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The Influence of Macroeconomic and Socio-Economic Factors on The Achievement of SDG 10 in Java

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Abstract

This study investigates the relationship between macroeconomic variables and income inequality on the island of Java using the panel regression method. Panel regression analysis shows that inflation, GRDP, decline and exchange rate influence income inequality on Java Island simultaneously. Partially, it shows that inflation, GRDP, poverty and the exchange rate have a significant effect.

Keywords**: **Inflation, GDP, Poverty, Unemployment, Exchange Rate, Inequality

1. INTRODUCTION

Economic inequality on the island of Java is an important and relevant issue in the context of Indonesia's economic development. As the most populous island and center of economic activity, Java accounts for more than 50% of the total national Gross Domestic Product (GDP). Despite having a significant contribution to the national economy, inequality between the region within Java and other islands in Indonesia remains a serious challenge. Income inequality in Indonesia can be measured using the Gini Ratio Index, which shows the income distribution of each individual. The value of the Gini Indonesia Index in 2023 was recorded at 0.36, better than 0.42 in 2015, although it still shows income inequality. These fluctuations indicate serious challenges in economic development, influenced by various factors (Wijayanti & Putri, 2023) The rise and fall of the Gini Ratio value shows that the problem of income inequality in Indonesia is a complex problem for Indonesia's economic growth. There are several factors that cause

intra-regional income inequality, including the influence of macroeconomic and socio-economic factors (Damanik et al., 2018).

The first factor to consider is inflation, which, according to the Monetary Theory put forward by Milton Friedman, is the result of a faster growth of the amount of money compared to the growth of economic output. When inflation occurs, people's purchasing power tends to decrease, especially for low-income groups who do not have assets to protect the value of their wealth. This situation can exacerbate economic inequality, where the rich have the ability to invest in assets whose value increases in line with inflation, while the poor are further depressed (Aprilianto, 2024). This is in line with research conducted by (Yuniar, 2024) The research entitled "The Impact of Inflation on the Income and Purchasing Power Gap of the Indonesian People" shows that inflation affects purchasing power and income inequality. The increase in the price of basic goods forces changes in spending patterns, making it difficult for low-income people to meet their daily needs, exacerbating inequality.

The next element is GDP according to the economic growth theory put forward by Robert Solow. The GDP used in Indonesia is GDP based on market prices (nominal) and GDP based on constant prices (real).(Yogi, 2018). By examining the connection between economic growth and social income distribution, one can comprehend the relationship between GDP and income disparity (Hartini, 2015) stated that GDP has a positive and significant influence on income inequality.

The Unemployment Factor according to Keynesian Theory emphasizes the importance of aggregate demand in the economy. According to this theory, unemployment can occur when aggregate demand is not enough to absorb the available labor. When unemployment is high, people's incomes decrease, which can exacerbate economic inequality. Expansive fiscal policies, such as increased government spending, can help reduce unemployment and, in turn, reduce inequality (Hasan, 2020).

Poverty is a state in which individuals or groups lack access to basic resources and needs such as income, education, and health services, making it difficult to meet the needs of a decent life. In his research (Nadya & Syafri, 2019) stated that poverty has a significant effect on income inequality. The last factor is the exchange rate This approach looks at how economic policies and political power affect exchange rates and inequality.

Policies that are not inclusive or discriminatory can cause exchange rate fluctuations that are detrimental to certain groups, such as minorities or low-income groups. Inequities in the distribution of resources and access to economic opportunities can exacerbate economic inequality (Simorangkir, 2004). This assertion is backed up by Firmansyah et al. (2022)'s studies have found that income disparity is significantly impacted by the exchange rate. The evolution of the Gini index on the Java island is as follows:

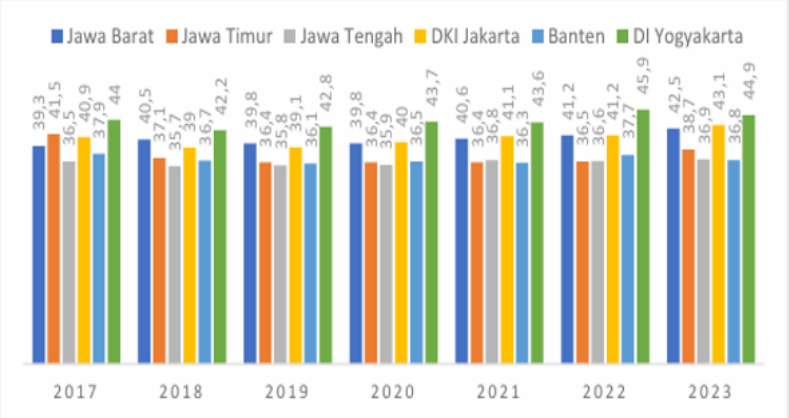

Figure 1. The development of the Gini index on the island of Java

Figure 1 explains that the income gap in all Java provinces shows a significant variation in the value of the Gini index. Based on existing data, the Gini index has fluctuated over the past seven years. DI Yogyakarta Province recorded the highest Gini index value, which was 45.9% in 2022. The high figure is influenced by the increasing inequality of expenditure among the population, considering that Yogyakarta is a student city that is a destination for many students from various regions. This situation has created a wide gap, especially with the increase in tariffs at various universities. In addition, the number of scholarships for the underprivileged in higher education institutions is also relatively small (Sari, 2023). The importance of studying the factors that affect income inequality because this problem has not been solved comprehensively.

2. METHOD

The study included data from six Java provinces. from 2017 to 2023, using secondary data. Independent variables include inflation, GDP, unemployment, poverty, and exchange rate, while the dependent variable is income inequality with the Gini Ratio Index. This study uses a panel data regression approach to analyze the relationship

between variables by considering the CEM, FEM, and REM models. The following is the research model used.

$$Gini_{it}=\alpha + \beta_1 Inflation_{it} + \beta_2 LnPDRB_{it} + \beta_3 Unemployment_{it} + \beta_4 Poverty_{it} + \beta_5 Exchange\ Rate_{it} + \varepsilon it$$

Explanation:

$Gini_{it}$ = Income Inequality

$Inflation_{it}$ = Inflation

$LnPDRB_{it}$ = Ln Gross Regional Domestic Product

$Poverty_{it}$ = Poverty

$Exchange\ Rate_{it}$ = Exchange Rate

i = Number of Provinces

t = time

ε = *Error*

3. RESULTS AND DISCUSSION

This research was conducted in the 2017-2023 period covering 6 provinces on the island of Java, the data analysis step was carried out through the testing of model selectors shown in the table below.

Table 1. Chow Test

Effects Test	Statistic	d.f.	Prob.
Cross-section F	32.075742	(5,31)	0.0000
Cross-section Chi-square	76.451216	5	0.0000

Sumber : Eviews,2024

According to the Chow test results, probability's significance value is less than alpha's, which is 0.00000. The Fixed Effect Model is used, as demonstrated by the Chow test findings, and the Hausman test follows. The Chow test's findings indicate that the significance value of probability is smaller than alpha, which is 0. 0000. The results of the Chow test show the use of the Fixed Effect Model, followed by the Hausman test.

Table 2. Hausmant Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	5	1.0000

Sumber : Eviews.2024

The random cross-section probability value, as determined by the Hausman Test, was 1.0000. The number is higher than 0.05. Using the above-described Hausmant test decision-making criteria, the Random Effect Model (REM) method was selected as the model.

Table 3. Lagrange Multiplier Test

Null (no rand. effect) Alternative	Cross-section One-sided	Period One-sided	Both
Breusch-Pagan	66.72182 (0.0000)	1.287363 (0.2565)	68.00919 (0.0000)
Honda	8.168343 (0.0000)	-1.134620 (0.8717)	4.973593 (0.0000)
King-Wu	8.168343 (0.0000)	-1.134620 (0.8717)	5.267760 (0.0000)
GHM	-- --	-- --	66.72182 (0.0000)

The number below, which is 0.000 when the result is less than 0.05, represents the P result. Thus, the Lagrange Multiplier Test indicates that Random Effect is the most effective estimating technique. Common Effect is the most effective estimating technique if the p value is higher than 0.05.

Table 4. REM Regression Result

Variabel	Coefficient	Std. Error	t-Statistic	Prob.
C	146.5348	37.53278	3.904181	0.0004
X1	0.444463	0.129284	3.437878	0.0015
LN_X2	20.87948	2.742967	7.612004	0.0000
X3	-0.365432	0.127500	-2.866134	0.0069
X4	-0.070357	0.092098	-0.763939	0.4499
LN_X5	-21.91675	4.758884	-4.605439	0.0000

Effects Specification	S.D.	Rho
Cross-section random	0.275125	0.0630
Idiosyncratic random	1.060606	0.9370

Weighted Statistics			
R-squared	0.365261	Mean dependent var	32.39880
Adjusted R-squared	0.277103	S.D. dependent var	2.493230
S.E. of regression	2.119828	Sum squared resid	161.7722
F-statistic	4.143241	Durbin-Watson stat	0.509995
Prob(F-statistic)	0.004483		

Unweighted Statistics			
R-squared	0.381136	Mean dependent var	39.29524
Sum squared resid	216.0449	Durbin-Watson stat	0.381879

The results of REM Regression produced the following research model equations:

Y = 146.53475679 + 0.444463199081*X1 + 20.8794762714*LN_X2 -

0.365432130159*X3 - 0.0703570353879*X4 - 21.916748932*LN_X5 + [CX=R]

Data analysis with E-Views shows an F-statistic of 4.143241 and a probability of 0.004483, indicating that independent variables (Inflation, GDP, Unemployment, Poverty, Exchange Rate) have a simultaneous effect on income inequality, with a determination coefficient of 27.7%. The rest is influenced by other factors. With the Random Effect Model (REM) method, the result was obtained that the inflation variable has a t-Statistic of 3.437878 with a Prob. value of 0.0015, then it can be concluded that inflation has a significant effect on the Income Gap. This research is supported by Yuniar (2024)’s research which states that inflation has a significant effect on income inequality When inflation occurs, people's purchasing power tends to decrease, especially for low-income groups who do not have assets to protect the value of their wealth. This situation can exacerbate economic inequality, where the wealthy have the ability to invest in assets that Hartini (2015), in her research, stated that GDP has a significant effect on income on the island of Java. This means that when the GDP of a region grows, there is usually an increase in employment opportunities and income. However, if this growth is uneven, it can lead to income inequality. The unemployment variable has a significant effect on income inequality in Java, with t-statistic -2. 866134 and value Prob.0.0069 (Yusica et

al., 2018). In Yusica et al. (2018)'s research on the influence of economic growth, agglomeration and unemployment rate on inequality between districts/cities in East Kalimantan Province. The results of the study show that unemployment has a positive and significant effect on inequality. according to Keynesian Theory emphasizes the importance of aggregate demand in the economy. According to this theory, unemployment can occur when aggregate demand is not enough to absorb the available labor. When unemployment is high, people's incomes decrease, which can exacerbate economic inequality. Expansive fiscal policies, such as increased government spending, can help reduce unemployment and, in turn, reduce inequality (Hasan, 2020).

The Poverty variable does not have a significant effect on income inequality based on t-Statistics and Prob values found. Ersad and Amir (2022) in his research entitled The Effects of Southern Sumatra's HDI, unemployment rate, and poverty rate on income inequality. This claim demonstrates that, at least in part, poverty has little bearing on income disparity. The reduction in poverty is not always directly proportional to the reduction in inequality, considering that inequality can increase even if the number of poor people decreases. Factors that cause inequality include income distribution, economic growth, access to resources, and government policies. The exchange rate has a t-Statistic -4. 605439 and Prob. 0. 0000, showing a significant influence on income inequality in this study (Firmansyah et al., 2022). Furthermore, the exchange rate affects income inequality. When a country's exchange rate weakens, export products become cheaper in the eyes of the international market. Increasing export demand can boost economic growth and employment, but it can lead to income inequality if it is uneven.

4. CONCLUSION

The conclusion of the analysis shows that inflation, GDP, unemployment, and exchange rate have a significant effect on income inequality, while poverty does not. Collectively, all of these variables significantly affect income inequality. Looking at the results of the research and conclusions that have been explained earlier, the suggestions that can be submitted to the provincial governments on the island of Java for the achievement of SDG 10 is that the provision of decent and sustainable jobs through the formal sector is very important to create a resilient economy. Policies that support skills,

training, and green jobs need to be expanded, the Government can consider adjusting the minimum wage that is more responsive to inflation, so that low-wage workers still have adequate purchasing power. Guaranteeing decent work and reducing unemployment will improve welfare and reduce inequality.

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