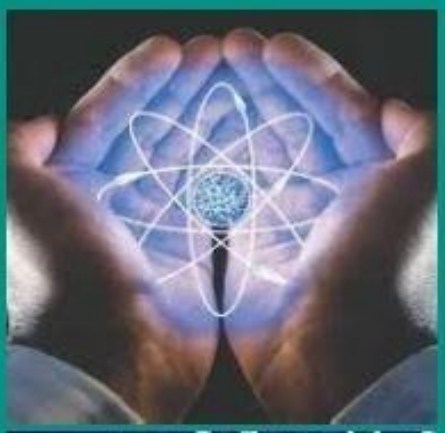
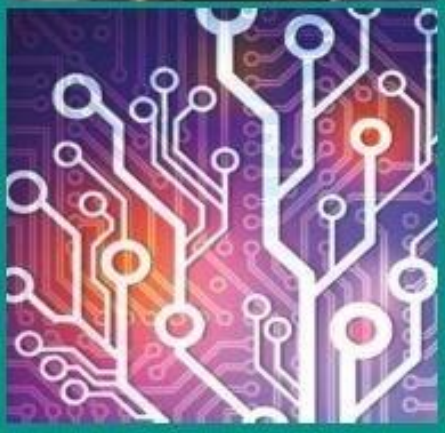
Academia Open
Vol. 11 No. 1 (2026): June
DOI: 10.21070/acopen.11.2026.13193

Academia Open



By Universitas Muhammadiyah Sidoarjo

ISSN 2714-7444 (online), https://acopen.umsida.ac.id, published by Universitas Muhammadiyah Sidoarjo

Academia Open
Vol. 11 No. 1 (2026): June
DOI: 10.21070/acopen.11.2026.13193

Table Of Contents

ISSN 2714-7444 (online), https://acopen.umsida.ac.id, published by Universitas Muhammadiyah Sidoarjo

Academia Open
Vol. 11 No. 1 (2026): June
DOI: 10.21070/acopen.11.2026.13193

Originality Statement

The author[s] declare that this article is their own work and to the best of their knowledge it contains no materials previously published or written by another person, or substantial proportions of material which have been accepted for the published of any other published materials, except where due acknowledgement is made in the article. Any contribution made to the research by others, with whom author[s] have work, is explicitly acknowledged in the article.

Conflict of Interest Statement

The author[s] declare that this article was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Copyright Statement

Academia Open
Vol. 11 No. 1 (2026): June
DOI: 10.21070/acopen.11.2026.13193

EDITORIAL TEAM

Academia Open
Vol. 11 No. 1 (2026): June
DOI: 10.21070/acopen.11.2026.13193

Article information

Check this article update (crossmark)

Check this article impact (*)

Save this article to Mendeley

(*) Time for indexing process is various, depends on indexing database platform

ISSN 2714-7444 (online), https://acopen.umsida.ac.id, published by Universitas Muhammadiyah Sidoarjo

Academia Open
Vol. 11 No. 1 (2026): June
DOI: 10.21070/acopen.11.2026.13193

Income Inequality And Economic Segregation In Indonesian Crime Patterns: Ketimpangan Pendapatan Dan Segregasi Ekonomi Terhadap Kejahatan Di Indonesia

Anna Khairunnissa, annakhairunnissa05@gmail.com, ()
Development Economics Study Program, University of Bengkulu, Indonesia

Ratu Eva Febriani, ratuevafebriani@unib.ac.id, (1)
Development Economics Study Program, University of Bengkulu, Indonesia

(1) Corresponding author

Abstract

General Background: Crime remains a persistent socio-economic challenge in Indonesia, closely associated with disparities in welfare and regional development. **Specific Background:** Previous studies emphasize income inequality, poverty, education, and unemployment as crime-related factors, yet spatial economic separation has received limited empirical attention within the Indonesian context. **Knowledge Gap:** Empirical evidence simultaneously examining income inequality and economic segregation over a long provincial panel period in Indonesia remains scarce. **Aims:** This study examines the relationships between income inequality, economic segregation, and crime rates in Indonesia, while controlling for poverty, education, and unemployment. **Results:** Using panel data from 34 provinces during 2013–2023 and a Fixed Effects Model with EGLS estimation, the findings indicate that income inequality and poverty are positively associated with crime, while education, unemployment, and economic segregation show negative associations. Economic segregation demonstrates a statistically significant negative relationship with crime, suggesting the presence of social cohesion and informal control mechanisms in economically homogeneous communities. **Novelty:** The study introduces economic segregation measured by an isolation index within a long-term cross-provincial panel framework, offering contextual evidence from Indonesia. **Implications:** These results suggest that crime mitigation strategies should not rely solely on income redistribution but also consider spatial economic structures, education development, and community-based social cohesion within inclusive regional planning.

Highlights:

- Income inequality and poverty are positively associated with crime rates across Indonesian provinces.
- Economic segregation shows a negative association with crime in economically homogeneous communities.
- Education and unemployment patterns reflect the role of informal social control mechanisms.

Keywords: Crime Rate; Income Inequality; Economic Segregation; Social Cohesion; Indonesia

Published date: 2026-01-24

Academia Open
Vol. 11 No. 1 (2026): June
DOI: 10.21070/acopen.11.2026.13193

Introduction

Indonesia has made significant economic progress in recent decades, though social issues like poverty and inequality persist [1]. Crime disrupts security and imposes high costs on society and the state, including property loss and law enforcement expenses [2].

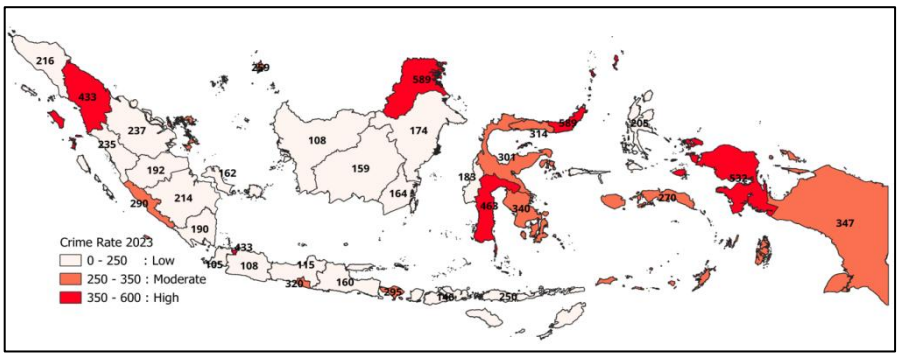


Figure 1. *Crime Rate in Indonesia, 2023*

Source: Statistics Indonesia 2023, processed by the author.

In 2023, crime rates per 100,000 population in Indonesia varied across provinces, ranging from moderate to very high. Provinces like DKI Jakarta, North Kalimantan, West Papua, South Sulawesi, Southeast Sulawesi, North Sulawesi, and North Sumatra reported the highest rates, with cases exceeding 350. Provinces with moderate crime rates include Bali, Bengkulu, Yogyakarta, Gorontalo, Riau Islands, Maluku, Papua, and Central Sulawesi. Provinces with lower rates include Aceh, Banten, Jambi, and several others. The spatial distribution of crime in Indonesia shows spillover effects, where rates in one province often influence neighboring regions [2]. Major cities like Jakarta rank among the highest in Southeast Asia for crime, with factors such as inequality, economic segregation, poverty, education, and unemployment driving these patterns [1],[3],[4],[5],[6],[7],[8],[9],[10]

Income inequality is a major driver of crime. Becker's economic crime theory says people commit crimes after weighing costs and benefits [11]. Merton's relative deprivation theory holds that large gaps frustrate the poor, leading some to commit crime [6,12]. Studies confirm this: South Africa, the U.S., Brazil, and Indonesia all link inequality to more crime [3],[4],[13],[14]. In Indonesia, income inequality remains stubborn even as the economy grows. Mostly, those with better economic access gain more while others are left behind [15].

In Indonesia, this inequality is even more apparent when comparing the western and eastern regions. The western region, particularly Java and Sumatra, is the center of industry, trade, and investment, thus having a much higher per capita income compared to eastern regions such as Nusa Tenggara, Maluku, and Papua, which still lag behind in terms of infrastructure and human resource quality [2].

This large, regional income inequality not only creates disparities but also increases crime rates. According to [2], economic disparities between provinces in Indonesia are closely associated with spatial

patterns of crime, with provinces with higher inequality tending to have higher crime rates. This phenomenon suggest that income inequality can drive criminal behavior under economic pressure. Highly urbanized areas in the western region, such as East Java and DKI Jakartam often exhibit higher crime rates due to sharp differences in income and job opputrunities between community groups.

Income inequality isn't just about the gap's size, but its spatial distribution. Economic segregation refers to the physical separation of the rich and the poor [16]. [5] found that violent crime rates depend more on neighborhood segregation than on overall inequality. The 'concentrated disadvantage' idea shows that isolation reduces access to resources and weakens social control, raising crime risk [17],[18],[19]. In Chicago, crime makes neighborhoods more isolated and worsens conditions [20]. But some research finds that segregation can reduce crime by fostering social cohesion in uniform communities [21].

Economic segregation in Indonesia is evident in cities such as Jakarta, Surabaya, and Medan. Wealthier and poorer groups live in separate areas with different access to education and public services [2]. This interregional inequality creates spatial effects: areas with high inequality are often near areas with high crime rates [22]. In Jakarta, the stark contrast between Kebayoran Baru and crowded Tambora reflects segregation, which widens social gaps and raises crime risk. Segregation weakens social interaction, increases alienation, and strengthens the effect of relative deprivation (Merton's theory). It reinforces the idea that income inequality leads to crime by creating tension and exclusion in cities [23].

Besides income inequality and economic segregation, poverty also plays a significant role. This means that poverty is used to separate the net effect of income inequality and economic segregation on crime rates. Poverty reflects a state of absolute deprivation that directly drives individuals to commit crimes due to economic limitations and low opportunity costs for deviant behavior [24]. An empirical study in Indonesia by [25] shows that increasing poverty significantly increases crime rates, while the effect of inequality weakens after controlling for poverty. These results align with those of [6] in China, who found that, after accounting for poverty levels, the relationship between inequality and crime became insignificant, confirming that absolute deprivation is more influential than relative deprivation. A cross-national study by [12] also showed that poverty indicators are much more consistent in predicting crime rates than inequality indicators. Research in the United States, Indonesia, and Nigeria also shows a strong relationship between poverty and crime [1],[7],[11]. Research in Indonesia reinforces the same pattern in [1] study, which found that poverty and unemployment have a significant positive effect on crime rates in several provinces. Research by [26] also confirmed that the increase in the number of poor people in urban areas, such as Jakarta, is directly proportional to the increase in the general crime rate. Thus, poverty ensures that the analysis of the relationship between inequality and segregation on crime is not biased by differences in basic welfare across regions.

Another important factor is education. Education is believed to reduce crime in the long term. Human capital theory holds that education increases skills and income, thereby reducing the likelihood of crime by

ISSN 2714-7444 (online), https://acopen.umsida.ac.id, published by Universitas Muhammadiyah Sidoarjo

raising opportunity costs. Social control theory emphasizes the role of schools in instilling pro-social norms [8]. Many studies support this. For example, in Turkey and Indonesia, education is negatively related to crime [2],[8]. In Nigeria, government spending on education has been shown to reduce crime rates [27]. In Italy, secondary education is also associated with neighborhood crime, but this association declines again at higher education levels [28].

Unemployment is also a powerful factor. According to economic theory, job loss lowers the costs of committing a crime [24]. Many studies have found that unemployment increases crime, especially property crime, in countries such as Pakistan, Sweden, China, the European Union, and Indonesia [1],[9].[10],[29],[30]. In Sweden, this effect is more pronounced among those aged 18–24 [10]. All of these variables are interconnected. Segregation concentrates poverty and unemployment in certain areas [5]. This reduces school quality, increases dropout rates, and limits access to employment [2],[10]. As a result, the cycle of poverty and crime repeats itself. In Nigeria, poverty in single-parent families increases the risk of children becoming involved in crime [7]. Thus, crime is not the result of a single factor, but rather a complex interaction between economic, social, and environmental factors.

However, research examining the relationship among inequality, segregation, and crime remains limited in Indonesia. Most studies focus on a single factor, such as poverty or unemployment, and use short-term data. However, according to Kang, inequality and segregation have different policy implications [5]. If segregation is proven to have a greater influence on crime, then income redistribution policies alone are inadequate without addressing spatial segregation between economic groups. In this context, segregation is a novel element because it reflects not only economic disparities but also the dimension of social space, namely, the extent to which the poor and rich are geographically separated. This separation can create unequal access to respurces, employment opportunities, and social control, potentially triggering social tensions and crime. Therefore, this study attempts to make a new contribution with three objectives: (1) examining the effect of income inequality on crime; (2) examining the effect of economic segregation; and (3) examining the role of poverty, education, and unemployment as control variabels. This study uses panel data from 2013-2023 to observe the dynamics of the relatioshiop over time.

Academically, this research enriches the literature on the economics of crime in developing countries, particularly Indonesia. Practically, the results can help design more targeted policies. If segregation proves to be a dominant factor, strategies to reduce crime cannot rely solely on income redistribution. Inclusive urban policies, affordable housing, and spatial planning that reduce the exclusion of the poor from economic opportunities are also needed.

Method

This study uses a quantitative approach with a panel data regression design, as it can numerically measure and analyze the influence of variables across time and regions [31]. The research focuses on the

ISSN 2714-7444 (online), https://acopen.umsida.ac.id, published by Universitas Muhammadiyah Sidoarjo

influence of income inequality and economic segregation on crime rates in Indonesia, covering 34 provinces from 2013 to 2023. The selection of 34 provinces was based on considerations of administrative consistency and the availability of time-consistent statistical data throughout the observation period. Although Indonesia currently has 38 provinces, four new provinces in Papua (South Papua, Central Papua, Highland Papua, and Southwest Papua) were only formed in 2022 and do not yet have complete socio-economic and crime data. Including them would have led to an unbalanced panel and estimation bias [31]. Therefore, 34 provinces were selected to ensure more reliable and statistically representative analysis results. The data used is entirely secondary and obtained from official publications of Statistics Indonesia.

The economic segregation variable is measured using the Isolation Index, which reflects the degree of spatial separation between economic groups within a region. The concentration of poor groups in one area can increase the risk of social disorganization and crime [5],[19],[20]. This index is calculated annually for each province. The formula for calculating the Isolation Index is:

$$I = \sum_{g=1}^{G} \left(\frac{P_g}{P} \cdot \frac{P_g}{n_g} \right)$$

Where P g is the population of poor people in geographical unit g, P is the total population of poor people in the entire study area (province), n g is the total population in geographical unit g, and G is the total number of geographical units that make up the study area (districts/cities in a province). All variables used in this study are further explained in the operational definitions in Table 1.

Table 1. *Operational Definition of Variables*

Variables	Definition	Unit	Data source
Crime Rate (CRIME)	The number of crime cases per 100,000 population. The results were transformed into natural logarithms (Ln) for data normalization.	Numeric	Statistics Indonesia.
Income Inequality (INEQUALITY)	Using an index that measures the distribution of expenditure per capita of the population (Gini Ratio).	Index (0-1)	Statistics Indonesia.
Economic Segregation (SEG)	Measured using the Isolation Index from population data at the	Index (0-1)	Author Calculation, Processed from Statistics Indonesia:

	district/city level within a province.		Population and Poor Population Data per Regency/City
Poverty Rate (POV)	Percentage of poor population by province.	Percentage (%)	Statistics Indonesia.
Education (EDUC)	Average Years of Schooling (RLS). The results are transformed into natural logarithm (Ln) form.	Year	Statistics Indonesia.
Unemployment Rate (UNEMPLOYED)	Open Unemployment Rate (TPT), namely the percentage of the number of unemployed to the number of the workforce.	Percentage (%)	Statistics Indonesia.

Source: Statistics Indonesia.

The panel regression model used in this study is formulated as:

$$LNCRIME_{it} = \beta_0 + \beta_{1INEQUALITY\ it} + \beta_{2\ SEG_{it}} + \beta_{3\ POV_{it}} + \beta_{4\ LNEDUC_{it}} + \beta_{5\ UNEMPLOY_{it}} + \varepsilon_{it}$$

Where: I refers to the province, and t refers to the year. It is a constant and an idiosyncratic error. To select the best model, a classical assumption test was conducted to assess model validity, including tests for multicollinearity and heteroscedasticity. Multicollinrarity is assessed by examining correlations among independent variabels and VIF values; correlations exceeding 0.8 indicate multicollinearity. Furthermore, heteroskedasticity is tested using the significance level, where $p > 0.05$ indicates the absence of heteroskedasticity [32]. If violations of the assumptions are detected, either multicollinearity or heteroskedasticity, the model is corrected using a robust approach through the Generalized Least Squares (GLS) or Weighted Least Squares (WLS) methods to ensure that the estimations remain efficient and unbiased [33].

After the basic assumptions are satisfied, panel model selection is conducted through the Chow test, the Hausman test, and the Lagrange Multiplier test at a 5% significance level ($p < 0.05$). The Chow test determines whether Pooled OLS or the Fixed Effect Model (FEM) is more appropriate, while the Hausman test is used to choose between FEM and the Random Effect Model (REM). If the Hausman test yields a p-value < 0.05, FEM is considered more consistent and therefore selected, while REM is automatically rejected. Conversely, if the p-value ≥ 0.05, REM is deemed more efficient and is selected, resulting in FEM being rejected. Thus, the Husman test serves as the primary determinant: FEM and REM cannot be selected simultaneously, and once one model is chosen, the other must be set aside [32].

ISSN 2714-7444 (online), https://acopen.umsida.ac.id, published by Universitas Muhammadiyah Sidoarjo

Hypothesis testingwas then conducted using a partial t-test to assess the influence of each independent variable on crime, and a simultaneous F-test to examine the collective influence of all variabels in the model. The coefficient of determination (R^2) was also calculated to assess how much variation in crime rates the model explains; a high (R^2) indicates the model's strength in explaining the phenomenon [31]. With this design, the study is expected to provide systematic and valid empirical findings regarding the relationship between socio-economic inequality and crime in Indonesia.

Result and Discussion

Using a panel regression model, this study analyzes crime rates in Indonesia based on five factors: income inequality, economic segregation, poverty level, education level, and unemployment rate. These variables are selected because they have strong theoretical relevance in explaining regional variations in crime. The use of panel data allows the model to capture both cross-regional differences and changes over time, resulting in a more comprehensive estimation. Table 2 presents a descriptive analysis of all research variables, providing an initial overview of the data before further econometric testing.

Table 2. *Descriptive Statistics*

Variables	Obs	Mean	Min	Max	Std. Dev
Crime Rate	374	185.23	15	778	109.59
Income Inequality	374	0.356	0.245	0.459	0.041
Economic Segregation	374	0.105	0.012	0.234	0.050
Poverty Rate	374	11.511	3.420	31.530	5.741
Education	374	8.772	6.030	11.420	0.927
Unemployment Rate	374	5.222	1.400	10.950	1.925

Source: Processed Results.

Based on descriptive statistics for 374 observations, the average crime rate was 185.23 cases per 100,000 population, ranging from 15 to 778. A fairly large standard deviation (109.59) indicates a significant difference in crime rates across regions. Income inequality averaged 0.356, indicating a moderate, relatively uniform level across regions. Meanwhile, economic segregation averaged 0.105, indicating that socio economic segregation still exists in some regions. Furhermorem the poverty rate is 11.51 percent, with significant variation, indicating a disparity in welfare between regions. The average education level is 8.77 years, equivalent to junior high school, with a relatively even distribution. The average unemployment rate is 5.22 percent, indicating moderate labor market conditions. Overall, these results illustrate significant

socioeconomic inequality, with differences in education, poverty, and unemployment contributing to variations in crime rates across regions.

Table 3. *Multicollinearity Test Results*

Variables	Coefficient Variance	Uncentered VIF	Centered VIF	Conclusion
Income Inequality	0.062	58.271	1.094	There is not Multicollinearity
Economic Segregation	0.077	7.315	1.322	There is not Multicollinearity
Poverty Rate	5.940	6.575	1.417	There is not Multicollinearity
Education	0.010	369.971	1.317	There is not Multicollinearity
Unemployment Rate	4.780	10.654	1.215	There is not Multicollinearity

Source: Processed Results.

The results of the multicollinearity test using Variance Inflation Factors (VIFs) indicate that this model is free of serious multicollinearity. The main metric used is the Centered VIF, which measures the correlation between independent variables after adjusting for the model intercept. It can be seen that the Centered VIF values for all independent variables of income inequality (1.09), economic segregation (1.32), poverty level (1.41), education (1.31), and unemployment level (1.21) are all far below the general tolerance limit of 0.8 [32]. This low value indicates that there is no high linear correlation between the independent variables in the model. Thus, it can be concluded that the regression coefficient estimator is not distorted by multicollinearity, and this model is suitable for further analysis.

Table 4. *Heteroscedasticity Test Results*

Test	P-Value	Conclusion
Heteroskedasticity (Cross-section test)	0.000	There is heteroscedasticity
Heteroskedasticity (Period test)	1.000	There is not heteroscedasticity

Source: Processed Results.

Heteroscedasticity testing was conducted to validate the standard error model [32]. The test results show specific findings: cross-section heteroscedasticity was detected (P-Value = 0.000 < 0.05), whereas period heteroscedasticity was not detected (P-Value = 1.000 > 0.05). This specific problem was addressed by re-estimating the model using the Panel EGLS (Cross-section weights) method. This GLS/WLS method assigns weights to each cross-section to produce an efficient and valid estimator, in accordance with panel data econometric recommendations [33]. Thus, all analysis results of this study are robust and statistically valid.

Table 5. *Chow Test Results*

Effects Test	Statistics	Df	Prob.
Cross-section F	14.239	(30.335)	0.000
Cross-section Chi-square	327.845	33	0.000

Source: Processed Results.

From Table 5, the Chow test results show that the cross-section F value of 14.239 with degrees of freedom (30.335) has a probability of 0.000, while the cross-section chi-square value of 327.845 with degrees of freedom 33 also has a probability of 0.000. Both results consistently show that the probability is below the 0.05 significance level, so the common effect model test rejects H0 (p-value < 0.05). Thus, it can be concluded that there are significant differences between cross-sectional units in panel data. This means that each region or observation unit has distinct characteristics that influence the dependent variable, so the most appropriate model is the Fixed Effects Model (FEM). The selection of FEM is important for capturing heterogeneity between units more accurately than the Common Effect Model.

Table 6. *Hausman Test Results*

Test Summary	Chi-Sq. Statistic	Chi-Sq. Df	Prob.
Random cross-section	25.294	5	0.000

Source: Processed Results.

The Hausman test results show a chi-square statistic value of 25.294 with 5 degrees of freedom and a probability of 0.000. Since the probability value is less than 0.05. Because the probability value is less than 0.05, the null hypothesis stating that the Random Effect Model(REM) is more appropriate must be rejected. Thus, the most appropriate model is the Fixed-Effects Model (FEM). This finding confirms that differences in characteristics across cross-sectional units in panel data are related to the independent variables, so the use of the Random Effect Model (REM) may lead to estimation bias. Furthermore, these results also indicate that variations between regions are not random factors, but are systematically related to the socio-economic

structure measured in the model. This condition strengthens the argument that the FEM is better able to capture the inherent heterogeneity in each region. Therefore, this study continued with estimation using the Fixed-Effects Model to obtain analytical results that are more valid and representative of the empirical conditions across regions. Thus, all estimation results presented below have undergone robust FEM EGLS testing and meet the criteria for statistical validity.

Table 7. *FEM EGLS Test Results*

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Crime Rate	2.455	0.256	9.582	0.000
Income Inequality	0.575	0.217	2.646	0.008
Economic Segregation	-0.923	0.424	-2.174	0.030**
Poverty Rate	0.018	0.007	2.399	0.017*
Education	-0.184	0.087	-2.101	0.036**
Unemployment Rate	-0.033	0.007	-4.738	0.000
R-squared	0.729		Mean dependent variable	2.193
Adjusted R-squared	0.698		SD dependent var	1.211
SE of regression	0.153		Sum squared residual	7.901
F-statistic	2.372		Durbin-Watson stat	1.150
Prob(F-statistic)	0.000			

Source: Processed Results.

Description: significant p < 5%**, p < 1%*

Academia Open
Vol. 11 No. 1 (2026): June
DOI: 10.21070/acopen.11.2026.13193

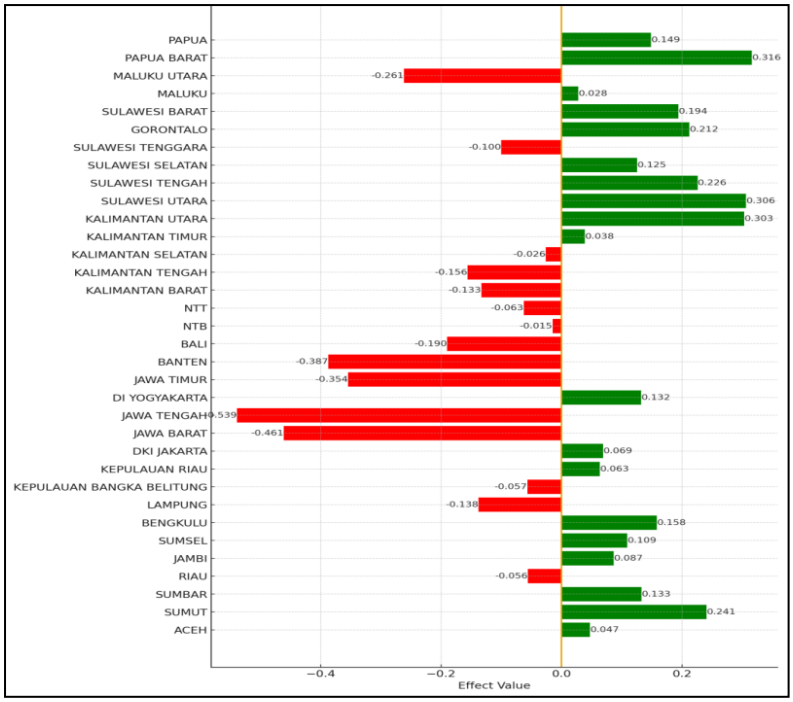


Figure 2. *Results of Cross-sectional Effect of Economic Segregation in the Province*

Source: Processed Results.

Based on the panel regression results using the EGLS (Cross-section weights) method in Table 7, this study found that several socio-economic variables significantly influence crime rates in Indonesia, namely income inequality, economic segregation, poverty rate, education, and unemployment rate. These findings provide a deeper empirical understanding of socio-economic dynamics and crime in the Indonesian regional context and confirm the relevance of classical and contemporary economic theories of crime.

First, the income inequality variable, measured using the Gini index, shows a positive coefficient of 0.575 with a probability value (p-value) of 0.008. This finding indicates that every one-unit increase in income inequality is correlated with a 0.57% increase in the crime rate, ceteris paribus. This finding aligns with Becker's economic theory of crime, which states that criminals are rational agents who consider the benefits and costs of their actions. [24] In conditions of high economic inequality, poor communities face low opportunity costs in committing criminal acts, because the legal income they can earn is relatively small and economic opportunities are limited. As a result, the potential profits from crime become more attractive compared to the potential risk of punishment. This phenomenon is clearly visible in large cities in Indonesia, such as Jakarta, Surabaya, Medan, and Makassar, where socio economic disparities are increasingly stark. In these urban areas, there is a sharp contrats between elite areas and desenly populated low income settlements. For example, in Jakarta, the disparity between central business districts and desenly populated areas often creates socialand economic pressures that tringger deviant behavior. Surabaya and Medan face similar dynamics, where rapid urbanization and limited formal employment opportunities increase the number of informal workers and increase the risk of crime. These findings are also supported by [34] and

[13], who also confirmed a positive relationship between inequality and crime. In the context of Indonesia, these results align with those of [4] and [2], who assert that increasing income inequality often gives rise to "social jealousy", thereby increasing the potential for intergroup crime.

Second, the regression results show that the economic segregation variable, measured using the isolation index, has a negative coefficient of –0.995 and a p-value of 0.019. This value indicates that economic segregation has a negative and significant effect on the crime rate. This means that every one-unit increase in economic segregation correlates with a decrease in the average crime rate of approximately 0.99%, ceteris paribus. This findings aligns with Kang's research, which shows that in areas with strong social cohesion and solid community networks, increased economic segregation can reduce crime by creating a more homogeneous and economically stable social environment [5]. This condition strengthens informal social control and reduces the potential for friction between economic groups, thereby effectively suppressing criminal activity. Thus, the influence of economic segregation on the crimw rate is contextual. When viewed spatially, the cross sectional effects is evident in Figure 2, which shows variations between provinces with positive effect values, such as west papua (0.316), Central Sulawesi (0.306), North Sulawesi (0.306), and North Kalimantan (0.303), indicating that economic segregation is correlated with higher crime rates. This means that in these regions, socio economic separation between rich and poor groups creates social distance, weakening social coheseion and informal social control. Inequality in access to resources and economic opportunities increases the potential for conflict, social jealousy, and criminal behavior, especially in areas with uneven economic growth and weak social infrastructure. Conversely, provinces with negative effect values, such as Central Java (–0.539), West Java (–0.461), Banten (–0.387), and East Java (–0.354), show that economic segregation is actually correlated with decreased crime rates. This phenomenon confirms that in regions with a more homogeneous social structure and high levels of community cohesion, segregation can function as a social stabilization mechanism.

In this context, relatively economically isolated communities exhibit strong internal solidarity and social control systems that are more effective at preventing crime. This phenomenon can be further explained through the socio cultural context of Indonesia society. In areas that still maintain a homogeneous social structure, such as the Baduy indigenous community, high levels of economic and social segregation actually create strong social stability. This community has a system of collective values and norms that are maintained from generation to generation, as well as effective customary-based social control mechanisms [35]. Consistent with [36]findings, homogeneous communities tend to have high collective efficacy, where solidarity and trust among members act as a bulwark against deviant behavior. Furthermore, [37] emphasized that segregation, as measured by the isolation index, can also reduce intergroup social friction and perceived threat, thereby suppressing the potential for conflict and crime based on social tension. Thus, these negative results indicate that economic segregation is not always dysfunctional. In Indonesia's socio-cultural context, which still has homogeneous and isolated communities, segregation can serve as a social

ISSN 2714-7444 (online), https://acopen.umsida.ac.id, published by Universitas Muhammadiyah Sidoarjo

control mechanism that strengthens internal harmony and reduces crime rates by stabilizing collective values and norms.

Furthermore, the poverty level variable has a positive coefficient of 0.018 and a p-value 0.017, indicating that poverty has a positive and significant effect on crime. This means that every 1 percentage point increase in the poverty level is correlated with an increase in the crime rate of approximately 0.018%. This results aligns with Merton's strain theory, which holds that the inability of poor people to achieve idealized economic goals through legitimate means creates pressure (strain) that encourages criminal behavior [38]. Furthermore, within the framework of rational choice theory [6], [24], poor individuals tend to believe that the economic benefits of criminal acts outweigh the risks they entail. This phenomenon is evident in indonesiam especially in areas of eastern Indonesia with high poverty rates, such as Papua, East Nusa Tenggara (NTT), and parts of Sulawesi, where limited access to education, employment, and public facilities creates high social vulnerability. However, poverty related crime is also increasing in large cities like Jakarta, Surabaya, and Medan, particularly in densely populated residential areas and urban slums. In these areas, the pressure of high living costs and stark social disparities often tringgers economic crimes, such as theft, mugging, robbery, or online faud, which are committed as a means of adapting to economic contraints. This view is supported by research findings [1] in Indonesia and [7] in Nigeria consistently show that poverty is a major determinant od increased crime. This is in line with studies by [6] in China and [12] in Poland, which found that absolute poverty is a stronger predictor of crime than relative inequality.

Meanwhile, the education variable shows a negative coefficient of -0.184 with a probability value of 0.036, indicating that education has a negative and significant effect on the crime rate. This means that every one-year increase in the average years of schooling (RLS) is associated with a 0.184% decrease in the crime rate per 100,000 population, indicating that increased educational attainment has a preventive effect on criminal behavior at the population level. This can be explained through Becker's [24] human capital theory, which explains that education improves an individual's skills, earning potential, and rationality in considering legal consequences. Highly educated individuals face greater opportunity costs if they commit crimes, such as reputational or career losses, Indonesia data show that crime rates are generally higher in areas with lower average years of schooling in Indonesia is still around 8.84 years, indicating that many residents have not completed high school. Regions such as Papua, East Nusa Tenggara, and parts of Kalimantan show relatively low levels of education accompanied by higher rates of social and economic crimes, such as theft and domestic violence. The reflects limited access to education, which reduces opportunities for social mobility and inreases vulnerability to criminal behavior. These findings are consistent with research by [39] in Turkey and [2] in Indonesia, which confirmed that higher education suppresses criminal tendencies.

Finally, the unemployment rate variable shows a negative coefficient of -0.033 with a probability value of 0.000. This means that unemployment has a negative and significant effect on crime; a 1 percentage point

increase in the unemployment rate is associated with a 0.033% decrease in crime, ceteris paribus. This result is quite interesting because it contradicts the classic view of the economic theory of crime [24], which posits a positive relationship between unemployment and crime. However, this negative result is consistent with [40] findings in the UK, who explained this phenomenon through the opportunity effect or guardianship effect. According to this theory, when the unemployment rate increases, more individuals spend more time at home, thereby reducing the opportunity for property crime through increased informal social supervision of the surrounding environment [9]. In Indonesia, this phenomenon can be explained by the communal, mutually cooperative social characteristics, in which interaction among residents tends to be high even in difficult economic conditions. In many areas, especially rural and semi-urban areas, communities still maintain community-based social control systems, such as night patrols, neighborhood association (RT/RW) activities, and religious or customary social control. When unemployment rates rise, citizen participation in social activities can increase due to greater flexibility in time availability, thereby strengthening a sense of togetherness and collective social control against deviant behavior [41].

Furthermore, Indonesia's informal economy also plays a significants role according to a study by [42], the informal sector in Indonesia encompasses nearly 75% of the total workforce. This indicates that many individuals are statistically categorized as "unemployed" under Indonesian statistical regulations, where the majority of the working population is classified as full time workers with at least 35 hours per week, while yhose working fewer than 35 hours per week are categorized as underemployed or unemployed. However, in reality, some individulas in this category still engage in subsistence economic activitied, such as microenterprises, family farming, or seasonal work, which are often not formally recorded in national employment surveys. These activities keep them connected to local social and economic networks, preventing them from becoming completely socially isolated, as Western models of the criminal economic assume. In addition to these dimensions, unemployment patterns in Indonesia are also increasingly complex due to the rise in educated unemployment, particularly among collage graduates. This group generally comes from families with relatively stable economic conditions, so even if they are not absorbed into the formal labor market, they still have adequate family economic supports. This situation reduces the financial pressures that typically drive individuals to commit a crime. College graduates also possess higher levels of social capital and education, allowing them to pursue alternative productive acitivities, such as digital entrepreneurship, freelance work, or social engagement. Therefore, the increase in unemployment is this category does not necessarily correlate with a increase in crime but may instead reflect a structural transition in the labor market toward new, more flexible economic ectors. These results highlight the importance of considering social dynamics and societal norms when interpreting the relationship between unemployment and crime, particularly in developing countries with collectivist social structures such as Indonesia.

Overall, the results of this study indicate that crime dynamics in Indonesia cannot be explained by a single factor but rather result from a complex interaction among economic inequality, economic segregation, poverty, education, and unemployment. Inequality and poverty increase incentives to commit crime, while

ISSN 2714-7444 (online), https://acopen.umsida.ac.id, published by Universitas Muhammadiyah Sidoarjo

education and certain economic segregation actually strengthen social control mechanisms that reduce crime. Furthermore, indirect interactions between variables such as poverty and education or economic segregation and unemployment can strengthen or weaken the effect of a single variable on crime, suggesting that crime dynamics are multicausal and contextual.

For example, areas with high poverty but relatively high education may experience suppressed crime due to stronger human capital, while areas with high economic segregation and low unemployment may have effective informal social control. This demonstrates the need for policy analysis that considers the local socio cultural context and the interaction between variables, not just a single factors. Thus, analyzing these interaction provides a deeper understanding of the socioeconomic complecities that shape criminal behavior.

These results provide a important empirical contribution to the literature om the economics of crime and provide a basis for formulating public policies that emphasize economic equality, improving the quality of education, and strengthening social cohesion to reduce crime rates in Indonesia. The discussion of poverty and education variables is quite robust, but the integrations between these factors could be further deepened. The author could emphasize indirect interactions between variabels to demonstrate the complexity of crime dynamics.

While the policy implications are relevant, they would be stronger if they were formulated more focused and derived directly from the main empirical findings, such as recommendations for improving education in poor areas, strengthening social cohesion in highly segregated areas, and developing equitable, region-based economic development. This would make the relationship between research findings and policy more clear and focused.

Conclusion

The research findings indicate that crime rates in Indonesia are strongly influenced by social and economic factors, namely income inequality, economic segregation, poverty, education, and unemployment. Income inequality and poverty increase crime by increasing social pressure and widening the welfare gap between social groups, while education and economic segregation, within Indonesia's socio-cultural context, reduce crime rates by strengthening social cohesion and community control. Unemployment negatively impacts crime, indicating the important role of the mutual assistance system and the dominance of the informal sector in maintaining social stability. Based on these findings, key policy recommencations that are more concise and directly address the research objectives include: developing a region based economy for equitable distribution of growth centers, increasing financial literacy and entrepreneurship to reduce dependence on formal employment, providing incentives for labor intensive investment, and strengthening vocational education and adaptive social protection programs for high risk communities. This approach positions social and economic policies as the primary instruments in maintaining social stability, rather than relying solely on repressive law enforcement. Based on the research limitations, future studies are recommended to break down the dependent variable into more specific crime categories such as violent,

ISSN 2714-7444 (online), https://acopen.umsida.ac.id, published by Universitas Muhammadiyah Sidoarjo

property, drug, and cyber crimes to identify the dominant socioeconomic factors in each type of crime. Thus, the research results are expected to supports the formulations of more targeted, adaptive, and evidence based crime prevention policies.

Acknowledgements

The author's would like to express sincere gratitude to all individuals and institutions who provided support, input, and contributions during the data collection, analysis, and writing of this article. Special appreciation is extended to the supervisor for invaluable guidance, constructive suggestions, and continuous support throughout the research process. It is hoped that the results of this research will contribute to the development of regional economic studies and support the formulation of crime prevention policies in Indonesia.

Referensi

[1] S. Septriani, "The Impact of Economic Conditions on Criminality in Indonesia," Eur. J. Dev. Stud., vol. 4, no. 3, pp. 68–74, 2024, doi: 10.24018/ejdevelop.2024.4.3.345.

[2] D. Trisnawati, Khoirunurrofik, and D. S. Ismail, "Inter-provincial spatial linkages of crime pattern in Indonesia: Looking at education and economic inequality effects on crime," Indones. J. Geogr., vol. 51, no. 2, pp. 106–113, 2019, doi: 10.22146/ijg.34026.

[3] N. Büttner, Local inequality and crime: New evidence from South Africa, no. 0123456789. Springer US, 2025. doi: 10.1007/s10888-024-09662-5.

[4] L. Sugiharti, M. A. Esquivias, M. S. Shaari, L. Agustin, and H. Rohmawati, "Criminality and Income Inequality in Indonesia," Soc. Sci., vol. 11, no. 3, 2022, doi: 10.3390/socsci11030142.

[5] S. Kang, "Inequality and crime revisited: effects of local inequality and economic segregation on crime," J. Popul. Econ., vol. 29, no. 2, pp. 593–626, 2016, doi: 10.1007/s00148-015-0579-3.

[6] B. Dong, P. H. Egger, and Y. Guo, "Is poverty the mother of crime? Evidence from homicide rates in China," PLoS One, vol. 15, no. 5, pp. 1–22, 2020, doi: 10.1371/journal.pone.0233034.

[7] Y. Jafaru, S. Magaji, and A. Idris Ahmad, "Poverty, Family Status, and Crime: Insights from Gwagwalada, Abuja, Nigeria," Int. J. Res. Publ. Rev., vol. 5, no. 5, pp. 6745–6755, 2024, doi: https://doi.org/10.55248/gengpi.5.0524.1292.

[8] S. Sezer, O. Kahya, and K. Yıldırım, "Eğitim ve Suç Arasındaki İlişkinin Sosyolojik Analizi," Muğla Sıtkı Koçman Üniversitesi Eğitim Fakültesi Derg., vol. 9, no. 2, pp. 441–452, 2022, doi: 10.21666/muefd.989472.

[9] F. Ayhan and N. Bursa, "Unemployment and Crime Nexus in European Union Countries: A Panel Data Analysis," Yönetim Bilim. Derg., vol. 17, no. 34, pp. 465–484, 2019, doi: 10.35408/comuybd.574808.

[10] G. Järvenson, "Unemployment and crime in Sweden, 2000 to 2014: A study with a focus on younger individuals," 2022. [Online]. Available: https://www.diva-portal.org/smash/get/diva2:1678830/FULLTEXT01.pdf

[11] J. Quednau, "How are violent crime rates in U.S. cities affected by poverty?," Park Place Econ., vol. 28, no. 1, 2021, [Online]. Available: https://digitalcommons.iwu.edu/parkplace/vol28/iss1/8

[12] N. Sypion, P. Terefenko, M. Leitner, M. Dutkowski, A. Lysko, and Tomasz, "What Determines Crime: Prosperity or Poverty?," Eur. Res. Stud. J., vol. XXVII, no. Issue 2, pp. 394–424, 2024, doi: 10.35808/ersj/3409.

[13] B. Atems, "Identifying the Dynamic Effects of Income Inequality on Crime," Oxf. Bull. Econ. Stat., vol. 82, no. 4, pp. 751–782, 2020, doi: 10.1111/obes.12359.

[14] C. Silva et al., "Spatial modeling for homicide rates estimation in pernambuco state-brazil," ISPRS Int. J. Geo-Information, vol. 9, no. 12, 2020, doi: 10.3390/ijgi9120740.

[15] S. Suparman and M. Muzakir, "Regional inequality, human capital, unemployment, and economic growth in Indonesia: Panel regression approach," Cogent Econ. Financ., vol. 11, no. 2, 2023, doi: 10.1080/23322039.2023.2251803.

[16] S. F. Reardon and K. Bischoff, "Residential Segregation by Income, 1970-2009," 2013.

[17] J. R. Hipp and C. E. Kubrin, "From bad to worse: How changing inequality in nearby areas impacts local crime," Rsf, vol. 3, no. 2, pp. 129–151, 2017, doi: 10.7758/rsf.2017.3.2.06.

[18] L. J. Krivo et al., "Patterns of local segregation: Do they matter for neighborhood crime?," Soc. Sci. Res., vol. 54, pp. 303–318, 2015, doi: 10.1016/j.ssresearch.2015.08.005.

[19] E. S. Shihadeh and N. Flynn, "Erratum: Segregation and Crime: The Effect of Black Social Isolation on the Rates of Black Urban Violence (Social Forces (1996) 74:4 DOI: 10.2307/2580353)," Soc. Forces, vol. 75, no. 1, pp. 398–399, 1996, doi: 10.1093/sf/75.1.398.

[20] C. Graif, A. Lungeanu, and A. M. Yetter, "Neighborhood isolation in Chicago: Violent crime effects on structural isolation and homophily in inter-neighborhood commuting networks," Soc. Networks, vol. 51, pp. 40–59, 2017, doi: 10.1016/j.socnet.2017.01.007.

[21] S. Michalak, "Neighborhood Income Dispersion and Criminal Activity," Univ. North Carolina Chapel Hill, no. May, 2020.

[22] P. A. Widyastaman and D. Hartono, "Economic Inequality Decomposition and Spatial Pattern of Crime in Indonesia," Pap. Appl. Geogr., vol. 8, no. 3, pp. 268–281, 2022, doi: 10.1080/23754931.2021.1991842.

[23] D. T. Anozi and B. Novianda, "Economics Development Analysis Journal Socio-Economic and Property Crime Rate in Indonesia," Econ. Dev. Anal. J. Vol, vol. 12, no. 3, pp. 305–318, 2023. doi: 10.15294/edaj.v12i3.68829.

[24] G. S. Becker, Crime and Punishment: An Economic Approach, vol. 76, no. 2. 1968. doi: 10.1016/S0002-9610(56)80126-8.

[25] L. Sugiharti, R. Purwono, M. A. Esquivias, and H. Rohmawati, "The Nexus between Crime Rates, Poverty, and Income Inequality: A Case Study of Indonesia," Economies, vol. 11, no. 2, 2023, doi: 10.3390/economies11020062.

[26] M. P. M. B. Sitanggang and H. Hutapia, "The Effect of HDI, Population Density, Poverty, and Income Inequality on Criminality in DKI Jakarta Province," Equity J. Ekon., vol. 12, no. 2, pp. 94–101, 2024, doi: 10.33019/equity.v12i2.390.

[27] A. G. Wilfred, "Inflation , unemployment and crime rate in Nigeria Keyword s," J. Soc. Econ., vol. 12, no. 2, pp. 125–143, 2025, doi: 10.18488/35.v12i2.4290.

[28] A. Castaldo, A. R. Germani, and A. Pergolizzi, "Does Education Affect Environmental Crime? A Dynamic Panel Data Approach at Provincial Level in Italy," Int. Crim. Justice Rev., vol. 33, no. 2, pp. 129–146, 2023, doi: 10.1177/10575677211020812.

[29] M. Kassem, A. Ali, and M. Audi, "Unemployment Rate, Population Density and Crime Rate in Punjab (Pakistan): An Empirical Analysis," Bull. Bus. Econ., vol. 8, no. 2, pp. 92–104, 2019. [Online]. Available: https://mpra.ub.uni-muenchen.de/95964/

[30] X. Wang and S. Hu, "Analysis of the Relationship Between Unemployment and Crime Rate in China," Proc. 2021 Int. Conf. Soc. Dev. Media Commun. (SDMC 2021), vol. 631, no. Sdmc 2021, pp. 665–670, 2022, doi: 10.2991/assehr.k.220105.122.

[31] B. H. Baltagi, Econometric Analysis of Panel Data (Springer Texts in Business and Economics) - Sixth Edition. 2021.

[32] D. N. Gujarati and D. C. Porter, Basic Econometrics, 5th ed. 2009.

[33] W. H. Greene, "Econometric analysis/Limdep users manual," Retrieved July, vol. 15, p. 2022, 2018.

[34] E. Schargrodsky and L. Freira, "Inequality and Crime in Latin America and the Caribbean: New Data for an Old Question," Economia, vol. 22, no. 1, pp. 175–202, 2023, doi: 10.31389/eco.413.

[35] Koentjaraningrat, Pengantar Ilmu Antropologi, Edisi Revi. Jakarta: Rineka Cipta, 2009.

[36] R. A. Bucci, "The Impact Of Spatial Segregation And Isolation On Violent," Fulfillment Requir. Degree Master Arts, no. December, 2017.

[37] J. P. Schleimer et al., "Neighborhood Racial and Economic Segregation and Disparities in Violence During the COVID-19 Pandemic," Am. J. Public Health, vol. 112, no. 1, pp. 144–153, 2022, doi: 10.2105/AJPH.2021.306540.

[38] R. K. Merton, Social theory and social structure. Simon and Schuster, 1968.

[39] S. SEZER, O. KAHYA, and K. YILDIRIM, "Eğitim ve Suç Arasındaki İlişkinin Sosyolojik Analizi," Muğla Sıtkı Koçman Üniversitesi Eğitim Fakültesi Derg., vol. 9, no. 2, pp. 441–452, 2022, doi: 10.21666/muefd.989472.

[40] K. Ha, "Testing the Relationship between Unemployment and Crime," JResCrim, vol. 28, no. April, pp. 400–417 u. 426–429, 2019. [Online]. Available: https://kar.kent.ac.uk/id/eprint/22965/

[41] P. H. Prayitno, S. Sahid, and M. Hussin, “Social Capital and Household Economic Welfare: Do Entrepreneurship, Financial and Digital Literacy Matter?,” Sustain., vol. 14, no. 24, 2022, doi: 10.3390/su142416970.

[42] C. Ablaza, V. Alladi, and U. Pape, “Indonesia’s Informal Economy Measurement, Evidence, and a Research Agenda,” no. November, 2023, [Online]. Available: http://www.worldbank.org/prwp.

ISSN 2714-7444 (online), https://acopen.umsida.ac.id, published by Universitas Muhammadiyah Sidoarjo