An analysis of income inequality in eight regencies and cities in Banten using panel data

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ABSTRACT

Income inequality remains a major challenge for regional economic development, particularly in Banten Province, which is characterized by pronounced regional disparities driven by urbanization and economic agglomeration. This phenomenon is influenced by various economic and social factors that have not yet been comprehensively examined within the regional context of Banten. Research on income inequality in Banten is therefore essential, as rapid economic growth concentrated in industrial areas has not necessarily translated into an equitable distribution of welfare across regencies and cities. This study aims to analyze the effects of economic growth, the Human Development Index (HDI), minimum wage, number of firms, and poverty rate on income inequality in eight regencies and cities in Banten Province over the period 2011–2023. The study employs a quantitative approach using panel data regression, combining both time-series and cross-sectional data. The results indicate that HDI has a positive and statistically significant effect on income inequality. In contrast, minimum wage, number of firms, and poverty rate exhibit significant negative effects on income inequality, while economic growth does not have a statistically significant impact. These findings are expected to provide valuable insights for local governments in designing policies that promote more equitable economic development and reduce income inequality in Banten province.

1. Introduction

Economic growth plays important role in improving social welfare. The concept of economic welfare, in this context, is closely related to whether individuals have sufficient income to achieve a basic level of consumption and overall well-being (Khoirudin & Haerusman, 2023). However, the impact of economic growth is not uniform. Rapid economic growth has not been experienced equally across all income groups within society (Febriani et al., 2022). Income inequality, therefore, remains a major concern in regional development, including in developing countries, despite ongoing economic progress. One of the primary factors contributing to income inequality is the unequal distribution of income among individuals or groups. In general, the more unequal the distribution of income within a society, the higher the level of income inequality (Khoirudin & Musta'in, 2020).

Research by Hornok & Raeskyesa (2024) employs a fixed-effects panel data approach to assess the impact of the establishment of economic zones on income inequality at the provincial level in Indonesia. The results indicate that the development of economic zones has a significant effect on local income inequality. Furthermore, Ayyash et al (2025) used a panel ARDL approach to examine the relationship between income inequality and macroeconomic factors in ASEAN-5 countries. Their findings show that macroeconomic variables exert different effects on inequality in the short and

long run, and that income inequality exhibits a high degree of persistence over time. Furthermore, significant income inequality is often driven by unequal ownership of production factors and resources, particularly capital assets. The pattern of economic development is strongly influenced by regional characteristics, leading to disparities in development capacity. As a result, some regions experience rapid economic growth, while others lag behind. According to Kalalo et al (2016) argued that income inequality among different social groups is an important issue that requires careful attention, particularly for policymakers in designing strategies to improve societal welfare. Economic growth and income inequality across Indonesia also fluctuate over time, following changes in the national economic growth rate. Adiat (2020) further notes that income disparities between provinces in Indonesia affect approximately 40% of all provinces and have shown an increasing trend over time.
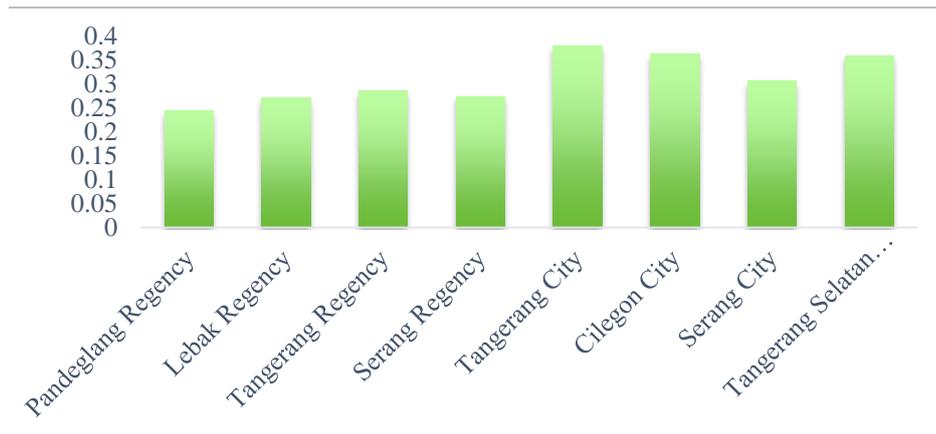
Figure 1. Gini Ratio Index in Banten 2023

Figure 1 shows data on the gini ratio in Banten as a reference for income inequality, which states that Banten Province is not yet prosperous. In the period 2011-2023, the gini ratio of development fluctuated. The gini ratio in 2023 amounted to 0.368. However, the value of the gini ratio in 2023 is still greater than 0.35. Income inequality across regions and the process of economic development remain key challenges faced by Banten Province (Syaifudin et al., 2025). The province was established through regional expansion under Law No. 23 of 2000, as part of the reform era that accelerated decentralization following Law No. 22 of 1999 on Regional Autonomy. According to Irkham (2019) the decentralization policy introduced through regional autonomy aims to reduce interregional income disparities, in contrast to the previous centralized system, which contributed to widening inequality.

Banten Province is a province with quite rapid economic development, especially in industrial areas such as Cilegon, Tangerang, and its surroundings. However, on the other hand, there are still relatively underdeveloped areas, such as Lebak and Pandeglang. According to Syaifudin et al (2025), these socio-economic disparities in Banten are closely related to differences in the development of key economic sectors, including industry, economic growth, and poverty levels across regions. Such conditions have the potential to exacerbate income inequality within the province. As a buffer zone for Jakarta, Banten exhibits unique economic and social dynamics. High levels of urbanization and migration to the Greater Tangerang area have contributed to widening income gaps between urban and rural regions. As a relatively new province, officially established in 2000, Banten is still undergoing stages of infrastructure expansion and economic development. Therefore, the issue of income inequality represents a critical area of study in understanding the challenges of balanced regional development in Banten Province.

Income inequality remains a structural problem in Banten Province. Over the past decade, Banten's Gini ratio has tended to hover above 0.35, indicating a substantial gap between more advanced industrial areas such as Tangerang–Cilegon and relatively underdeveloped regions like Lebak and Pandeglang. High levels of urbanization in Jakarta's buffer zone have further widened income disparities between high-income households in growth centers and those in peripheral areas. This phenomenon suggests that Banten's relatively high economic growth has not automatically translated into income equality. Previous studies have examined income inequality at the national and provincial levels; however, their empirical findings remain inconsistent. Several studies suggest

that economic growth does not necessarily reduce inequality (Febriyani & Anis, 2021; Ilyasa et al., 2025), while others suggest that improving human quality can actually widen inequality if access to education is unequal (Rachmawati et al., 2025). Waluyo et al (2024) confirm the presence of inequality across regencies and cities in Banten Province, based on differences in GRDP contributions, per capita GRDP growth, and Klassen typology, which reveal disparities in regional economic structures. Mulia et al (2021) found that income inequality in Banten is categorized as medium inequality according to the Williamson and Thiel index. Furthermore, the literature shows mixed results regarding the influence of the minimum wage, the number of firms as an indicator of industrial activity, and the poverty rate on income inequality. Despite these contributions, no study has specifically examined the simultaneous impact of these variables within the context of Banten using district- and city-level panel data. Therefore, a clear research gap exists in the form of a lack of up-to-date empirical evidence that comprehensively maps how the dynamics of economic growth, human development, industrial structure, and social conditions jointly influence income inequality in Banten Province.

Banten Province has many industrial companies as one of its leading sectors. Based on data collected by the Banten Province Investment and One-Stop Integrated Service Office (DPMPTSP), seen from the business sector, Banten Province's economic growth is driven by strong growth in almost all main sectors. From the supply side, the manufacturing industry sector is still the largest economic sector in Banten Province with a contribution of 1.39%. Furthermore, from the supply side, the manufacturing industry sector still contributes 30.26% to the total supply of Banten Province. Referring to the context that has been explained, the researcher sees the need for research on income differences between districts and cities in Banten Province. This study aims to analyze the impact of variables such as economic growth, Human Development Index, Minimum Wage, Number of Companies and poverty on income inequality in the regions.

Based on these research gaps, this study aims to analyze the influence of economic growth, the Human Development Index (HDI), minimum wages, the number of firms, and poverty rates on income inequality in eight regencies/cities in Banten during 2011–2023 using a panel data regression approach. Through this framework, the study seeks to address the lack of comprehensive empirical evidence on the determinants of inequality in regions characterized by highly heterogeneous economic conditions. Academically, this study contributes to the literature on regional inequality by providing novel empirical evidence based on a multi-dimensional panel dataset that has not been widely explored in the context of Banten. In addition, the findings are expected to offer valuable insights for policymakers in designing more targeted and effective strategies to promote economic equity at the regional level.

2. Literature Review

Income inequality reflects how income is distributed within a country over time. It is often described as the gap between the rich and the poor and remains a major challenge for developing economies. Indicators such as differences in average per capita income, income levels, employment opportunities, and regional disparities are commonly used to assess economic inequality (Iswanto, 2015). Income distribution, in this context, illustrates how evenly the benefits of economic development are shared among the population. According to Subrata (2018), Kuznets' theory proposes a hypothesis that explains the relationship between a country's economic growth rate and the inequality of income distribution among its population, which is described as an inverted U. Income inequality remains a central issue in regional economic development, particularly in developing economies undergoing structural transformation. The classical foundation of inequality analysis originates from Kuznets (1955), who proposed the inverted U-hypothesis, arguing that inequality tends to increase during the early phase of industrialization and decline at later stages of development. This implies that in regions experiencing rapid industrial expansion, income disparities may initially widen before eventually converging over time. Consequently, income inequality remains a central issue in regional economic development, particularly in developing economies undergoing structural transformation.

Subsequent empirical studies provide mixed evidence regarding the relationship between economic growth and inequality. Barro (2000) founds that the growth–inequality relationship depends on the level of development, while Dollar & Kraay (2002) argue that economic growth generally benefits the poor but does not necessarily reduce income inequality. These findings suggest that

growth alone is insufficient to ensure equitable income distribution, particularly when economic expansion is concentrated in capital-intensive sectors. From a spatial perspective, Kanbur & Venables (2005) emphasize that industrial agglomeration and geographic concentration of economic activities generate spatial inequality. Regions that successfully attract manufacturing and modern services tend to grow faster, while peripheral areas lag behind. This framework is highly relevant to provinces characterized by industrial clusters alongside relatively underdeveloped rural districts.

Furthermore, inequality can persist due to disparities in human capital accumulation. Galor & Zeira (1993) demonstrate that unequal access to education leads to persistent income inequality through intergenerational transmission of human capital. When improvements in education and health are disproportionately accessed by higher-income groups, inequality may widen rather than decline. This theoretical explanation supports empirical findings in several developing regions where improvements in the Human Development Index (HDI) do not automatically reduce inequality. The concept of economic value does not only include direct or indirect use value (Khoirudin & Khasanah, 2018). The progress of economic activities that have an impact on increasing the production of services and goods in society is called economic growth. Economic growth is a macroeconomic variable that reflects the overall economic conditions and is national in nature. When economic growth declines, this reflects a poor economic situation. Conversely, if economic growth increases, there is potential for increased productivity in the economy (Pangiuk, 2018). Adam Smith's Classical Theory states that economic growth is driven by an increase in population that expands the market and encourages work specialization. This will increase productivity and accelerate the economic growth of a country.

The Human Development Index, built on various basic components that reflect quality of life, is used to measure the level of success of human development. This index is an important benchmark that reflects the level of welfare of a region through the dimensions of health, education, and income (Latifah, 2023). According to Law No. 33 of 2004, the Human Development Index is a measure to assess the level of community welfare based on access to basic services such as health, education, and social welfare. The development of human resources both physically and mentally means intensifying the basic capabilities of the population which will then increase the opportunities for participation in the sustainable development process (Mahroji & Nurkhasanah, 2019). According to the Ministry of Education and Culture of the Republic of Indonesia, there are several theories regarding wages. First, the Natural Wage Theory according to David Ricardo, Market wages are determined by the mechanism of supply and demand, but natural wages are wages that are sufficient to meet the needs of a worker and his family. The amount tends to fluctuate around the natural wage level. In the view of modern economists, natural wages are considered the minimum limit for work wages. Minimum wages are regulations that aim to prevent worker poverty and ensure that they receive fair compensation. So that employees can meet their basic needs and improve their quality of life, this policy includes meeting the standard of living needs (Sungkar et al., 2015).

Industrial companies, according to Law No. 5 of 1984 on Industry, are economic activities that transform semi-finished goods, raw materials, raw materials, or finished goods into products with greater utility value. This includes creating and building industries. Industry not only produces goods but also services. Therefore, the Industrial Sector is very important for national economic growth because it can help overcome employment problems, especially unemployment (Veriyanto & Yasin, 2023). Even with the largest workforce, the processing industry is one of the mainstay sectors of the national economy (Rahmah & Widodo, 2019). In developing countries, the industrial sector has an important role in overcoming economic problems. This sector can be a driving force for other economic sectors in driving economic development. Thus, the industrial sector is able to lead the growth and development of other economic sectors. Uncertainty in the economy can affect an unclear future, including economic trends or movements that are difficult to predict (Kurniawan & A'yun, 2022). This makes some countries or regions have poverty problems. Poverty viewed from an economic perspective is seen as a person's inability to meet their daily needs, it can also be interpreted that a person's income is much lower than the costs needed to meet daily needs, both consumption, decent clothing and good housing (Salim & Khoirudin, 2025). Guampe et al (2022) stated that poverty is a complex and complicated development problem, making it a chain that is difficult to break and interconnected. According to Andiny & Mandasari (2017), social inequality in a country causes poverty, which occurs when a few people enjoy most of the country's income, while others only get a small share or even do not get it at all, economic inequality is increasingly apparent.

Research on the effect of economic growth on inequality has shown inconsistent findings. Some studies, such as Febriyani & Anis (2021) state that economic growth has no significant effect on

inequality, so increases in economic output are not always felt equally by all. However, other studies show a negative relationship when economic growth absorbs poor labor and expands productive employment. This inconsistency indicates that the effect of growth on inequality is highly dependent on regional economic structure, particularly the extent to which growth is accompanied by equal access to education and economic opportunities. Rachmawati et al (2025) and Anita & Udjianto (2024) found that the HDI can have a positive effect on inequality when improvements in the quality of education and health are enjoyed only by high-income groups. This condition is common in regions with unequal access to education, so that improvements in human quality actually widen the income gap. However, some other studies report that improving human resource quality can reduce inequality if access to basic services is equal. Thus, the relationship between the HDI and inequality is dual-effect, depending on the equitable distribution of human development.

Sungkar et al (2015) and Alhakim (2022) argued that minimum wage increases tend to reduce income inequality by increasing the income of low-wage workers and narrowing the welfare gap between income groups. In some industrial areas, minimum wage increases have been shown to increase purchasing power and reduce inequality among workers. However, several studies note more complex effects if wage increases lead to a reduction in employment in labor-intensive sectors. Therefore, the effect of the minimum wage on inequality tends to be negative, but can change depending on labor market conditions. Studies on industrial activity and inequality confirm that the presence of companies plays a crucial role in regional income equality. Alhakim (2022) found that an increase in the number of companies negatively impacts inequality through formal job creation, local labor absorption, and increased supporting economic activity. However, the uneven distribution of companies across regions can create spatial disparities. Therefore, the number of companies can reduce inequality in regions that are able to exploit industrial opportunities equally. Several studies have found a complex relationship between poverty and inequality. Farhan & Sugiyanto (2022) state that high poverty often coincides with high inequality because most income circulates among the upper classes. However, other studies show a negative correlation when poverty reduction is not accompanied by an increase in middle-class income, resulting in a more equal distribution of income. This relationship suggests that the effect of poverty on inequality depends on the pattern of income growth across household groups.

3. Method

This research is a quantitative research with a panel data econometric approach that combines time dimensions (time series) and regional dimensions (cross-section). The observation units in this study are eight districts/cities in Banten Province, with the research period covering 2011–2023. All data used are secondary and obtained from the Central Statistics Agency (BPS). The variables analyzed consist of income inequality (gini ratio) as the dependent variable and economic growth, the Human Development Index (HDI), district/city minimum wages, number of companies, and poverty levels as independent variables. The definition of variables shown in Table 1 as follows:

Table 1. Definition of Variables

Variable	Unit	Definition	Source
Income Inequality	Index	Income inequality is a condition in which the distribution of income in society is uneven.	BPS
Economic Growth	%	Economic growth is an increase in the production of goods and services in an economy in a region.	BPS
Human Development Index	Index	The Human Development Index (HDI) is a composite index that measures human development based on education, health, life expectancy, per capita expenditure.	BPS
Minimum Wage	Rupiah	Minimum Wage is the lowest wage standard applicable in a Regency/City area.	BPS
Number of Companies	Unit	The number of companies is the number of business units that carry out economic activities in the field of processing raw materials into finished or semi-finished goods.	BPS
Poverty	%	Poverty is the economic inability to meet basic needs, both food and non-food.	BPS

The selection of these variables is based on regional development theory which emphasizes that income inequality is influenced by a). growth capacity (growth effect), b). human quality (human capital effect), c). labor policy (wage effect), d). industrial dynamics (industrial structure effect), and e). social conditions of the community (poverty effect). Thus, the selection of variables is not only technical, but also has a clear theoretical basis. Baltagi (2005) explains that panel data provides more variation, less collinearity between variables, and more degrees of freedom than cross-section or time series data alone. The panel data approach is a combination of time series and cross-section data, where panel data will provide the advantage of more information about the time period of the relationship being studied, so that the error variance structure of the two types of data can be analyzed properly. There are 3 approaches that can be applied in the panel data-based regression estimation method (namely Common Effect, Fixed Effect and Random Effect) (Widarjono, 2013). In general, the panel data regression equation followed Purna et al (2026) as follows:

$$IE_{it} = \alpha_0 + \beta_1 EG_{it} + \beta_2 HDI_{it} + \beta_3 MW_{it} + \beta_4 NC_{it} + \beta_5 Pov_{it} + \epsilon_{it} \qquad (1)$$

Where IE is the income inequality; EG is the economic growth; HDI is the human development index; MW is the minimum wage; NC is the number of companies; Pov is the poverty; ϵ is the random error term; α_0 is the constant term; $\beta_1 - \beta_5$ is the coefficient of independent variables; i is the notation for cross-section and t is the notation for time-series data.

4. Results and Discussion

Descriptive analysis aims to provide an overview of the research data used in this study. Data were obtained from official sources such as the Central Statistics Agency (BPS). The variables analyzed include income inequality, economic growth, Human Development Index (HDI), regency/city minimum wages, number of industries, and poverty for eight regencies/cities in Banten for the period 2011-2023.

Table 2. Descriptive Statistics

Variable	Obs	Mean	Std. dev	Min	Max
Income Inequality	104	0.3362692	0.0418658	0.243	0.45
Economic Growth	104	4.993077	2.507977	-7.36	8.81
HDI	104	70.39096	6.123608	59.82	82.28
Minimum Wage	104	2835269	1073654	1007500	4657223
Number of Companies	104	308.6442	450.9233	8	2060
Poverty	104	5.808654	2.479237	1.33	10.72

Source: data processed

Table 2 shows the average income inequality value in the study area was 0.3363 with a standard deviation of 0.0419. This average value indicates that income inequality is in the moderate category, meaning that income distribution in the study area is not too unequal but still requires attention. Economic growth showed an average of 4.9931 with a standard deviation of 2.5080, indicating moderate economic growth, reflecting relatively stable economic development. However, the standard deviation of 2.5080 indicates fluctuations in economic growth between regions, which can be caused by external factors such as economic policy, investment, and labor market conditions. The average HDI in the study area was 70.3910, indicating that the overall level of human development in the study area is in the medium to high category. The standard deviation of 6.1236 indicates significant variation between regions, indicating differences in levels of well-being, access to healthcare, education, and living standards across regions.

Table 2 shows the average value reflects the minimum wage levels applicable in the various districts/cities studied. The relatively large standard deviation indicates significant differences in minimum wage levels between regions, which may be influenced by factors such as the level of industrialization, cost of living, and regional policies. The average number of industries was 308.6442 with a standard deviation of 450.9233, indicating significant variation across regions. The large standard deviation reflects the disparity in industrial distribution, with developed regions having more industries than regions still reliant on traditional economic sectors. The mean poverty score is 5.8087, with a standard deviation of 2.4792. The value means the average poverty level across the various regions studied, while the standard deviation indicates a significant difference between regions with higher and lower poverty levels.

Table 3. Result of Panel Data

Variable	Panel Data		
	CEM	FEM	REM
Economic Growth	-0.0003621	-0.0001918	-0.0005236
	(0.777)	(0.872)	(0.664)
HDI	0.0040565	-0.0054664	0.0036957
	(0.000)***	(0.350)	(0.013)**
Minimum Wage	-0.0423455	0.0086842	-0.0409924
	(0.000)***	(0.714)	(0.000)***
Number of Companies	-0.0053957	-0.0301075	-0.008245
	(0.011)**	(0.009)***	(0.046)**
Poverty	-0.0070473	-0.0009959	-0.0081113
	(0.000)***	(0.851)	(0.007)***
Diagnostic Tools			
Chow Test	0.0007		
Hausman Test		0.0583	
Langrange Multiplier Test			0.0436

Source: data processed

Table 3 shows the results of panel data testing using the Common Effect Model method, it was found that the human development index, district/city minimum wage, number of industries, and poverty variables significantly influence income inequality, with probability values of less than 5%. Meanwhile, economic growth does not significantly influence income inequality, with probability values exceeding 5%. In the Fixed Effect Model, the variables of economic growth, human development index, district/city minimum wage, and poverty do not significantly influence income inequality, as their probability values are greater than 5%. Meanwhile, the variable of number of industries significantly influences income inequality, as its probability value is less than 5%. Using the Random Effects Model, it is known that the human development index, district/city minimum wage, number of industries, and poverty variables have a significant influence on income inequality, as their probability values are less than 5%. Conversely, the economic growth variable does not have a significant influence on income inequality, as its probability value is greater than 5%. Table 3 shows the Chow test results show a probability value of 0.0007 <0.05, so the Fixed Effect Model (FEM) should be selected. However, the Hausman test produces a probability value of 0.0583 > 0.05, so the Random Effect Model (REM) is the selected model. Furthermore, the Lagrange Multiplier test results show a probability value of 0.0436 <0.05, which also leads to the selection of REM. By considering these three tests, it can be concluded that the panel data analysis carried out is more appropriate using the Random Effect Model (REM) because it produces estimates that are more appropriate and consistent with the characteristics of the data being analyzed.

Based on Table 3 shows the income inequality in Banten is influenced by a combination of factors such as the quality of human development, employment policies, industrial structure, and social conditions across regions. The choice of REM has important methodological implications: this model demonstrates that differences in characteristics between districts/cities—such as industrial structure, urbanization rate, workforce composition, and fiscal capacity—are random and uncorrelated with the independent variables. Thus, income inequality in Banten is influenced not only by the variables in the model but also by unmeasured regional factors that consistently influence inequality patterns. REM is the best model because inter-regional variation plays a significant role, but is random in nature and therefore does not need to be included as an explicit variable. In REM, constants also differ across districts/cities due to the presence of region-specific error components, which reflect internal regional factors such as industrial concentration or urbanization levels that also influence inequality.

The Economic Growth variable has no significant effect on poverty in Banten Province with a coefficient of -0.0005236. This means that if there is a one percent change in economic growth, it does not affect income inequality. This finding shows that economic growth is often considered to be able to reduce income inequality, economic growth does not directly or significantly impact the decrease or increase in income inequality in Banten society. In addition, this study found a negative relationship between economic growth and income inequality, which indicates that economic growth is not effective enough to reduce income inequality. The results of this finding are the same as the study

Febriyani & Anis (2021), that the results of the hypothesis test show that the level of income distribution inequality is not affected by economic growth. Therefore, whether economic growth increases or decreases, it does not affect the level of income distribution inequality. The results of the study indicate that economic growth has no significant effect on income inequality in Banten. This finding is consistent with Kurniawati & Samudro (2025) who stated that growth does not automatically reduce inequality if it is not accompanied by equal economic opportunities. Banten's economic structure, which relies heavily on the modern industrial and service sectors in Tangerang–Cilegon, results in the benefits of growth being concentrated in urban areas. This explains why hypothesis was not supported: enclave-based and capital-intensive growth is unable to absorb low-income labor in areas like Lebak and Pandeglang, thus having no significant impact on income distribution.

The coefficient of the Human Development Index (HDI) variable, of 0.0036957, indicates a significant positive relationship with Income Inequality. This means that every 1% increase in HDI is estimated to increase the average Income Inequality by 0.0036957%. This is in line with Rachmawati et al (2025) which means that the higher the HDI, the inequality in income distribution also increases. This result is also supported by the results of research Anggina & Artaningtyas (2017), that this condition can occur because the increase in HDI is only enjoyed by certain groups or groups, or only some areas feel the benefits. Access to higher formal education is still limited to those who have economic ability, thus widening the gap in income distribution between the rich and the poor. The HDI has a positive effect on inequality. Theoretically, an increase in the HDI can widen inequality if access to education and healthcare improves more rapidly in developed regions. This phenomenon is clearly visible in Banten, where Greater Tangerang has far better education and healthcare facilities than southern regencies such as Lebak and Pandeglang. This unequal access causes the increase in the HDI to be uneven, thus driving income inequality. This finding emphasizes the need to improve human resource quality in an inclusive manner to prevent human capital inequality.

Table 3 shows the coefficient of the minimum wage variable, of -0.0409924, shows a negative relationship with Income Inequality. This means that every 1% increase in minimum wage is estimated to reduce Income Inequality by 0.0409924%. This finding also reveals a negative relationship between minimum wage and income inequality, which means that an increase in minimum wage can contribute to reducing income inequality. In other words, the policy of increasing minimum wage can be an effective tool to reduce economic disparities among community groups, especially by increasing the ability of low-income workers to purchase goods and narrowing the gap between low- and high-income groups. This emphasizes the importance of the role of employment policies in creating a more equitable distribution of income. The minimum wage has a negative and significant effect on inequality, supporting hypothesis. This finding aligns with research by Sungkar et al (2015) and Alhakim (2022), which states that increasing the minimum wage improves the welfare of low-income workers and narrows the income gap. In Banten, the minimum wage policy has a significant impact, particularly in industrial areas such as Cilegon, Serang, and Tangerang, where the manufacturing sector absorbs a large portion of the formal workforce. The higher the minimum wage, the greater the income increase for workers previously at the bottom of the income scale. The minimum wage variable is also one of the most influential variables based on its coefficient value, thus it can be considered a key factor in reducing income inequality.

The coefficient of the number of companies variable, of -0.008245, indicates a negative relationship between the number of companies and income inequality. This means that every 1% increase in the Number of Companies will cause a decrease in income inequality of 0.008245%. This finding is in line with Alhakim (2022) that the number of companies has a negative and significant impact. The existence of industrial companies utilizes local resources, so that their contribution can be felt by all levels of society. With the increase in the number of companies, the productivity of society as a whole increases, which ultimately contributes to reducing income inequality. The number of firms negatively impacts inequality, supporting the hypothesis. Theoretically, the presence of firms increases job creation and local economic activity, resulting in more equitable distribution of income. In Banten, firms are heavily concentrated in the Tangerang-Cilegon region, resulting in significantly higher income levels in that region. However, increasing the number of firms in other regions has the potential to narrow the gap between districts/cities. Therefore, the distribution of industrial investment is a crucial issue in achieving income equality in Banten.

Table 3 shows the coefficient of the poverty variable, of -0.0081113, shows a negative relationship with income inequality. This means that every 1% increase in the poverty rate is estimated to reduce

income inequality by 0.0081113%. Income of 0.0036957%. The results of this study are supported by Farhan & Sugianto (2022), where someone becomes poor when they cannot meet their basic needs such as food, clothing, shelter, school, and health. When an area experiences rapid economic growth, not all groups in society benefit equally. Often, wealthier groups or those with easier access to economic opportunities and resources will benefit more, while poorer groups may not feel the positive contribution of that growth. This can lead to increased income inequality even though poverty rates are decreasing. The findings showing a negative effect of poverty on inequality appear contradictory to the initial hypothesis and general theory. However, this phenomenon has several scientific explanations. First, areas with high poverty rates, such as Lebak and Pandeglang, tend to have a more equal but lower income distribution, so the gini ratio can appear smaller despite poorer economic conditions. Second, the high proportion of low-income informal sector workers can reduce income distribution. Third, a homogeneous informal sector tends to produce low inequality but low productivity. These findings suggest that poverty reduction does not always directly correlate with reduced inequality if productivity increases do not occur proportionally across income groups.

5. Conclusion

Income inequality remains a persistent structural challenge in Banten despite sustained economic growth driven by industrial expansion. The coexistence of advanced industrial districts and relatively underdeveloped rural regions indicates that growth has not been spatially inclusive. This condition underscores the continued relevance of examining inequality determinants at the sub-provincial level. Using panel data from eight regencies/cities over the period 2011–2023, this study applies a Random Effects Model (REM) to capture regional heterogeneity. The findings reveal that economic growth does not significantly affect income inequality, suggesting that growth in Banten is concentrated in capital-intensive sectors with limited distributive impact. In contrast, the Human Development Index (HDI) shows a significant positive relationship with inequality, indicating that improvements in human capital may disproportionately benefit more developed districts. Meanwhile, minimum wage policy and the number of firms significantly reduce inequality, highlighting the importance of labor market regulation and industrial expansion in promoting income distribution. Poverty also exhibits a significant association with inequality, reflecting complex structural conditions in less developed districts. These findings suggest that reducing inequality requires structural and institutional interventions rather than relying solely on aggregate economic growth. Policies promoting inclusive human capital development, spatially balanced industrial investment, and effective wage regulation are crucial for achieving equitable regional development.

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