Poverty in the Indonesia-Malaysia border province (case study in West Kalimantan Province)

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Abstract

This study aims to analyze the factors determining poverty in the Indonesia-Malaysia border province of West Kalimantan. Data were obtained from Statistics Indonesia (BPS) of West Kalimantan Province. From 2010 to 2019, panel data of regencies/cities in West Kalimantan were analyzed quantitatively. The results showed that the Random Equation Model (REM) using the GLS method was more appropriate for examining the impact of poverty in West Kalimantan. The study result found that Gross Regional Domestic Product, unemployment rate, and population density significantly affect poverty.

Keywords: *Economic growth, GRDP, Population density, Poverty, Unemployment*

JEL Classification: O11, O47, I31

INTRODUCTION

Poverty is an economic circumstance in which one cannot fulfill their basic needs for food and non-food items. It is referred to as the 'basic need approach' (Khomsan et al., 2015). Statistics Indonesia (BPS) employs this notion as an instrument for measuring the poverty rate in Indonesia. Poor individuals have a monthly per capita expenditure less than the poverty line. The poverty line is determined by the amount of money (in rupiah) spent per month on food needs (2100 kcal/capita/day) and non-food needs (housing, goods, and services, clothing, durable goods such as brooms and scissors, taxes and insurance, as well as party and ceremonial expenditures) (Badan Pusat Statistik Provinsi Kalimantan Barat, 2020).

Due to Indonesia's high poverty rate, poverty is one of the country's main challenges that must be addressed. Moreover, Indonesia shares direct borders with neighboring countries such as Malaysia, Brunei Darussalam, Papua New Guinea, and Timor Leste. Malaysia is one of the countries frequently seen as a point of comparison based on its welfare level. According to World Data Lab (2018), Indonesia ranked second-highest, with a 5.1% extreme poverty rate. In contrast to Malaysia, which came

in second last with a 0% extreme poverty rate. It may undoubtedly be one of the triggers of socioeconomic inequality, notably among those residing in areas bordering Malaysia, such as provinces on the Borneo island.

According to the report, the poor population in West Kalimantan Province fell from 8.48% to 7.28% between September 2011 and September 2019. However, compared to other provinces directly bordering Malaysia, the proportion in 2019 turned out to be the highest. East Kalimantan had a poverty rate of 5.91%, while North Kalimantan had a rate of 6.49% (Badan Pusat Statistik Provinsi Kalimantan Barat, 2020).

Furthermore, as mentioned in Rencana Pembangunan Jangka Menengah Daerah (RPJMD) Provinsi Kalimantan Barat 2018-2023, the poverty rate target was not met in 2019. It is also worth noting that the poverty rate refers to the overall rate in 14 regencies/cities in West Kalimantan, which ranges from 4% to 13% (Pemerintah Provinsi Kalimantan Barat, 2019). The disparity in poverty rates begs the issue of what variables influence it and what exactly is at the root of the problem. These questions are critical considerations while formulating appropriate policies to address poverty.

In China, it was discovered that population density is the root of poverty; thus, the government implemented a residential development policy and livelihood resources to alleviate the problem. People competed for access to livelihood sources in their area as the population grew. They are racing about looking for jobs. Nonetheless, some intriguing findings suggest that population density influences infrastructure development, production output, production gains, and economic growth (Frederiksen, 1981; Ciccone & Hall, 1996; Rahman, 2017; Maguire-Jack et al., 2015; Yang et al., 2020).

If, on the other hand, unemployment and economic growth are found relevant, policies might be oriented toward generating the greatest number of job opportunities by boosting investment in various economic sectors. Unemployment is considered a difficult issue to overcome. Unemployed individuals experience a lower quality of life and are more likely to suffer from psychological distress. Aside from creating job opportunities, other measures such as improving their quality of life via advocate education must be implemented for them to survive (Ding et al., 2020; Prasetyoningrum & Sukmawati, 2018; Sari et al., 2020; Mankiw, 2013).

Another variable, such as Gross Regional Domestic Product (GRDP), also significantly affects poverty (Puspita, 2015). Some regions' declining GRDP is perceived as affecting income and the quality of household consumption. The public will change its consumption pattern by purchasing the cheapest goods. Such circumstances indicate a lack of prosperity in the community. There's also the Human Development Index (HDI) variable which consists of three interconnected indicators: education, health, and income. The relationships between the three indicators are as follows: First, higher education is often linked to higher wages; second, higher wages will increase purchasing power or income; third, when people's purchasing power increases, it indicates that the economy is growing rapidly; and fourth, when education and the economy are both good, it will have an impact on good well-being in the community health. Prasetyoningrum & Sukmawati (2018) similarly found the HDI variable to influence poverty substantially. According to economists and sociologists, those variables have certain implications. For example, if an economic growth variable

has no substantial influence on poverty reduction, it indicates that income disparity exists in the community. This circumstance might arise as a result of inappropriate policies. As a result, society experiences absolute poverty.

In terms of geographical aspects, West Kalimantan has 14 regencies/cities, 5 of which border Malaysia directly, namely Kapuas Hulu, Sintang, Sanggau, Bengkayang and Sambas. From the economic and social standpoint, the location of these areas should benefit West Kalimantan Province, particularly in terms of poverty reduction. Land boundaries of 966 km in length, social and economic networks with heterophilic and homophilic characteristics, and a wide range of livelihood options should reduce unemployment (Agustinus, 2016b; Agustinus, 2016a).

The authors believe that analyzing the factors influencing poverty is critical based on the description above. When such influential factors are identified, it is hoped that effective policies to alleviate poverty may be formulated, particularly in West Kalimantan Province, which borders Malaysia.

METHODS

This study used panel data from 14 regencies/cities in West Kalimantan Province to examine poverty conditions from 2010 to 2019. The total number of data examined was 700, all of which were obtained from Statistics Indonesia. The data include poverty rate, Human Development Index (HDI) value, economic growth, Gross Regional Domestic Product (GRDP), unemployment rate, and population density.

Panel Data Regression was used to look at the relationship pattern of HDI, economic growth, GRDP, unemployment rate, and population density to the poverty rate in West Kalimantan. The equation model can be seen as follows:

$$Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{5it} + U_{it} \quad \text{.....(1)}$$

Whereas::

Y	:	The poverty rate of regencies/cities in West Kalimantan
X_1	:	HDI value of regencies/cities in West Kalimantan
X_2	:	The economic growth rate of regencies/cities in West Kalimantan
X_3	:	GRDP of regencies/cities in West Kalimantan
X_4	:	The unemployment rate of regencies/cities in West Kalimantan
X_5	:	Population density of regencies/cities in West Kalimantan
α	:	Intercept
$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$	:	The regression coefficient of independent variables
U_{it}	:	Error component in time *t* for cross-section unit *i*
i	:	1,2,3,…14 (cross-section data of regencies/cities in West Kalimantan
t	:	1,2,3…..10 (time series data, period 2010-2019)

Common Effect Model (CEM), Fixed Effect Model (FEM), Random Effect Model (REM) with General Least Square (GLS) method are used to select the regression model. Based on the three approaches, there are steps taken to decide the best model to use, namely: 1) Chow Test, to decide whether FEM is better than CEM; 2) Hausman Test, to decide whether FEM is better than REM; and 3) Lagrange Multiplier

Test, to decide whether CEM is better than REM. A good regression model should become the best linear unbiased estimator. Next, the classical assumption tests were performed, including normality, heteroscedasticity, multicollinearity, and autocorrelation. Furthermore, statistical tests were carried out to see the influence of poverty factors, including coefficient of determination test, F-test, and t-test.

RESULTS AND DISCUSSION

Results

In 2019, the poverty rate of West Kalimantan Province was lower (7.28%) compared to Indonesia's poverty rate (9.41%). However, the problem of poverty must still be controlled to reduce the social inequality of the people in the Indonesia-Malaysia border areas. Several variables can serve as benchmarks in controlling West Kalimantan's poverty rate, HDI, economic growth rate, GRDP, unemployment rate, and population density.

According to BPS (2021), the poverty rate of West Kalimantan has been fluctuating in the period 2015-2021. It hit the 8% mark in 2016, but it fell in 2021 (7.15%). It is also in line with its economic growth rate, which fluctuated rises and falls with the highest rate in 2017 (5.17%) and the lowest in 2015 (4.88%). Meanwhile, the highest unemployment rate was recorded in 2021 (5.82%), and the lowest rate was in 2018 (4.18%). In contrast to the previous three variables, West Kalimantan's HDI value tends to increase every year. As of 2021, its HDI value stands at 67.90. Each of these variables certainly has a different influence on the poverty rate.

To determine the best model, a selection of appropriate panel data regression models for poverty, HDI, economic growth rate, unemployment rate, and population density variables was carried out. The Chow test and Hausman test performed the selection. The results of the model selection test are shown in Table 1.

Table 1. Regression model selection test results

Testing	Criteria	p-value	Accepted Model
Chow Test	H_0 : CEM H_1 : FEM	0.9979	H_0 : accepted H_1 : rejected *CEM*
Hausman Test	H_0 : REM H_1 : FEM	0.9923	H_0 : accepted H_1 : rejected *REM*
Langrange Multiplier Test	H_0 : CEM H_1 : REM	0.0000	H_0 : rejected H_1 : accepted *REM*

Based on the Chow Test, Hausman Test, and Lagrange Multiplier Test results, the best panel data regression model is the Random Effect Model (REM) using the General Least Square (GLS) method. The panel data regression model is as follows:

$$Y_{it} = 1{,}862891 + 0{,}520048X_{1it} + 0{,}187321X_{2it} - 0{,}107779X_{3it} + -0{,}100092X_{4it} - 0{,}149837X_{5it} + 0{,}5967 \quad \ldots\ldots(2)$$

After selecting the best regression model, classical assumption testing is performed, i.e., by heteroscedasticity test, multicollinearity test, and autocorrelation test.

The results show a Jarque-Bera value of 0.05284 at the 0.05 (α) significance level. The J-B value is 0.05284 > = α = 5% (0.05) and it indicates that the data is normally distributed. Furthermore, the heteroscedasticity test aims to see the residuals of regression have changing variance. The test results using the Glejser test method are shown in Table 2.

Table 2. Heteroscedasticity test using Glejser Test method results

Variable	p-value	Decision
Log(X1)	0.3549	Not significant
Log(X2)	0.3569	Not significant
Log(X3)	0.6761	Not significant
Log(X4)	0.4971	Not significant
Log(X5)	0.1840	Not significant

The results of the heteroscedasticity test show that the p-value of X1, X2, X3, X4, and X5 are greater than α (0.05). So there is no heteroscedasticity. A multicollinearity test is performed to see whether the regression model has intercorrelation or collinearity between independent variables. The results of the test are shown in Table 3.

Table 3. Multicollinearity test results

	LOG(X1)	LOG(X2)	LOG(X3)	LOG(X4)	LOG(X5)
LOG(X1)	1.000000	0.152718	0.028893	0.338072	0.637915
LOG(X2)	0.152718	1.000000	0.006594	0.039722	0.127262
LOG(X3)	0.028893	0.006594	1.000000	0.304362	0.337141
LOG(X4)	0.338072	0.039722	0.304362	1.000000	0.623062
LOG(X5)	0.637915	0.127262	0.337141	0.623062	1.000000

The results show no coefficient with magnitudes of .80 or higher (r > 0.8), so multicollinearity in the model is not detected.

Autocorrelation in panel data usually occurs in OLS equations due to estimation errors (underestimate). It can be fixed using the General Least Square (GLS). The estimation of the selected panel data used REM with the GLS method, and the autocorrelation was solved.

The classical assumption test results mean that the regression model is free from econometric problems. Then, statistical tests were carried out to determine the factors that influence the poverty rate in West Kalimantan Province. The test includes the coefficient of determination test, statistical F test, and statistical t-test.

Next, the regression model has no econometric issues in the classical assumption tests. Then, statistical tests were carried out to determine the factors affecting the poverty rate in West Kalimantan, including the coefficient of determination test, F-test, and t-test.

1. *Coefficient of Determination Test (Adjusted R^2)*

   The test can measure the capability of a model in describing the variation of its dependent variables. The results show an R^2 value of 0.4033. It means that poverty in West Kalimantan can be explained by HDI, Economic Growth Rate, GRDP, Unemployment Rate, and Population Density of 40.33%. Meanwhile, the remaining 59.67% can be explained by other variables outside this study.

2. *F-Test*

   The results show the value of F count (17.1724) > F table (2.29); therefore, H0 is rejected, and H1 is accepted. It means that the independent variables (HDI, Economic Growth Rate, GRDP, Unemployment Rate, and Population Density) simultaneously affect the dependent variable (Poverty Rate in West Kalimantan).

3. *t-Test*

   Table 4 shows some significant variables in the regression model. The results show two independent variables with a t-statistic > a significant level of α=0.5%, namely HDI and Economic Growth Rate. While GRDP, Unemployment Rate, and Population Density have a significant effect on the Poverty Rate in West Kalimantan.

Table 4. T-statistic test results

Variable	t-statistic	Probabilitas	t-table	Decision (α = 5%)
LogX1	0,869443	0,3862	1,65694	Not significant
LogX2	1,449740	0,1496	1,65694	Not significant
LogX3	-2,158777	0,0327	1,65694	Significant
LogX4	1,830658	0,0695	1,65694	Significant
LogX5	-6,282202	0,0000	1,65694	Significant

Discussion

HDI on poverty

The Human Development Index (HDI) is the benchmark of the UNDP (United Nations Development Programme). However, the Human Development benchmarks have undergone several changes in recent years. They were tailored to each country's needs, including Indonesia's. For example, Mangaraj & Aparajita (2020) modified the concept of HDI to GHDI and GHDIR. Both models have flaws since the degree of equality is not considered. Therefore, this dimension is included so that the benchmarks of human development can be integrated. Meanwhile, Ghana has its indicator known as the Multidimensional Poverty Index (Global MPI). The study of Masset & García-Hombrados (2021) reported that the index made it easier for the Ghanaian government to alleviate poverty.

Based on the results of panel data regression, the coefficient value of West Kalimantan's HDI is 0.520048. It indicates that for every one-unit increase in the HDI, people living in poverty rise by 0.52%. It contradicts the findings of Prasetyoningrum & Sukmawati (2018), who found that HDI had a favorable influence on poverty. It suggests that the policies to raise the HDI in West Kalimantan have failed to alleviate poverty.

Based on the findings, the Government of West Kalimantan Province must collaborate with the Central Government to adopt Ghana's policy by launching Millennium Village *(Desa Millenium)*. This initiative aims to improve sectors classified as "urgent" and influence poverty alleviation. The sectors include agriculture, education, health, infrastructure, and business development. Its implementation in West Kalimantan must be tailored to the HDI indicator (Long et al., 2020).

Economic growth rate on poverty

Economic growth and poverty rates are important indicators of a region's development success. Based on the estimation results, Economic Growth Rate has a

value of 0.187321. It indicates that if economic growth rises by 1%, the poverty rates will rise by 0.18%. This finding is in line with Perera & Lee (2013), which revealed that an increase in the poverty rate is followed by economic growth across Asia. Erlando et al. (2020), on the other hand, concluded that economic growth has a negative impact on poverty.

In West Kalimantan, economic growth has no significant effect on poverty. It is due to the huge income inequality across regencies/cities in this province and the low quality of institutions and financial development management (Ahmed et al., 2021). Kulkarni & Gaiha (2020) also emphasized that the larger the income disparity, the higher the poverty rate. Therefore, efforts to address inequality should be prioritized before improving economic growth. Improving the efficient movement of commodities across regions would be a more practical approach. It is, then, mandatory to build major infrastructures such as seaports, roadways, terminals, and airports.

Another assumption is that because economic growth is concentrated in cities, it does not considerably relieve poverty. People in rural areas continue to live in absolute poverty. There are a finite number of human resources capable of managing the village's potential. Therefore, fostering good human resources may be considered as a means of reducing poverty (Ahmed et al., 2021; Chen et al.,2016; Adeleye et al.,2020; Moore & Donaldson, 2016).

GRDP on poverty

The sources of economic activity in West Kalimantan are highly diversified. Agricultural, mining, fishing, forestry, plantation, and service industries have historically sustained the province's economic, social, and even cultural activities. GRDP, as an indicator of West Kalimantan's ability to generate added value substantially, lowers its poverty rate. It is shown by its coefficient value of -0.107779 and a significance of 0.0327. It indicates that if the GRDP rises by 1 billion rupiahs, the poverty rate will fall by 0.10%. These findings are consistent with Puspita (2015), which found that GRDP had a significant negative effect on poverty. It is a cue for the government to continue increasing regional GRDP to alleviate poverty.

Measures taken in Singapore and Finland can be seen as models for boosting the added value of economic activity sources. They are concentrating their efforts on advancing and utilizing information technology and encouraging their country to lead the service industry. As a result, the residents of both countries have a better standard of living than those of other countries (Watanabe et al., 2018; Ferreira et al., 2020). In the digitalization era, the government of West Kalimantan Province may adopt such actions as well. The establishment of internet infrastructure in rural areas should be accelerated. The purpose is for information on economic activity sources in agriculture, fishery, and forestry to be widely disseminated so that people in rural areas may access larger market opportunities.

Unemployment on poverty

Individuals continue to improve their capacity to get a job. However, the current job opportunities cannot accommodate a large number of workers. Like the rest of the world, West Kalimantan is experiencing rapid population growth. The estimation results of the unemployment variable show a value of 0.100092. It indicates that a 0.10% increase in the poverty rate will result in a 1% increase in unemployment. The findings

of this study are also supported by Puspita (2015) and reinforced by Prasetyoningrum & Sukmawati (2018), who stated that the unemployment variable strongly drives a significant increase in the poverty rate.

Kiaušienė (2015) attempted to examine it from a gender perspective. She researched the female unemployment rate, and it was shown that unemployed women in the European Union had a greater risk of poverty than unemployed men. In West Kalimantan, the women's unemployment rate climbed in 2018. It is consistent with the study's findings, which indicated that as unemployment rises, so will poverty. One explanation is that measures such as introducing new entrepreneurs have failed (Danson et al., 2021).

To address the problem of unemployment in West Kalimantan, an alternative is to make agriculture the prima donna sector, which will absorb new employees. The agriculture sector's contribution to West Kalimantan's GRDP has reached 22% of the total GRDP. However, this does not negate the importance of other sectors. According to LI et al. (2021), working outside the agriculture sector can help to alleviate poverty in rural areas.

Furthermore, the practice of granting unemployment benefits during the Covid-19 pandemic has to be reviewed. According to Martins (2021), after providing benefits was implemented during the pandemic, the unemployment rate increased by 10%. Therefore, initiatives to provide job opportunities in both urban and rural areas must be prioritized. Income tax regulations must also be reconsidered because the poor are typically in debt and unable to pay the tax; thus, it is worsening poverty circumstances (Pac et al., 2020).

Population density on poverty

Based on the estimation results, the population density variable has a value of -0.149837. It indicates that if the percentage of the people living in poverty falls by 0.149 percent, the population density climbs by 1 person/km^2. It is necessary to develop policies to increase population density in an area. It is doable since West Kalimantan covers 7.53% of Indonesia's total land area and has a comparatively small population of about 5 million people (Badan Pusat Statistik Provinsi Kalimantan Barat, 2020). Such a vast area has unexplored social, economic, and cultural potential. It will be valuable if it is managed to its full capacity. Local transmigration programs, for example, might be considered to adopt by the government. People in areas with high population density, such as Pontianak City and Singkawang City, might be urged to move to less populated areas like Kapuas Hulu Regency, Ketapang Regency, and Melawi Regency.

However, it should be recognized that the local transmigration program does more than simply relocate people from one place to another. It should be complemented by effective spatial planning policies for clear information on the new location and its economic potential. It is backed by the opinion of Želinský et al. (2021), which suggests that population density in an area might impact well-being if spatial planning is well-prepared. Another policy that can alleviate poverty, especially in urban areas, is to manage the flow of urbanization—especially urban residents who do not have skills and expertise because of their low education. Therefore, residents who move to cities must be aware of their presence and detect the quality of their resources. The aim is that stakeholders can stimulate appropriate policies to not become parasites in urban areas (Cobbinah et al., 2015).

Another alternative for alleviating poverty, particularly in urban areas, is to regulate the flow of urbanization. It should be focused more on the urban residents with lack skills and knowledge due to a lack of education. Therefore, the government should be aware of the presence of this type of resident and should assess their resources. The goal is to stimulate suitable policies so that these individuals do not become parasites in urban areas (Cobbinah et al., 2015).

CONCLUSION AND RECOMMENDATIONS

Conclusion

The study found that variables, namely HDI, Economic Growth Rate, GRDP, Unemployment Rate, and Population Density, simultaneously affect the poverty rate in West Kalimantan Province. The partial test findings suggest that only GRDP, Unemployment Rate, and Population Density significantly influence. In contrast, HDI and Economic Growth Rate have no significant effect on the poverty rate. It is presumably because the policies have not been implemented following the findings presented in the study. Adopting appropriate policies is expected to help reduce poverty in the province directly bordering Malaysia, particularly in West Kalimantan.

Recommendations

Poverty reduction is a critical issue that must be addressed. Therefore, to reduce it in the province close to neighboring Malaysia, and in light of the findings of the study, the stakeholders should consider 1) the development of major infrastructures such as seaports, roadways, terminals, and airports must remain a priority so that movements across regions run smoothly, 2) good human resources capable of capitalizing on the potential of the village must be prepared, particularly through advocacy education, 3) GRDP of the regions must be continuously increased, 4) internet infrastructure in rural areas must be built so that the wider community can know the potential of the village, and 5) in addition to managing the flow of urbanization and regulation spatial planning in cities and villages, the agricultural sector, which contributes significantly to GRDP, should be encouraged as a prima donna sector, particularly for the millennial generation in West Kalimantan.

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