



How Economic Indicator Drive Crime? Empirical Study in Developing Country, Indonesia

Sodik Dwi Purnomo^{1*}, Doni Adi Supriyo², Rusito², Teguh Anindito², Wahyu Hariadi², Damar Jati¹

¹Faculty of Economics and Business, Wijayakusuma University, Purwokerto, Indonesia, ²Faculty of Law, Wijayakusuma University, Purwokerto, Indonesia. *Email: sodikdwipurnomo@yahoo.com

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ABSTRACT

More offenses are committed in society as the crime rate rises, which is a sign that the safety of society is deteriorating. The purpose of this research is to examine how the Gini ratio, per capita income, unemployment, poverty, and population density affect the number of crimes committed in Indonesia between 2012 and 2020 in 34 Indonesian provinces, this research used secondary data from the years 2012 until 2020. Multiple linear regression using a panel data approach is the study methodology. The study's findings demonstrate that the fixed effect approach is the most effective. Unemployment had a positive and significant impact on the amount of crimes, according to partial testing, while overcrowding and internet access had a negative and significant impact. In Indonesia between 2012 and 2020, the Gini ratio, per capita income, and poverty did not affect crime, according to partial testing, which also found that unemployment had a positive and significant impact on the number of crimes. Overcrowding and internet access also had a negative and significant impact on the number of crimes. According to this study, it is hoped that the government will establish learning facilities that put an emphasis on developing skills, offer counseling regarding family planning initiatives, and create a fair digital infrastructure to raise the standard of internet access.

Keywords: Crime, Unemployment, Overcrowding, Internet Access

JEL Classifications: D73, H11, H12

1. INTRODUCTION

Criminality is defined as a deviant act that endangers a person's safety (Nadilla and Farlian, 2018). Crime has a large impact on people's lives, and many factors can influence someone to commit a crime. Crime has become common in society when a person does not need to think long to commit a crime and perpetrators do not consider the consequences of their actions.

Crime can be caused by two factors: internal factors, which include both special and general traits in individuals, and external factors (Astuti, 2014). Individuals with special traits include mental illness, emotional power, mental lowness, and anatomy, while individuals with general traits include age, physical strength, individual position in society, individual education, and individual entertainment. Economic factors (price changes, unemployment,

urbanization), religious factors, reading factors, and film factors are examples of external factors.

Several factors, including economic growth, education, unemployment, and poverty, are thought to be influencing the rising number of crimes. A high GRDP level does not guarantee equality. With a high GRDP, the crime rate can be reduced year after year. Of course, there are factors behind the problem of criminal acts that occur in society, one of which is low education. Punishment or wage increases can be used to reduce crime rates. One way to raise wages is to improve the quality of human resources through education (Winda and Sentosa, 2021).

The impact of crime on a country's people can be seen in the level of welfare. Indonesia is recorded as a country with a crime rate that is still relatively safe. However, this cannot

be taken as proof that the Indonesian people are prosperous. We continue to encounter various cases of criminality that are detrimental to many parties, particularly the country's economy. For example, economic crimes in Indonesia can be classified as high, resulting in a negative relationship with GRDP. This demonstrates that any special crimes, such as corruption, will reduce the GRDP rate, thereby lowering Indonesia's growth rate (Kesuma, 2019). Figure 1 depicts the number of Indonesian crimes in 2012-2020.

The higher the crime rate, the more crimes there are in society, indicating that society's condition is becoming increasingly dangerous. Figure 1 depicts how the number of incidents of crime or crime experienced fluctuating conditions between 2012 and 2020. However, between 2016 and 2020, the government was able to reduce the crime rate, resulting in a significant decrease in the number. Increasing the legal strictness for criminals and increasing the wages of legal workers are two options for dealing with criminal cases (McGloin et al., 2007). Several macroeconomic indicators, including ratio, per capita income, poverty, unemployment, population density, and the percentage of households with internet access, are thought to influence the rise in crime.

Increasing income inequality leads to a higher chance of crime arising (Kelly, 2000). Income inequality occurs in almost every aspect of life. Income differences between low-income people and high-income people due to various factors can be a benchmark for inequality that can lead to crime. Income inequality, as measured by the Gini index, has a significant and positive influence on the occurrence of crime (Hendri, 2014).

In Indonesia, per capita income has a significant impact on the crime rate. A low-income person is more likely to commit a crime because of a sense of urgency to make ends meet as soon as possible. As a result, they will justify any means to achieve their goals, including stealing, robbing, grabbing, and even killing someone (Pare and Felson, 2014). According to Khan et al. (2015), if poor people have insufficient income to meet their needs, they are more likely to engage in illegal activity to supplement their income. As a result, poverty is the primary determinant of the criminal economy in the country.

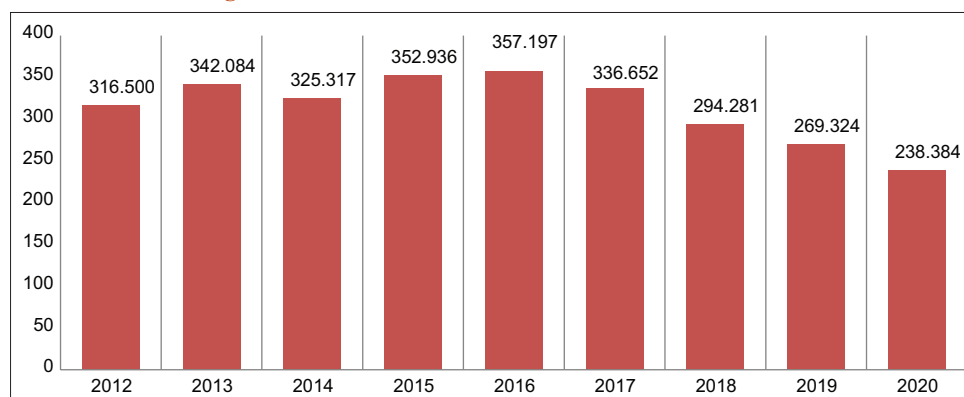
According to Khan et al. (2015) high unemployment rates in any country lower income opportunities and can force individuals to adopt criminal behavior. Various ways the government minimizes crime, such as reducing the number of unemployed. This should be an opportunity for prosperity. One of the causes of unemployment is the large number of school graduates who are not ready to work. But there are many other factors such as the level of education and the lack of employment. Unemployment is always related to crime because the economic growth rate in Indonesia is uneven. The relationship between crime and unemployment is certainly an interesting thing to continue to explore as a reference for the government in solving cases of increasing crime.

Another thing that causes criminality in Indonesia to disrupt the economy is overcrowding. The population density in Indonesia occurs due to uneven population distribution. So the impact that will be caused from a socioeconomic point of view is an increase in criminal cases in densely populated areas. The possible impact is inequality, because economic concentration may be more focused on densely populated areas than other regions. Uneven social development is also included in the economic impact of population density. Suppressing the rate of population growth through family planning programs is one solution to minimizing the influence of population density on crime. Browning et al. (2010) in their research also found the same thing. In locations with high population density, a person who has the potential to commit a crime is more likely to meet potential victims due to the high volume of traffic along the way.

According to numerous studies, access to information has an impact on crime. According to the use of broadband internet in Norway, internet use is associated with an increase in reporting, cases, charges, and sentencing of sexual crimes due to society's increased consumption of pornographic content (Bhuller et al., 2013). Households or consumers with low economic status are less likely to commit criminal acts because they rarely conduct online transactions and act cautiously when conducting risky transactions (Mardinsyah and Sukartini, 2020).

Thus, this study aims to analyze the effect of the Gini ratio, per capita income, poverty, reduction, population density, and internet access on total crime in Indonesia in 2012-2020.

Figure 1: Total number of crimes in Indonesia in 2012-2020



Source: Badan Pusat Statistik Indonesia 2015, 2020 (processed)

2. LITERATURE REVIEW

2.1. Crime

Criminality or crime is one of the social problems that cannot be avoided by all developed and developing countries. There are frequent acts of criminality in all walks of life wherever they are, and they can occur in multiple places at different times. According to Myers (1984), criminality is defined as anti-social acts committed consciously or unconsciously that cause harm to others. Myers (1984) contends that criminal acts are part of immoral acts. Then immoral acts are anti-social acts. Criminality is an act that can cause problems and unrest in society, so it tends to deviate from existing norms.

2.2. Criminality in an Economic Approach

Becker (1968) developed a function model to describe the utility expectations of criminal acts occurring in the following equation:

$$EU_j = P_j U_j(Y_j - F_j) + (1 - P_j) U_j(Y_j) \quad (1)$$

Where:

EU_j : Expected Utility of criminal acts;

P_j : Probability of criminal acts being arrested;

U_j : Utility functions

Y_j : Income earned from criminal acts;

F_j : Interpretation of a sum of money equivalent to punishment.

The equation above explains that a person can commit an act of criminality that has two probabilities, namely the first probability of an act of criminality being caught (p_j) and the second probability of an act of criminality not being caught ($1 - P_j$). If the criminal act is not caught, then the utility that will be obtained is a function of the income that will be obtained later from the proceeds of the criminal act (Y_j). If an act of criminality is caught, then the utility derived from the act will be reduced by an amount of money equivalent to the amount of appropriate punishment ($Y_j - F_j$). Therefore, the expected utility of an act of criminality is the sum of the probability of an existing act of criminality, that is, the act of criminality caught with the probability of an act of criminality not being caught, as an equation.

2.3. The Effect of Income Inequality on Criminality

The relationship between inequality and crime has long been a source of concern for academics. There are three basic theories that address the relationship between inequality and the level of criminality: Becker's economic theory of crime, Merton's theory of tension (strain theory), and Shaw and McKay's theory of social disorganization (Kelly, 2000). According to economic theory of crime, a high-inequity area is generally dominated by poor people with low incomes who live next to high-income rich people who own valuables. This condition has the potential to increase the allocation of individual time used for criminal acts. People weigh the benefits of committing a criminal act versus attempting to do so legally. If the returns obtained from criminal acts are greater than the legal efforts the individual has a greater chance of committing criminal acts (Becker, 1968).

According to tension theory, individuals who experience failure in their lives will become increasingly depressed when confronted

with the success of the surrounding society. The greater the regional inequality, the greater the pressure on the individual and the greater the individual's chances of committing a crime (Merton, 1938). According to the theory of social disorganization, criminality occurs when social control is weakened due to poverty, family instability, population mobility, and other factors (Shaw and McKay, 1942). Empirical research on the relationship between economic inequality and criminality has been widely conducted around the world. However, the findings of these studies indicate that the relationship between inequality and crime is still poorly understood. Some argue that there is a positive and a negative (Choe, 2008; Hendri, 2014; Nguyen, 2019; Lynch and Pridemore 2011; Sachsida et al., 2010; Scorzafave and Soares, 2009). While other studies found different results. The study states that there is statistically no evidence that inequality influences crime (Kelly, 2000; Mehanna, 2004; Neumayer, 2005).

2.4. The Effect of Unemployment on Criminality

According to Khan et al. (2015) high unemployment rates in any country lower income opportunities and can force individuals to adopt criminal behavior. Unemployment and criminality are closely interrelated. Unemployment and criminality are inextricably linked. Unemployment, defined as someone who does not have a job or is looking for one, is a problem that many countries around the world, particularly developing countries, must address. A country's high unemployment rate will lead to a slew of other social issues over time. As a result, unemployment is one of the root causes of many social problems because it has a wide-ranging impact. So, if the unemployment rate rises from year to year, it indicates that the country's economic growth is slowing, if not declining. High unemployment rate, it will cause economic problems in meeting primary needs which ultimately encourages a person to cut corners by doing acts of welfare to meet his primary needs. Thus it can be concluded that unemployment has an influence on crime where the higher unemployment can increase the crime rate.

2.5. The Effect of Internal Access et on Criminality

According to Bhuller et al. (2013), in his study on broadband internet use in Norway, internet use is associated with increased reporting, cases, allegations, and sentencing of sex crimes due to society's increased consumption of pornographic content. Reisig and Lloyd (2009) conducted a study in Florida on the impact of online behavior on the risk of credit card information theft. According to the study, consumers with low economic status and who rarely use the internet are more likely to become victims of credit card data theft. This is because these customers rarely make online purchases and tend to act rashly when making risky purchases. Meanwhile, online shopping consumer behavior in Indonesia is generally rational and pays attention to orientation before making purchase transactions.

3. METHODOLOGY AND DATA

This research is a type of quantitative research. According to Sugiyono (2016), quantitative research is research based on the philosophy of positivism, used to examine certain samples and to achieve predetermined hypotheses. The data source used for this study is secondary data. The data obtained in this study was

sourced from the Central Statistics Agency of all provinces in Indonesia for the 2012-2020 period. The data in this study is panel data combining *time series* data with *cross section data*. The location taken for this study is Indonesia covering 34 provinces in Indonesia. The data obtained and used are data for the period 2012 – 2020. The variables in this study are entered into the equation, it will be a model as follows:

$$CT_{it} = \beta_0 + \beta_1 GINI_{it} + \beta_2 PDRB_{it} + \beta_3 POV_{it} + \beta_4 TPT_{it} + \beta_5 KP_{it} + \beta_6 RTINET_{it} + e_{it} \quad (2)$$

Information:

CT_{it} : Total crime (number of provincial crime incidents)

β_0 : Constant

$\beta_{1,2,3,4,5,6}$: Regression coefficient

$GINI_{it}$: Provincial gini ratio (Ratio)

$GRDP_{it}$: Provincial per capita income (Rp)

POV_{it} : Provincial poverty rate (%)

TPT_{it} : Provincial open unemployment rate (%)

KP_{it} : Population density in the province (people/km²)

$RTINET_{it}$: Internet access

e : Standart error

I : Cross Section

T : Time series

Before performing the analysis using panel data, you must determine the estimation model to be used. According to Sugiyono (2016), in the panel data there are three models of estimation approaches that must be carried out, namely with common effects, *fixed effects*, and *random effects*. In this study, it used chow test, hausman test, and lagrange multiplier to determine the best estimation model between common effect, fixed effect or random effect.

4. EMPIRICAL RESULTS AND DISCUSSION

The panel data regression model has three estimates that can be done through the Common Effect Model, Fixed Effect Model, and Random Effect Model approaches. Furthermore, tests will be carried out which are used in choosing the best model from the three models (CEM, FEM, REM) which will be carried out in the data analysis in this study. The Classical Assumption Test is used for testing the assumptions and suitability of the model. Hypothesis testing was also carried out in this study in order to find out how much influence free variables (gini ratio, per capita income, poverty, unemployment, population density and internet access) have on bound variables (crime) carried out by multiple linear regression with a panel data approach processed using *E-Views10 software*.

Based on the model fit test from the chow test it results that the prob value on the chi-square cross-section is 0.000 then the value is <0.05. Thus it can be concluded that the selected model is a fixed effect model. Meanwhile, husman test results show that the prob value in random cross-section is 0.000, then the value <0.05. Thus the selected model is a fixed effect model. From the two tests above, namely the Chow Test and the Hausman Test, it can be

concluded that the best model chosen is a fixed effect model, so there is no need to do a langranger multiplier test. Here's Table 1 showing a summary of the fixed effect model.

4.1. The Effect of Gini Ratio on Criminality

The results showed that the gini ratio had not significant effect on crime in Indonesia in 2012-2020. These findings are not in line with the research of Choe (2008), Hendri (2014), Nguyen (2019), Lynch and Pridemore (2011), Sachside et al. (2010), and Scorzafave and Soares, (2009) which found that the value of the gini ratio has an effect on criminality. The gini ratio, as measured by an index ranging from 0 to 1, had no effect on crime in this study. This is due to a significant decrease in the gini ratio in each province of Indonesia. However, lowering the gini ratio in each province will not reduce crime rates. The study also contradicts the tension of stating that individuals who experience failure in their lives will become increasingly depressed when confronted with the success of the surrounding community. The greater the income inequality, the greater the pressure on the individual and the greater the individual's chances of committing crimes (Merton, 1938).

The study is in line with Kelly (2000), Neumayer (2005) and Aranthya et al. (2018) Because of the dense population, the gini ratio has no effect on crime. This can be expanded by diverse types of work, resulting in a gap between the modern and informal job markets. This study agrees with Mehanna (2004), who claims that there is no statistical evidence that inequality affects crime. Thus, the gini ratio in Indonesia has no effect on crime because the happiness index of Indonesians is already high. The happiness in question is the sufficiency of the needs of the Indonesian people, who, despite not having a fixed income, can meet their personal needs without committing crimes.

4.2. Effect of Per Capita Income on Criminality

The results showed that the gini ratio had not significant effect on crime in Indonesia in 2012-2020. These findings are not in line with Khairani and Ariesa (2019) which states that per capita income affects criminality. This is because the per capita income rate in Indonesia has increased, which illustrates the changing pattern of the level of public welfare in each province. However, the increase in per capita income does not reduce the crime rate. This study is in line with the findings of Aranthya et al. (2018) which explains that per capita income has no effect on criminality, due to unequal employment opportunities. Per capita income is not always directly

Table 1: Results of estimated regression data panel fixed effect model

Variable	Coefficient	t-Statistic	Prob.
GINI	1.149	1.304	0.193
GRDP	0.061	0.966	0.334
POV	-2.307	-1.095	0.274
TPT	2.993	1.785	0.025
KP	-1.876	-6.625	0.000
RTINET	-4.747	-3.224	0.001
Constant	22.678		
Adjusted R-squared	0.937		
F _{count}	1.178		
Prob. (F _{count})	0.000		

Source: Fixed effect model estimation.

proportional to employment opportunities and the amount of labor absorbed. The small amount of income in rural communities does not create opportunities for criminal acts. Indonesia also occupies a muslim-majority country whose Islamic values have been embedded, so that the attitude of mutual cooperation and sharing will help the adequacy of life even with a small income. Thus fewer and fewer people will commit criminal acts.

4.3. The Effect of Poverty on Criminality

The results showed that poverty had not significant effect on crime in Indonesia in 2012-2020. This finding is not in line with Pare and Felson (2014) which states that poverty affects crime. The needs of society are increasing, if people with limited incomes, are likely to engage in an illegal activity to obtain the desired income (Khan et al., 2015). This empirical study is consistent with poverty data from each province's BPS and the number of crimes reported by the Indonesian National Police, despite the fact that the percentage of poor people in a province is not always directly proportional to the high crime rate. This is due to a decrease in the poverty rate in Indonesia from 2012 to 2020, demonstrating the changing pattern of the level of community welfare in each province. However, a decrease in poverty does not result in a decrease in crime. According to the research, the majority of Indonesians live in rural areas, so there is still a lot of vacant land and rice fields used for farming, and some become labor workers whose results are to meet basic needs.

4.4. The Effect of Unemployment on Crime

The findings indicated that from 2012 to 2020, unemployment had an impact on crime in Indonesia. This result is consistent with Magan's (1993) theory that an increase in unemployment is a contributing factor to crime. According to the rationality premise, a person who is unemployed will lose his income but still needs to provide for his basic requirements in life. As a result, the utility of crime is exploited more than the lawful act, and the opportunity cost of lost legal income is a very small part of the cost of imprisonment for those who are jobless. According to Khan et al. (2015) high unemployment rates reduce income possibilities worldwide and may push people to engage in criminal behavior.

According to Sukirno (2000), unemployment can cause social and political instability, slow down economic activity, and encourage criminal activity. So, if the unemployment rate rises year after year, it indicates that the country's economic growth is slowing, if not declining. A high unemployment rate causes economic problems in meeting basic needs, which ultimately encourages people to cut corners by performing acts of kindness to meet their basic needs. As a result, the high number of unemployed in Indonesia will have an impact on society and the state, and will almost certainly increase the crime rate.

4.5. The Effect of Population Density on Criminality

The findings indicated that, between 2012 and 2020, Indonesia's crime rate was negatively and significantly impacted by population density. These results contradict those of Browning et al. (2010) who claim that population density reduces crime. They claim that this is because a high level of population density increases the likelihood that a person who wants to commit a crime will

encounter potential victims because of the high volume of traffic along the road. These results support the claim made by Sichor et al. (1980) that overcrowding has a detrimental impact on criminality. This is so that residents of these neighborhoods can feel secure against crime. Densely populated neighborhoods will also have tighter security controls and supervision. Because it is considered safer than densely populated neighborhoods, criminals will feel more free to carry out their actions in a quiet environment without having to be overly vigilant. According to Edwart and Azhar (2019), the population density in urban areas will have more heterogeneous job vacancies, implying that the number of people who are productive at work will outnumber those who are not. As a result, the residents of the area have few opportunities to commit criminal acts.

4.6. The Effect of Internet Access on Criminality

The findings revealed that internet access had a negative and significant impact on crime in Indonesia from 2012 to 2020. These findings are consistent with those of Bhuller et al. (2013) and Reisig and Lloyd (2009), who found that internet access has a negative impact on criminality. With increased internet access, information on crimes and hoaxes will become more widely available. As a result, the public can be more vigilant in responding to criminal acts that may occur to them in the future. According to Bhuller et al. (2013)'s findings in his study on broadband internet use in Norway, internet use is associated with increased reporting, cases, allegations, and sentencing of sex crimes due to society's increased consumption of pornographic content. Because of how quickly information spreads, criminals will also be more watchful in how they carry out their activities. The impact of internet access can be seen in contemporary society, as seen, for instance, in the rational and usually attentive behavior of Indonesian online shoppers prior to transactional transactions (Khusaini et al., 2019). This can serve as evidence for the idea that shrewd internet users can easily defeat fraud and other illegal cases.

5. CONCLUSION

According to the study's findings, (1) unemployment has a positive and significant effect on the number of crimes; (2) overcrowding and internet access have a negative and significant effect on the number of crimes; and (3) gini ratio, per capita income, and poverty have no effect on crime in Indonesia between 2012 and 2020. These findings imply policies such as (1) the government providing learning facilities aimed at improving skills, (2) counseling on family planning programs, and (3) equitable development of digital infrastructure aimed at improving internet access quality.

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