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Analysis of Determinants of Crime in Java and Bali

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ABSTRACT

This analysis examines the influence of education, unemployment, population, and poverty variables on crime rates in Java and Bali. The panel data regression method, which is a combination of time series and cross-section data, was applied in this study. The secondary data used in this study was obtained from BPS Indonesia from 2015 to 2022. The variables collected include Education, Unemployment, Population, Poverty, and Crime. The best model obtained from the regression results of panel data is CEM. The study provides clues that education, unemployment, population size, and poverty simultaneously have a significant impact on crime rates on the islands of Java and Bali. Overall, these variables have a significant impact on crime, with an R-squared value of 68%.

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INTRODUCTION

A person's actions that are contrary to the rules of society and legal regulations are categorized as criminality. The community strongly rejects any such criminal acts. This phenomenon has been happening for a long time despite various efforts to overcome it. The impact of crime is not only felt by the individual perpetrator or victim, but also affects the social aspect at large. Economic problems, such as an imbalance between income and living needs, are often associated with increased crime. Therefore, the profits obtained from illegal actions are considered greater than the results of legal actions (Rahmalia et al., 2019).

According to Hardianto (2009), economic problems and minimal income levels can trigger pressure in society. This condition further has the potential to encourage individuals to commit criminal acts in order to meet the needs of life or gain personal satisfaction. Rising crime rates are thought to be the result of a number of economic variables, including economic growth, poverty, and population density. Demographic pressures directly or indirectly affect criminal acts and social conflicts due to poverty, unemployment, and life pressures. The current increase in crime cases has the potential to cause various social problems. Criminality is a form of action that is contrary to various widely recognized social norms, and has the potential to cause losses for various parties. Criminality is an activity that is contrary to the law. Increasingly complex crime has the potential to affect various levels of Indonesian society. The density and diversity of the population in big cities affect individual behavior in carrying out daily activities. Unconducive environmental conditions have the potential to encourage a person to commit crime (Rahmi & Adry, 2018).

Increasingly complex crime has hit various levels of society on the islands of Java and Bali. The diversity of the social environment influences individual behavior in committing crime. A large city that is dense and full of activity provides a greater opportunity for crime. Efforts to increase the sense of security in the community are very important to reduce the risk of criminal acts, especially in areas with high crime rates. According to (Septriani, 2024) The high crime rate in Indonesia indicates many social and economic problems. As a developing country, Indonesia has many economic problems, such as high poverty rates, high unemployment rates, and uneven income distribution. These economic problems are allegedly closely related to the high crime rate in Indonesia.

The following is attached the development of the Number of Crime Incidents on the island of Java & Bali from 2015 – 2022.

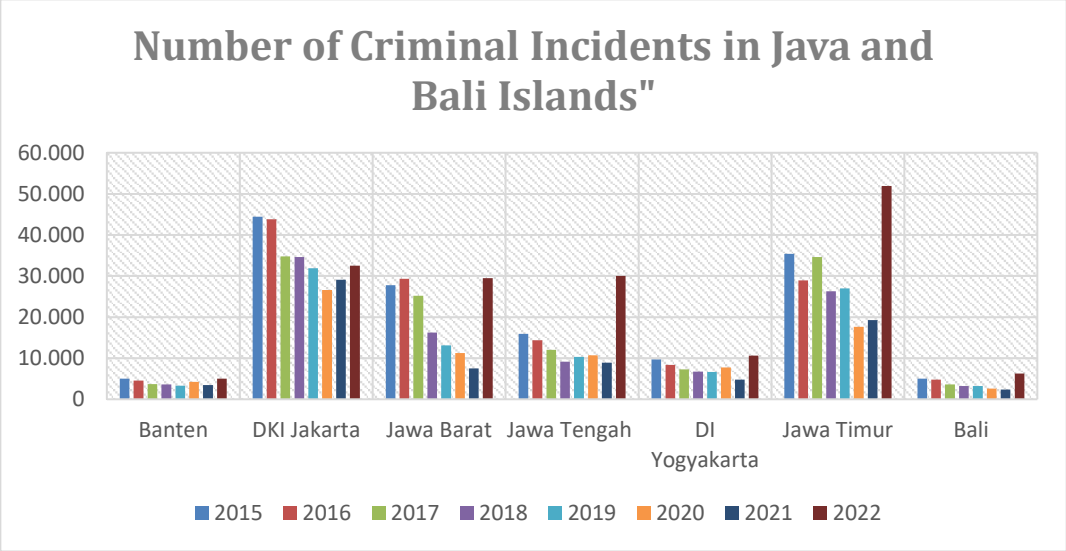


Figure 1. Number of Crime Incidents in Java and Bali in 2015-2022
Source : Central Statistics Agency (Processed)

Graph 1 above shows the highest crime rate on the island of Java in 2022, namely East Java province with 51,905 incidents, followed by DKI Jakarta with 32,534 incidents, and Central Java with 30,060 incidents. while the lowest crime rate on the island of Java in 2022 is Banten Province with 5,038 incidents. An increase in crime rates was observed in East Java Province in the period from 2018 to 2019. However, when entering 2020 during the Covid-19 pandemic, the number of criminal incidents decreased significantly by 17,642 cases. Then it increased drastically in 2022 by 51,905 incidents.

Rusman (2021) and Krisnandika et al. (2021) provide clues that the Covid-19 pandemic is the main cause of layoffs. There is a correlation between economic conditions and crime rates. Khan et al. (2015) suggested that an economic recession has the potential to trigger an escalation of crime. On the contrary, a stable and prosperous economy has a tendency to reduce crime rates. As a result of the high number of unemployed and the high poverty rate, it is suspected that the crime rate in Java and Bali has increased.

Increasing penalties or increasing income wages are two methods that can be used to reduce crime rates (Khan, 2015). According to Rahmalia & Ariusni (2019), education can improve the quality of human resources. Education has a very important role and is the main indicator in producing quality human resources.

Lochner (2007) states that low levels of education correlate with fewer skills compared to highly educated individuals. Elementary and junior high school graduates tend to have more free time compared to high school and college graduates. The excess free time has the potential to be an opportunity for them to engage in criminal acts. (Rahmalia & Ariusni, 2019)

A person's lack of education can deprive the person of their dream job, and it can also potentially become unemployed. A person can be categorized as unemployed if the individual belongs to the labor force group and wants to get

a job but has not succeeded in getting it, according to Sugirno (1994). Individuals who do not have a job and are not actively seeking employment are not classified as unemployed. Open unemployment occurs when the growth of job vacancies is less than the addition of labor (*excess supply*), so that many workers do not get jobs. This condition causes individuals to be encouraged to accept jobs that are not in accordance with the norm in order to meet the needs of daily life (Sartika, 2011).

Unemployment in a country can lead to social and political instability. This has a negative effect on people's welfare and hinders economic development in the long term (Septriani, 2023a). Furthermore, the high unemployment is an economic problem due to the waste of valuable resources (Septriani, 2024) Unemployment occurs due to various factors, such as minimum wage policies, business cycle uncertainty, lack of jobs, mismatches between the type of job and one's education, and certain conflicts. Then when someone loses their job, of course there are obstacles in finding a job again because the competition is getting tighter every day and also the qualifications provided by the company are also getting higher, especially if the person does not have a lot of experience that can support their application letter. In this situation, they are tested for obedience because there is an opportunity to commit crime. High unemployment in a country can reduce the opportunity to earn income and encourage individuals to commit criminal acts (Rahmalia & Ariusni, 2019). Unemployment has a positive influence on the increase in crimes. In addition to the high unemployment rate, a person's inability to meet the basic needs of their lives also encourages the occurrence of criminal acts.

And the last one is poverty. Poor itself means when a person has an income lower than the required income. According to Septriani (2023b), poverty has an impact on health and creates vulnerability to criminal acts. When a person is in that position, there will be many problems such as difficulty meeting daily needs, experiencing depression or despair, malnutrition, and eventually becoming a criminal. The negative impact of uneven economic growth is poverty, which increases income inequality in disadvantaged areas. This inequality triggers the movement of people from disadvantaged areas to more developed areas or cities. Kartini (2005) suggested that the government should alleviate poverty in Indonesia through the distribution of subsidies, social assistance, and other programs so that the distribution would be more even. This is also in line with the opinion (Dari & Asnidar, 2022).

This study examines the impact of variables of education level, unemployment rate, population density, and poverty on crime rates in the Java and Bali regions. This goal is based on the background that has been presented before.

LITERATURE REVIEW

Crime

Criminality is a social problem that often arises in various societies. Reality shows that almost every country faces the issue of crime, regardless of the high and low incidence rate. A country that is absolutely free from crime has never existed. Referring to Abdila et al. (2022), criminal behavior is any form of action

that violates legal rules and social norms. These actions are also contrary to the principles of morality and various values that apply in the community. In KBBI, the term "criminality" refers to criminal acts or acts that violate the law. Legal clarity is very important so that a person can distinguish moral actions (Indah, 2023).

Anomie Theory

Emile Durkheim created this theory to describe an irregular situation. It is of Greek origin, where "*a*" means "without" and "*nomos*" means "law or rule." According to anomie theory, the imbalance between societal norms and values leads to deviations, where cultural goals are more important than the various methods available to achieve them. Both individuals and groups in such a society have to adjust, and deviance is one such type of adjustment. Most members of society follow the norm for a long period of time, while some others deviate. The lower class, for example, who experience tension due to this imbalance, tend to deviate more often than other groups.

Differential *Association Theory*

Sutherland put forward the differential association theory, which states that interactions with various people that violate social norms, especially legal norms, lead to criminal behavior. This theory explains that the learning process does not only include mastering the actual methods of criminal acts, but also involves the formation of various motivations, internal drives, attitudes, and relevant justifications to support the implementation of antisocial acts. Differential association theories of crime, according to Sutherland, include:

1. Criminal behavior can be understood by studying the interaction between individuals through the process of communication.
2. The study of criminal behavior relies heavily on direct interaction with criminals, particularly in the context of society.
3. Focuses on the analysis of criminal behavior, including the methods of committing crimes as well as the driving factors or motivations behind them.

Strain Theory

According to this theory, humans usually violate laws or norms when the distance between a goal and the way to achieve it is great. As a result, using illegal means is a last resort. Thus, humans are actually good, but social conditions cause pressure, stress, and tension that ultimately encourage crime.

Social Control Theory

This theory departs from the premise that individuals do not automatically obey the law. Instead, this theory adopts the opposite view, namely that one needs to learn not to commit criminal acts. This is because every human being is born with a natural tendency to break the rules. Social control theorists consider societal delinquency to be the logical result of a person's inability to cultivate internal impulses that discourage lawless behavior.

Education

The implementation of the educational process integrates the transmission of various knowledge values, mastery of skills, and the formation of habits that take place from generation to generation. Education can build morality, personality, intelligence, and spiritual strength, as well as skills that benefit a person and his or her society. Human resources in the education sector hold significant urgency in preparing the next generation. This generation is expected to have a competitive advantage and effective collaboration capabilities to realize the nation's prosperity, as well as answer various dynamics of global challenges in the future era (Edwart & Azhar, 2019).

Social Control Theory

This theory emphasizes that social bonds and societal norms play a role in preventing deviant behavior. Individuals who have close ties to family, friends, and community show a higher tendency to conform to social norms. Education can strengthen these social bonds by shaping individual character and morals. Through character education, students are taught ethical values and social responsibility, so they are more likely to respect the law and avoid criminal behavior.

Theory *Human Capital*

The quality of human resources is an important factor that drives economic growth according to *human capital* theory. Investment in human resources includes improving the level of education. A total of 22 countries are trying to improve the quality of human resources through human capital investment by providing free education services. This policy increases public awareness of the importance of education (Hachica & Triani, 2022). According to Todaro, investment in the education sector is human capital. Economists often use the term "human capital" to describe human abilities such as education that can increase productivity. With improved education, the initial investment in human capital allows for increased income streams in the future. Therefore, the rate of return on investment is from education (Hachica & Triani, 2022).

Differential Association Theory

Edwin Sutherland put forward a theory that states that criminal behavior is acquired through the process of learning from interactions with others. Individuals learn norms and values through their social experiences. Education can influence the type of interaction that individuals engage in. By providing a good education, individuals are expected to be exposed to positive norms and reduce exposure to environments that support criminal behavior.

Unemployment

According to Sukirno (2007), unemployment is the number of people who enter the world of work in an economy and actively look for work but have not found it. The unemployment criteria according to BPS include individuals who do not have a job but are actively looking for work or are preparing to establish a new business. Status as an unemployed person is also given to a person who

has received a job acceptance, even if his or her work period has not been effectively started. A condition where the growth of job vacancies is smaller than the growth of the labor force is called open unemployment (*excess supply*).

Human Needs Theory

This theory states that criminal acts often arise from unmet basic needs. Individuals who are unemployed and unemployed often face limitations in meeting basic needs. This condition encourages them to commit unlawful actions. The inability to get a decent job can lead to frustration and decision-making, which in turn increases the likelihood of engaging in criminal behavior.

Conflict Theory

Conflict theory explains that social injustice and economic inequality can trigger criminal behavior. Individuals from low socio-economic backgrounds often feel marginalized and do not have equal access to economic opportunities. Unemployment can exacerbate these conditions, creating a sense of discontent that can trigger criminal acts as a form of protest or survival effort.

Population

BPS in Indonesian Statistics (2013) defines population as all individuals who have resided in the geographical area of Indonesia for six months or more, including those who stay for less than six months with the intention of settling. Population growth in developing countries is generally very fast and large. The problem of population growth is not only related to quantity, but also related to the interests of development and the welfare of society as a whole. From a development perspective, the population is seen differently, namely as an obstacle to development or as a driver of development.

Said (2001) defines population as the total number of individuals who live in a specific territory at a certain period of time. The number and structure of the population are formed and undergo changes through essential demographic mechanisms, including fertility, mortality, and migration. This definition emphasizes that population is an aggregation of individuals in an area whose quantity is dynamic. Fluctuations in this number occur as a consequence of births, deaths, and population mobility between regions.

Social Disorganization Theory

This theory explains that a high population can lead to social disorganization, in which social norms are weakened and social control is reduced. In situations like these, individuals may feel more free to commit criminal acts due to weak social supervision. In the context of rapid urbanization, cities with high populations often experience increased crime rates due to a lack of social engagement and community support.

Human Needs Theory

This theory states that criminal acts often arise from unmet basic needs. In the context of the population, individuals may feel pressured to make ends meet,

which can encourage them to commit illegal acts. The inability to meet basic needs in densely populated environments can increase the risk of engaging in crime as a way to survive.

Poverty

Poverty is defined as a condition of inability to meet basic food and non-food needs measured by expenditure, according to BPS. The World Bank (1990) states that poverty is when a person has an income below the international poverty line, which is $1.9 per day. According to Sen (1981), poverty is the absence or lack of basic skills needed to live. BPS uses a basic needs approach, or a basic needs approach, to determine the poverty level, which is determined by the GK. An individual is classified as poor if his or her income level is lower than the established standard. According to Ala (1981), poverty has a multidimensional nature because human needs are very diverse, as well as forms of poverty. These various dimensions include general policies, including primary aspects such as lack of assets, limitations in social and political organizations, and low knowledge and skills. In addition, there are secondary aspects such as a lack of social networks, limited access to financial resources, and lack of information. These various conditions have the potential to trigger a series of problems, including malnutrition issues, scarcity of clean water, inadequate health services, and limited education levels (Rahmalia & Ariusni, 2019).

Human Needs Theory

This theory states that criminal acts often arise from unmet basic needs. An individual's inability to meet essential needs, which include food, shelter, and medical services, can be a driving factor for criminal behavior. Individuals who live in poverty often feel compelled to take illegal steps for survival.

Conflict Theory

Conflict Theory explains that social injustice and economic inequality can trigger criminal behavior. Individuals from poor groups often feel marginalized and do not have equal access to economic opportunities, which can lead to frustration and criminal acts as a form of protest or survival effort. Ralf Dahrendorf stated that social conflicts occur due to differences in power and resources, where economically disadvantaged individuals may feel compelled to commit crimes.

METHODOLOGY

Secondary data sourced from BPS for the period 2015 to 2022 was used as the main database in this research. The population in the study included a variable bound to the crime rate (Y) in the Java and Bali islands. Four variables were independently investigated: education (X1), unemployment (X2), population (X3), and poverty (X4). The research utilizes multiple linear regression analysis with a panel data application that combines *cross-section* and *time series data*. Additionally, the analysis tool is EViews.

Operational Definitions and Variable Measurements

1. **Crime Rate**, measured by the number of crime rates reported by province in 6 provinces of Java and 1 island of Bali in annual units.
2. **Education**, measured by the average number of school hours per year in six provinces of Java and one island of Bali.
3. **Unemployment**, which is calculated as a percentage of the labor force without a job or actively looking for work, is analyzed based on annual data from six provinces in Java and one province in Bali.
4. **The number of population**, measured in the number of thousands of people by province in 6 provinces of Java and 1 island of Bali in annual units.
5. **Poverty,** measured as a percentage of the total poverty population by province in 6 provinces of Java and 1 island of Bali in annual units.

The mathematical formulation for the multiple linear regression model relevant to this study is presented as follows:

$$JTK_{it} = a + \beta_1 RLS_{it} + \beta_2 TPT_{it} + \beta_3 JP_{it} + \beta_4 PPM_{it} + e_{it}$$

Information:

JTKit : *Number of Crime Rates in unit i at time t*
a : *constant*
RLSit : *Average School Length in unit i at t time*
TPTit : *Open Unemployment Rate in unit i at t time*
JPit : *Total Population in unit i at t time*
PPMit : *Percentage of Poor Population in unit i at time t*
β1 β2 β3 β4: *Coefficients Regresi Variable Independent*
eit : *error term*
i: sample
T : Time

RESEARCH RESULT

Model Determination Test Results

Chow Test

Table 1. To choose the right research model, i.e. CEM or FEM, the chow test is used

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	3.170804	(6,44)	0.0113
Cross-section Chi-square	19.763646	6	0.0031

Source : EViews 12 data processed

Based on the results of Chow's test, the FEM model shows superior performance compared to CEM. This is confirmed by the *chi-square* probability value of 0.0031, which is lower than the significance level of 0.05. The next step is to do the Hausman Test.

Hausman Test

Table 2. The thirst test serves as a method to determine the most appropriate model between FEM and CEM

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	5.548679	4	0.2355

Source : EViews 12 data processed

The thirst test yielded a probability value of 0.2355. The figure shows a higher yield compared to 0.05. The best model based on the thirst test in this study is REM. These results confirm this. The next step is to conduct the LM Test.

Uji Legrange Multiplier (LM)

Table 3. The LM test aims to select the best model between CEM and REM.

Lagrange Multiplier Tests for Random Effects
Null hypotheses: No effects
Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided (all others) alternatives

	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	1.061237 (0.3029)	22.95479 (0.0000)	24.01603 (0.0000)
Honda	1.030163 (0.1515)	4.791116 (0.0000)	4.116266 (0.0000)
King-Wu	1.030163 (0.1515)	4.791116 (0.0000)	4.010856 (0.0000)
Standardized Honda	2.956001 (0.0016)	5.165350 (0.0000)	2.456208 (0.0070)
Standardized King-Wu	2.956001 (0.0016)	5.165350 (0.0000)	2.392554 (0.0084)
Gourieroux, et al.	--	--	24.01603 (0.0000)

The results of the LM test showed a *random cross-section* probability value of 0.3029. The number indicates a value greater than 0.05. This indicates that CEM is the best model in the test as well as the most suitable for this study.

Classical Assumption Test Results

The model chosen is CEM, so it is necessary to perform a classical assumption test. The classical assumption test applied includes multicollinearity and heteroscedasity (Basuki & Yuliadi, 2014; Napitupulu et al., 2021).

The reasons for not testing classical assumptions such as normality and autocorrelation are explained as follows:

1. Normality analysis was applied to data with less than 30 observations. This test aims to ensure that *the error term* is distributed close to normal. The number of observations greater than 30 no longer requires the

implementation of a normality test. This condition is based on the assumption that the error distribution from sampling has approached the normal curve (Ajija et al., 2011). This study used 136 observations so that the normality test was not carried out.

2. Autocorrelation testing was performed to evaluate the presence of serial dependencies between the error component of the period t and the error component of the previous period (t−1) in a linear regression model. Generalized Least Squares (GLS) is a method for eliminating first-order autocorrelations in approximated regression equations. Sarwoko (2005) also emphasized this. In his view, the implementation of the GLS method has the capability to negate the existence of autocorrelation. The autocorrelation often comes from errors in the process of estimating variance, so this problem can be solved through the GLS method. In line with that, Gujarati (2003) stated that the GLS method is able to eliminate autocorrelation. This autocorrelation phenomenon is often identified in the OLS formula as a result of errors in the estimation of variance.

Multicollinearity Test

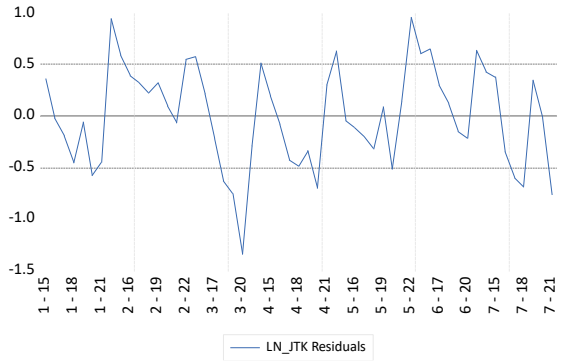
Table 4. Multicollinearity Test

	LN_RLS	LN_TPT	LN_JP	LN_PPM
LN_RLS	1	0.17907577...	-0.5851416...	-0.6144052...
LN_TPT	0.17907577...	1	0.48905283...	-0.0773050...
LN_JP	-0.5851416...	0.48905283...	1	0.35288329...
LN_PPM	-0.6144052...	-0.0773050...	0.35288329...	1

Source : EViews 12 data processed

The correlation coefficient between RLS and TPT is 0.17907577, smaller than 0.85. The correlation coefficient between RLS and JP is -0.5851416, also less than 0.85. In addition, the correlation coefficient between RLS and PPM is below 0.85. The correlation between TPT and JP was recorded at 0.48905283, while between TPT and PPM was -0.0773050, both less than 0.85. The correlation coefficient between JP and PPM is 0.35288329, also below the limit of 0.85. Based on these results, it can be concluded that there is no indication of multicollinearity so that the multicollinearity test was declared passed (Napitupulu et al., 2021).

Heteroscedasticity Test



Source : EViews 12 data processed

The results of the heteroscedasticity test in the image indicate that the residual graph is within the boundary between 500 and -500. This indicates that the residual variance is constant. Thus, there are no signs of heteroscedasticity so that the heteroscedasticity test is declared passed. (Napitupulu et al., 2021).

Panel Data Regression Equation Results

LN_JTK = -26.87 + 8.07*LN_RLS - 1.00*LN_TPT + 1.26*LN_JP + 0.69*LN_PPM

The explanation is as follows

1. The JTK (Y) variable in the region will decrease by 26.87 in the absence of RLS (X1), TPT (X2), JP (X3), and PPM (X4) variables, according to the constant value of -26.87.
2. An increase in the X1 variable of 8.07 will increase the beta coefficient of the JTK variable (Y) by 8.07, assuming the various other variables are kept constant. Conversely, if the other variable is considered fixed, a decrease in the variable X1 by 8.07 will cause the variable Y to decrease by 8.07.
3. The beta coefficient of the TPT variable (X2) is -1.00. If the other variable remains constant, the JTK variable (Y) will decrease by 1.00 if the variable X2 increases by 1.00. In contrast, a decrease in the value of the variable X2 by 1.00 results in an increase in the value of the variable Y by 1.00.
4. The beta coefficient for the JP variable (X3) is 1.26. Assuming the other variables are fixed, an increase of 1.26 in the X3 variable will cause the JTK variable (Y) to rise by 1.26. Conversely, if the variable X3 drops by 1.26 while the other variable remains, the variable Y will also drop by 1.26.
5. The beta coefficient of the PPM variable (X4) is 0.69. The JTK variable (Y) is estimated to increase by 0.69, as long as various other factors are kept constant. Conversely, if the variable X4 falls by 0.69, the variable Y will decrease by 0.69.

Hypothesis Test Results

Table 5. Test Results t

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-26.87524	3.028023	-8.875505	0.0000
LN_RLS	8.078436	0.967811	8.347126	0.0000
LN_TPT	-1.007367	0.204877	-4.916927	0.0000
LN_JP	1.265429	0.128938	9.814252	0.0000
LN_PPM	0.694020	0.187222	3.706933	0.0005

Source : EViews 12 data processed

There is an explanation of the individual impact of each independent variable on the bound variable as follows:

1. The variable of average length of school (X1) resulted in a calculated t score of 8.347126. This figure exceeds the table t-value of 2.004879. The significance level obtained at 0.0000 was also recorded lower than 0.05. Thus, Ho was rejected and Ha was accepted. The RLS variable has an influence on JTK on the islands of Java and Bali.

2. The variable of the open unemployment rate (X2), with a t value of 4.916927, is greater than the table t-value of 2.004879. In addition, the significance of 0.0000 is lower than 0.05. Thus, H0 is rejected and Ha is accepted. This provides clues that the TPT variable has an effect on JTK in the Java and Bali island regions.
3. The value of t calculated in the variable population (X3) is 9.814252, greater than the t table of 2.004879. The significance value of 0.0000 is less than 0.05. Thus, Ho was rejected and Ha was accepted. This gives a clue that the JP variable has an effect on JTK on the islands of Java and Bali.
4. Hypothesis testing using the t-test on the variable percentage of the poor population (X4) showed that the calculated t-value reached 3.706933. This figure exceeds the limit of the table t-value of 2.004879. Furthermore, a significance value of 0.0005 was obtained which was below the significance standard of 0.05. Based on these findings, H0 is unacceptable, while Ha is supported. This implies that the PPM variable has a significant influence on JTK in the Java and Bali island regions.

F Test Results

Table 6. F Test Results

R-squared	0.706282
Adjusted R-squared	0.682785
S.E. of regression	0.503644
Sum squared resid	12.68286
Log likelihood	-37.69688
F-statistic	30.05786
Prob(F-statistic)	0.000000

The variables RLS, TPT, JP, and PPM have an impact on JTK in Java and Bali, because the value of F calculated 30.05786 is greater than 2.557179 and the value of sig. 0.000000 is less than 0.05. Thus, H0 is rejected and Ha is accepted.

Coefficient of Determination Test (R2)

Table 7. Coefficient of Determination Test (R2)

R-squared	0.706282
Adjusted R-squared	0.682785
S.E. of regression	0.503644
Sum squared resid	12.68286
Log likelihood	-37.69688
F-statistic	30.05786
Prob(F-statistic)	0.000000

The *adjusted value of R squared* is 0.682785 or 68.2785%. This determination coefficient indicates that independent variables, namely RLS, TPT, JP, and PPM, are able to explain the variability of JTK variables in Java and Bali by 68.2785%. The contribution of various other variables that were not included in the framework of this study model explained the portion of 31.7215%, which is the result of a calculation of 100 minus the *adjusted R squared value*.

DISCUSSION

The Influence of Education on Crime

The results of the t-test indicated that the *t-statistical* value of the unemployment rate variable was positive. These findings, which are related to the analysis of the influence of education level on crime, show that the *probability of t-statistic* (0.0000) of the variable is less than α=0.05. The level of education has a positive and significant influence on crime in Java and Bali in part. This suggests that an increase in the level of education is followed by an increase in crime in Indonesia, and vice versa. If the level of education decreases, then crime in Indonesia will also decrease.

This research supports the findings obtained by Komang (2023), Silvia & Ikhsan (2021), and Erlyna (2021). The level of education is one of the significant consideration factors for an individual in choosing a profession. The salary obtained from the work is expected to be able to return the cost of education investment that has been incurred. The relationship between education level and potential criminal acts shows indications of results with positive effects. An individual with a higher education qualification who has secured employment in the legal sector can be encouraged to commit unlawful acts. This situation can occur if the income received is disproportionate to the amount of education costs that have been invested, thus motivating efforts to obtain additional funds through illegal channels. The *human capital* theory says that better education can increase income. Each additional year provides guidance on improving employability and income. The quality of superior human resources can be reflected through the level of education taken. The level of education is a series of activities that aim to develop individual insights and skills. Such development contributes to the formation of a person's character and independence. Education is the basic capital needed to be able to work. More established educational qualifications contribute to an individual's mastery of knowledge and expertise, thus positively impacting their professional competence. Those living below the poverty line believe that education is hard to come by. They also believe that society is unaware of the importance of education.

The Effect of Unemployment on Crime

The t-statistical value on the t-test shows a negative number for the effect of the unemployment rate on crime, with the probability of the t-statistical variable of the unemployment rate of 0.0000 which is less than 0.05. These findings indicate that the unemployment rate has a negative and partially significant influence on crime on the islands of Java and Bali. In other words, an increase in the unemployment rate will be followed by an increase in the crime rate in Indonesia, and vice versa. If the unemployment rate falls, then crime in Indonesia will also decrease.

The results of the studies of Anata (2018), Rahmalia & Ariusni (2020), and Rahmi (2020) are consistent. The relationship between unemployment and crime shows a negative influence. There are several factors that cause individuals and groups in the open unemployment category to be unable to work. This condition resulted in them being forced to be unemployed. One of them is individuals who are trying to find a job with higher wages. During such periods of

unemployment, the individual can use the savings from the past to meet his or her living needs. This condition leads to a low tendency to commit criminal acts.

Social disorganization theory states that social and economic factors are influenced by crime rates in a particular area (Cullen & Wilcox, 2010). These results are supported by the Strain theory, proposed by Merton (1968). Individuals who do not have a job face financial and social hardship. This condition can encourage them to commit criminal acts as a way to meet the needs of life. The results of this study are in accordance with Hagan's (1993) theory, which explains with macro analysis that an increase in unemployment leads to an increase in crime. Based on the assumption of rationality, when a person is unemployed, he will lose his income, but the unemployed person still has to meet his living needs. Thus, criminality is more effective than legal action, and the criminal costs for losing a very small legal income for the unemployed will encourage individuals to commit crimes. Therefore, the government must be able to overcome the unemployment problem if they want to reduce the crime rate in Indonesia.

The Influence of Population with Crime

The number of people affects the crime rate. The results of the t-test showed a statistically positive t-value. The probability of the t-statistical variable of the population is 0.0000, which is smaller than 0.05. Data analysis implies that the population, when viewed separately, shows a substantial positive impact on crime statistics in the Java and Bali regions. This means that the increase in Indonesia's population will be followed by an increase in the crime rate. On the other hand, if the population decreases, the crime rate also tends to decrease.

This study supports the results of Riyardi & Guritno (2022), Putra et al. (2021), and Astuti et al. (2020) providing clues regarding a significant relationship between poverty and crime rates. The theory of social disorganization reinforces these results by stating that crime arises as a result of weakening social control, caused by poverty, family instability, and population mobility (Shaw & McKay, 1942). People with low economic levels often inhabit areas that show symptoms of social disorganization. This condition correlates with a higher frequency of criminal acts in communities that have less effective social control mechanisms. These environmental conditions increase the risk of crime and encourage aggressive behavior and the tendency to arm themselves (Pare & Felson, 2014).

The Influence of Poverty on Crime

The level of poverty has an influence on crime. The results of the t-test showed a positive statistical t-value, with the probability of the t-statistical variable of poverty level being 0.0005, which is less than 0.05. These findings indicate that poverty levels have a positive and partially significant effect on crime on the islands of Java and Bali. An increase in poverty rates is followed by an increase in crime, and vice versa. If the poverty rate decreases, then crime in Indonesia will also decrease.

The effect of poverty on crime is proven to be significant based on the results of this study. These findings support the research of Septriani (2024),

Fachrurrozi et al. (2021), Ulfa & Talbani (2018), and Dulkiah & Nurjanah (2018) who stated the same thing. Social disorganization theory (proposed by Cullen & Wilcox, 2010). This theory states that environmental, social and economic factors in an area affect crime rates. Various economic factors such as poverty, unemployment, and social instability are some of the economic factors that affect crime rates. This theory is in line with Becker's (1968) theory which states that poverty can affect the desire to commit crimes. According to Kartono (2009) there are many factors that affect crime, namely biological, sociological, and economic factors. In this case, poverty is one of the economic factors that cause crime. Todaro & Smith (2015) explained that a high level of poverty leads to limited access to facilities that can improve their well-being. This condition increases the likelihood that the individual will commit criminal acts in an effort to maintain survival.

CONCLUSIONS AND RECOMMENDATIONS

The results of the panel data regression analysis indicate that the CEM model is the best. The crime rate on the islands of Java and Bali is significantly influenced by various factors such as education level, open unemployment rate, and population. Furthermore, various elements including education, open unemployment rate, population, and the percentage of the identified poor have made a positive and real contribution to the crime rate in the two provinces. The *adjusted R-squared values* obtained were 77.94 percent and 68.28 percent. This indicates that the increase in RLS, TPT, JP, and PPM is directly proportional to the increase in the number of crimes on the islands of Java and Bali.

ADVANCED RESEARCH

This study presents an advanced empirical analysis of crime determinants in Java and Bali using panel data regression, identifying the Common Effect Model (CEM) as the most suitable specification. The findings reveal that socio-economic variables namely, the average years of schooling (RLS), open unemployment rate (TPT), total population (JP), and the percentage of identified poor (PPM) exert a statistically significant and positive influence on regional crime rates. The robustness of the model is reflected in the high adjusted R-squared values of 77.94% and 68.28%, indicating strong explanatory power. These results suggest that increasing educational attainment, while generally viewed as a protective factor, may paradoxically correlate with rising crime when not accompanied by adequate employment opportunities and social safety nets. This highlights the complex interplay between development indicators and criminal behavior, underscoring the need for integrated policy interventions that address education, labor markets, and poverty simultaneously to effectively mitigate crime in high-density regions such as Java and Bali.

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