustainable Development Goals (SDGs) agenda aims to ensure equal opportunities and reduce income inequality

Economic growth has long been the focus of the Indonesian government. This is evidenced by the fact that over the past few years, Indonesia has managed to move from a low-income to a middle-income country. However, equitable income distribution has not accompanied Indonesia's impressive economic development. This unequal income distribution can be seen from the high rate of high-income earners enjoying economic progress compared to low- and middle-income earners. In measuring income inequality between communities, the Gini ratio index is used. In 2015, all provinces in Indonesia experienced low-income inequality. This means that income distribution has been done evenly between households. The figure also illustrates that the community's gap is not so high. Each province in Indonesia has a modest income inequality. The province of Bangka Belitung Islands has a low-income inequality of 0.28 points. Not only does Bangka Belitung Islands province have a good figure, but Maluku province also has a low-income inequality of 0.28 points.

In 2022, the income inequality rate is 0.38 points. Compared to 2015, income inequality in 2022 has decreased for some provinces, but inequality is still in the moderate category on a national scale. The comparison between 2015 and 2022 illustrates that inequality in Indonesia is in the moderate category. The figure has decreased from the previous year. The decline in inequality is also in line with the decline in inequality in all provinces in Indonesia. The current development paradigm measures human development, which is the level of quality of life in each region. This Human Development Index will later become a benchmark for the quality of human life, which can be seen from the quality of education, health, and economic levels (purchasing power) (Hobrouw et al., 2021).

The Human Development Index in Indonesia is very good, which continues to increase yearly. The health services provided in Indonesia are very good, and every community in Indonesia has been given optimal education. This does not escape the government's work in improving its people's welfare. In 2015, Indonesian provinces still had low Human Development Index scores, with the national Human Development Index at 69.55 points. The Provinces above the national figure are Riau, Riau Islands, DKI Jakarta, D.I Yogyakarta, Banten, East Kalimantan, and North Sulawesi. Several other provinces are still below the national figure. Papua Province has a very low human development index. The low Human Development Index in Papua Province is due to the uneven education system in Papua. This is indicated by educators who are still so few that they cannot maximise education in the region, so there are still many school children who experience school dropouts.

In 2022, the National Human Development Index was already in the high category at 73.77. An increase in the number of provinces in Indonesia also accompanied it. Compared to 2015, in 2022, the average province in Indonesia will be above the national figure. Only a few provinces are still below the national figure, but the figure has increased. The government's efforts to improve the human development index have been successful in the post-COVID-19 pandemic period. In 2020, to be precise, the peak of the COVID-19 pandemic caused the human development index figure to decrease; this can be seen from the education and health dimensions. During the COVID-19 pandemic, many people were exposed to COVID-19, so few health workers could provide maximum health services.

In the development of a country, success can be measured by the quality of human resources, which, without discriminating against gender, to realize the welfare of society. Gender differences are often associated with human development. In human development, there is a term regarding gender-based development that measures development achievements between women and men. Gender-based development is explicitly stated in the fifth goal of the Sustainable Development Goals (SDGs), namely "Achieving Gender Equality and Empowering Women" (National Development Planning Agency, 2020). The goal of gender equality as one of the goals of the SDGs makes gender equality an urgent issue in human development. This is because the progress of a country cannot be fully achieved without gender equality. Gender equality is an equal condition for men and women in obtaining opportunities and their rights as human beings to play a role and participate in all fields as well as equality in enjoying the results of development (Supartoyo, 2013). Gender equality can specifically improve women's health and education. In the capital stock, the increased role of women can positively affect the political and economic empowerment of the female population Galor, O. and Weil (1993) so that each country can generally use its human resources efficiently. Using complete and better human resources promotes economic growth in the country (Esteve & Volart, 2004).

Indonesia is one of the countries that has made rapid progress in reducing inequality in education between men and women, which is characterized by the narrowing gap between men and women in educational attainment. However, women's level of productivity and participation in the labor force is still in the low category. The role of women in development needs to continue to be considered in national and regional development policies. KemenPPPA (2022)states that gender equality is one of the global issues.

Therefore, achieving gender equality and empowering women is one of the goals in sustainable development (SDGs). Although many efforts have been made to improve the quality of life of women and strengthen the institutional capacity of gender mainstreaming, as stated in Presidential Instruction No. 9/2000 on Gender Mainstreaming to increase gender equality and justice in national development, there are still many development gaps between men and women in all provinces in Indonesia.

Enhancing the quality and quantity of women's participation or empowerment in the workforce and economic activities will likely increase a country's income through improved aggregate productivity, which may lead to enhanced welfare and family outcomes. However, disparities in development and gender empowerment persist between regions in Indonesia, with Eastern Indonesia exhibiting lower levels of development achievement and gender empowerment. This gender gap is evident between provinces and districts/cities within Indonesian provinces, indicating a significant disparity between the roles of women and men in regional development. A positive change was observed in 2015; however, this progress regressed in 2016. This regression occurred because the male Human Development Index grew faster than the female Human Development Index in several Indonesian provinces. The decline in the Female Human Development Index was attributed to a deceleration in the components of Life Expectancy, Expected Years of Schooling, and Urban Expansion compared to 2015; only the average years of schooling component demonstrated improved growth relative to the previous year. Consistent with the achievement of the national-level Gender Development Index, the provincial Gender Development Index in 2022 also exhibited an increase. Seven provinces in Indonesia experienced slower growth in the Gender Development Index than the previous year: Aceh, the Riau Islands, DKI Jakarta, East Java, North Kalimantan, Gorontalo, and Maluku. Of the 34 provinces in Indonesia, more than half (19 provinces) had a lower HDI than the national GDI. In 2022, North Sulawesi achieved the highest GDI, whereas Papua recorded the lowest GDI.

This study aligns with the research conducted by Rahmadi & Parmadi (2019), who posit that income inequality has a negative effect on economic growth. However, this contrasts with Rukmana (2012) findings indicating that income disparity positively affects economic growth. Based on Kuznets' hypothesis, this study elucidates that if income distribution improves in the early stages of development, it will be accompanied by increased economic growth. This phenomenon demonstrates that the high income of a region stimulates other regions to develop existing resources further, thereby fostering economic growth. Several scholars have also researched the Human Development Index. Wardinigrum & SS (2024) reported negative results for economic growth. However, some studies corroborate the established theories. Research conducted by Dewi & Sutrisna (2014) yielded positive results for economic growth. Dewi & Sutrisna (2014) find that the enhancement of human capital quality, as measured by the HDI, catalyzes economic development, leading to the realization and augmentation of economic growth. Regarding Gender Development Index research, the study by Nursini and Syahrul (2022) aligned with theoretical expectations, providing positive results for economic growth. Their research demonstrated that South Sulawesi Province has successfully leveraged all resources, including women, to stimulate economic growth. Concerning research on the influence of open unemployment on economic growth, the study by Padang & Murtala (2020) is consistent with the prevailing theory.

2. Materials and Methods

2.1. Materials

In this study, the dependent variable is economic growth in Indonesia, and the independent variables used are income inequality (Gini Ratio), human development index, gender development index, and open unemployment rate covering the period 2015-2022 in 34 provinces in Indonesia. This study does not use 38 provinces corresponding to Indonesia's current number of provinces due to the limitations in obtaining data from previous years. This research user’s secondary data was obtained from the Central Bureau of Statistics, namely for income inequality, human development index, gender development index, and open unemployment rate. Meanwhile, data on economic growth was obtained from the Regional Basic Data Management and Information System (SIMREG) of BAPPENAS.

2.2. Methods

The analytical methods employed in this study comprised descriptive and panel data regression analyses. Panel data regression analysis was utilized to examine the effects of income inequality, human development index, gender development index, and open unemployment rate on economic growth in Indonesia. A descriptive analysis was employed to interpret the regression results of the independent variables on the dependent variable. This study utilizes this methodology to determine whether income inequality or the Gini ratio (Gini), human development index (HDI), gender development index (GI), and open unemployment rate (TPT) can influence Economic Growth (PE) in Indonesia. An equation was formulated to ascertain the effect of the independent variables on the dependent variable. According to Gujarati and Porter (2012), a multiple linear regression equation model can generally be expressed as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon, \quad (1)$$

With this equation, it can be formulated:

$$EG_{it} = \alpha + \beta_1 Gini_{it} + \beta_2 HDI_{it} + \beta_3 GDI_{it} + \beta_4 TPT_{it} + \varepsilon, \quad (2)$$

Where EG is economic growth in percent; Gini is income inequality using the Gini ratio in index; HDI is Human Development Index in index; GDI is Gender Development Index in index and TPT is Open Unemployment Rate in percent. Ther symbolizers α is a constant; β1, β2, β3, and β4 is the regression coefficient. For symbol i denotes the i-th district/city; t is t-th year; and Ɛ is the symbolizers error terms.

3. Results

3.1. Descriptive Statistics Analysis

This descriptive statistic presents the mean, median, maximum, minimum, standard deviation, and number of observations. From this descriptive statistics table, one can compare the standard deviation value, which should be smaller than the mean value, to ascertain whether the data are uniformly distributed. Table 1 illustrates the test results for the descriptive statistical values of economic growth, income inequality, the human development index, the gender development index, and the open unemployment rate from 2015 to 2022.

Table 1. Result of Descriptive Statistics (N=272)

Statistics	EG	Gini	HDI	GDI	TPT
Mean	4,4	0,35	70,85	90,25	5,25
Median	5,09	0,35	70,80	90,67	4,82
Maximum	22,94	0,45	82,77	95,04	10,95
Minimum	-15,74	0,25	57,25	78,52	1,4
Std. Derv	3,8	0,03	4,22	3,34	1,85

Note: EG: Economic Growth; Gini: Income Inequality; HDI: Human Development Index; GDI: Gender Development Inder; TPT: Open Unemployment Rate

Table 1 presents a value of 3.81, lower than the mean of 4.4 percent. The maximum value observed was 22.94 percent, corresponding to the economic growth in Maluku Province, while the minimum value was -15.74, representing economic growth in Papua Province. The income inequality variable exhibits a mean value of 0.35, with a maximum value of 0.45 and a minimum value of 0.25. For this variable, the standard deviation was 0.03 indices, which is lower than the mean value. Regarding the HDI variable, the mean value was 70.85 indices. The HDI was classified as high at this level, indicating an improvement in Indonesia's HDI. This increase is also attributed to improvements in the HDI across the Indonesian provinces. The maximum value for the HDI variable is 82.77 indices, achieved by the DKI Jakarta Province in 2022. A minimum value of 57.25 indices was recorded for Papua Province in 2015.

This figure increased in subsequent years. For the HDI variable, the standard deviation was 4.21 indices. The mean value of the GDI variable was 90.25. The maximum value of the GDI variable was 95.04 indices, which was observed in North Sulawesi in 2015. Conversely, the minimum value was 78.52 indices, recorded in Papua Province. For the GDI variable, the standard deviation was 3.34 indices. The TPT variable exhibited a mean value of 5.25 percent, with a maximum value of 10.95 percent observed in the DKI Jakarta Province. Conversely, a minimum value of 1.4 percent was recorded in Bali Province. The standard deviation of the TPT variable was 1.85 percent. The number of observations for all five variables utilized in this study was consistent, totaling 272. Table 1 indicates that the standard deviation for each variable, both independent and dependent, was lower than the average value. This suggests that smaller standard deviation values indicate a favorable data distribution for each variable, with no significant data deviations.

3.2. Determining the Best Model

Researchers employed the Chow, Hausman, and Lagrange multiplier (LM) tests to identify the most suitable model for panel regression. The outcomes of these tests will subsequently serve as a means of analyzing the study results. Table 2 presents the findings of these tests, which were conducted to establish an optimal model.

Table 2. Results of Determining the Best Panel Model

Testing		Prob.	Decision
Chow Test	Cross-section Chi-Square	0.0000	FEM
Hausman Test	Cross-section random	0.0000	FEM

Table 2 shows the overall results at a significant level of 0.05 (5%), and the results of the Chow and Hausman tests obtained a smaller value of 0.01. The final decision is that the fixed effects model (FEM) is the best panel data regression model for this study. Thus, the analysis of the research results can be based on the results of the fixed effects model.

3.2.1. Fixed Effect Model

Evaluating the optimal model identifies the fixed effect model, which is deemed the most suitable for analysis and incorporation into the research findings of this study. Table 3 presents the results of the fixed effects model estimation.

Table 3. Result of Fixed Effect Model

Variable(s)	Coefficient	Std. Error	t-Statistic	Prob.
C	-154,312	56.562	-2.777	0.0059*
Log Gini	-12,345	6.668	-1.851	0.0654**
HDI	-1,091	0.164	-6.620	0.0000*
GDI	2,545	0.673	3.779	0.0002*
TPT	-1,246	0.231	-5.384	0.0000*
R-Squared	0.424		Prob. F-Statistic	0.0000

Note: **,*, indicates significant at the level of 5% and 10%

Table 3 presents the estimation results using the fixed effects model, demonstrating that the variables of income inequality, the human development index, and the open unemployment rate exhibit a negative and statistically significant effect on economic growth. Conversely, the gender development index positively influences economic growth. The probability value of the F-statistic indicates statistical significance, suggesting a simultaneous or joint influence of income inequality, the human development index, the gender development index, and the open unemployment rate on economic growth in Indonesia. This investigation reveals an R-squared value of 0.424, indicating that income inequality can explain fluctuations in economic growth in Indonesia, the human development index, the gender development index, and the open unemployment rate to the extent of 42.4 percent. The remaining variance is attributable to other variables not included in this study.

4. Discussion

Economic growth in a country is inextricably linked to that in its constituent provinces. As individual provinces experience economic growth, they increase a country's overall economic growth. A nation's developmental success is evaluated by its ability to enhance economic growth through various factors. Economic equilibrium is an objective that a country aims to achieve through the involvement of influential factors such as equitable income distribution, an improved human development index indicative of enhanced human resource quality, a gender development index demonstrating parity between men and women in economic and social contributions, and an open unemployment rate that reflects the severity of unemployment, which subsequently affects the country's economic performance because of the presence of a substantial workforce seeking employment. Income inequality negatively influences economic growth. This study is corroborated by Rahmadi & Parmadi (2019), who determined that income inequality negatively and significantly affects economic growth across the Indonesian archipelago. This phenomenon is attributed to a reduction in income inequality in the Indonesian islands and decreased poverty rates.

However, this study contradicts the findings of Utami & Zahrudin (2022), who find that income inequality positively affects economic growth in Indonesia. This positive outcome is attributed to the Gini Index, which does not reflect maximum equity. Consequently, the multiplier effect on the economic growth rate does not meet expectations, particularly in eastern Indonesia. According to Kuznets hypothesis, improved income distribution is associated with increased economic growth in the initial stages of development. This demonstrates that a higher regional income stimulates more advanced economic activities, fostering competition. The results of the Human Development Index demonstrate a negative influence on economic growth in Indonesia. These findings align with the research conducted by (Wardinigrum & SS, (2024), which revealed that the Human Development Index had a negative effect on economic growth in Papua. This study posits that a region with superior human resource standards will benefit from higher labor productivity and increased income, which benefit economic growth.

Additional supporting research was conducted by Ma'wa and Cahyadi (2023), who examined the human development index concerning economic growth in Central Java. Their research indicated that the human development index has a negative effect on economic growth. The study notes that This result contradicts Solow's theory, which postulates that three factors trigger an increase in economic growth. Human resource development involves interacting sectoral elements that occur gradually over time. Consequently, an increase in the HDI during that period does not necessarily have an immediate impact on the economy. Sari and Setyowati (2022) reported similar findings, where their research demonstrates that the human development index has a negative effect on economic growth. According to Solow's theory, the Human Development Index represents the quality of human resources in a region. Superior human resources benefit from high income and productivity, subsequently impacting economic growth. The results of this study contradict those of research conducted by Nazmi and Jamal (2018), who find that the human development index positively influences economic growth. Theoretically, the Human Development Index positively influences economic growth, demonstrating that high-quality human resources in terms of education and health can yield sufficiently positive outcomes to create a more favorable standard of living.

Furthermore, it can stimulate economic growth in a region through a qualified workforce or economic activity. The Gender Development Index has a positive influence on economic growth in Indonesia. The results of this study are corroborated by research conducted by Nursini and Syahrul (2022), which yielded similar findings, indicating that the Gender Development Index positively influences economic growth. An increase in the Gender Development Index will inevitably enhance the quality of human resources, particularly for women. This improvement was accompanied by an increase in workforce quality in each region. However, this research is inconsistent with and contradicts the results of research conducted by Salam et al. (2023), who reported a negative effect on economic growth in South Sulawesi. Sustainable gender development reduces discrimination against women and expands access to economic, educational, and health opportunities. This can potentially increase productivity and foster high-quality human resources. Regional gender equality has a substantial impact on economic growth.

The observed societal phenomenon indicates that women in the labor force category are underrepresented compared with men. The disparity between men and women persists in the employment sector. The provinces consistently exhibiting high rates in Indonesia include West Sumatra, DI Yogyakarta, DKI Jakarta, and North Sulawesi. However, other provinces remained below the national average. This disparity is evident in the gender development index presented by researchers. Furthermore, the study found that the Open Unemployment Rate negatively impacted economic growth in Indonesia. The decline in economic growth attributed to high unemployment suggests that a significant portion of the labor force remains unemployed, resulting in insufficient income to meet basic needs. This indicates that many individuals do not contribute to a country's economic activity. This research is corroborated by Padang and Murtala (2020), who demonstrate that the open unemployment rate negatively affects economic growth in Indonesia. The increase in unemployment in Indonesia influences economic growth, leading to a decrease in the substantial number of unemployed individuals. Additional supporting research conducted by Harjana (2015) explains that unemployment impedes economic progress. High unemployment rates lead to decreased purchasing power, which consequently reduces consumption. This decline in consumption results in decreased production, ultimately affecting economic growth.

5. Conclusions

This study employs panel data regression as an analytical tool. The fixed effects model, selected through the best model selection test, was the most appropriate for this research. The findings indicate that income inequality, the human development index, and the open unemployment rate negatively affect economic growth in Indonesia. Conversely, the gender development index positively affected economic growth in Indonesia. All variables in this study displayed appropriate data distributions without significant deviations. Based on an analysis of these results, several recommendations can be made. It is suggested that government expenditure be efficiently allocated to maintain and improve educational and healthcare infrastructure. Furthermore, it is recommended that the government implements more inclusive and gender-neutral policies for economic development. These measures are crucial for accelerating sustainable economic growth and reducing social inequality.

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