The relationship between regional development, human development and poverty: A perspective from the Indonesian province

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ABSTRACT

Purpose: This study investigates the relationship between human development, poverty and regional economic growth. There is short-run and long-run equilibrium.

Design/Methodology/Approach: This research uses a quantitative approach with panel data from the Jambi Province National Bureau of Statistics for 2010-2022. Researchers used cointegration and Fully Modified Least Squares (FMOLS) panels to analyze research data.

Findings: The results of the study indicate that human development has a positive and significant effect on gross domestic product growth but poverty has no effect on gross domestic product growth. The results of the coefficient calculation show a negative value indicating that an increase in gross domestic product growth can reduce poverty.

Conclusion: The calculation results show the research model's short-run and long-run relationships. Each aspect of HDI has a significant effect on GRDP. Therefore, if there is an increase in HDI, it will cause an increase in GRDP.

Research Limitations and Implications: This study only uses human development and poverty variables. Future researchers should add variables that affect the region's economic growth such as unemployment, inflation, welfare, regional inequality and developing countries.

Practical Implications: The research results contribute to the recommendations of policymakers for the need to form a regional poverty reduction committee and develop regional poverty reduction strategies as the basis for mainstreaming poverty reduction, improving access and providing social service facilities such as education and health to reduce poverty and improve the welfare of Indonesian residents.

Contribution to Literature: This research can add to the literature on regional economic growth, human development and poverty regarding macroeconomic studies' short-run and long-run equilibrium.

Keywords: *Human development, Poverty, Product domestic, Regional development, Regional economic growth.*

1. INTRODUCTION

Several policies are being implementing by different countries to reduce poverty levels, economic disparities, social facilities and unemployment (Addison, Pikkarainen, Rönkkö, & Tarp, 2019; Alkire, Kanagaratnam, & Suppa, 2021). During the COVID -19 period, it impacted regional economic growth and increased unemployment and poverty in Indonesia (Rahayu & Muharam, 2021; Sholahuddin, Manullang, & Sari, 2021; Tambunan, 2021). Two significant problems faced by developing countries are economic disparities or income distribution inequality between high- and low-income groups (Nugraha, Prayitno, Situmorang, & Nasution, 2020). Developing countries face the problem of income inequality and even developed countries are inseparable from this problem (Azam & Raza, 2018; Huynh, 2022; Wang, Zhang, & Wang, 2018). The difference lies in the proportion or size of the level of inequality that occurs and the level of difficulty overcoming it, which is influenced by the area and population (Nugraha et al., 2020).

The state or policymakers can make efforts to distribute income through the implementation of economic development. This condition is related to the process of productive economic activity which causes people's per capita income to increase in the long term (Amri, 2018). Measuring income distribution based on the primary size

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such as the distribution of personal income or functional distribution describes the lowest income of the population and receives the highest income (Bilan, Mishchuk, Samoliuk, & Yurchyk, 2020; Han, Meyer, & Sullivan, 2020).

Inequality in income distribution is the result of differences in income between advanced communities and underdeveloped regions (Kuznets, 2019). The more significant the income gap, the greater the variation in income distribution that will cause income disparities (Erlando, Riyanto, & Masakazu, 2020). This situation can be avoided because there is a trickle-down effect of perfect output in which the results of national output are shared by minority groups with specific goals (Akinci, 2018; Hasan, 2021; Saunders, Naidoo, & Wong, 2022).

Per capita income is the average income of the population in a country and is obtained by dividing a country's national income by the country's total population during a specific period (BPSa, 2022). Income per capita is used to compare a country's welfare or standard of living annually (Ravallion & Chen, 2019, 2022). The average welfare of the population increases if per capita income increases (Kurniawan & Managi, 2018). Economic development is measured by equality where development that pursues growth is believed to produce various disparities (Lee & Lee, 2018). The problem of inequality such as the imbalance of power between social groups and regional economic imbalances is related to the long-term development of Indonesia (Haseeb, Suryanto, Hartani, & Jermsittiparsert, 2020; Houeninvo, 2023; Nguyen, Gan, & Hu, 2021).

Disparities in economic development are necessary at the inter-country and inter-regional levels. Disparities occur due to differences in the allocation of various economic growth factors (Kurniawan & Managi, 2018; Kuznets, 2019). In this world, there are developed and underdeveloped countries and there are also developed and underdeveloped regions within each country (Le Caous & Huarng, 2020).

Regional development is not always evenly distributed. Some regions show fast growth while other regions show slow growth and these areas do not experience the same progress due to a lack of available resources. There is a tendency for investors to choose areas that already have facilities such as infrastructure transportation, an electricity network, telecommunications, banking, insurance and a skilled workforce (Canh, Schinckus, Thanh, & Ling, 2020; Sayed & Peng, 2020). In addition, there is an imbalance in income redistribution from the central government to the regional governments. From a spatial economic perspective, regional economic development in Indonesia is not uniform giving rise to regions that can grow fast while at the same time giving rise to regions that are relatively left behind (Cahyani, Nachrowi, Hartono, & Widyawati, 2020; Topuz & Dağdemir, 2020). This different ability will result in regional economic inequality in Indonesia. This condition is generally driven by differences in resources owned by each region with a tendency for regions with adequate resources to achieve high economic growth (Amri, 2018; Erlando et al., 2020; Hasan, 2021). Based on the problems previously mentioned, it is necessary to find out how the gross regional domestic product is related to human development and poverty.

Research by Wulandari, Narmaditya, Prayitno, Ishak, and Asnan (2019) used the Vector Error Correction Model (VECM) approach with research data for the 2014-2018 period in Malang Regency. Indonesia shows that in the short term, both variables negatively relate to GRDP. However, in the long term, the human development index has a negative effect on GRDP and poverty positively affects GRDP. Pertiwi and Purnomo (2022) noted that the results of processing panel data show that Gross Regional Domestic Product does not significantly affect poverty rates or the Human Development Index in 15 regencies or cities in Lampung Province, Indonesia in the 2017-2021 period. Irawan (2022) shows a data series for Sumbawa Regency, Indonesia during 2012-2021 where the unemployment rate and the Human Development Index significantly affect poverty. However, Mustika and Nurjanah (2021) show that data for ten provinces on Sumatra Island in 2011 -2019 does not indicate a relationship between GRDP and poverty. Vitenu-Sackey and Barfi (2021) tested panel data from 170 countries showing an econometric model of the link between poverty and a country's growth during COVID-19. Meanwhile, Zhang (2019) shows that the relationship between human rights and the use of technology can increase economic growth in ASEAN countries.

However, only some studies still examine the influence of GRDP by using district and city data in provinces in Indonesia. For this reason, this study formulates the problem of how HDI and poverty are related to GRDP and the research objective is to analyze and find out the effect of HDI and poverty on GRDP. The research results can contribute to further understanding the relationship between HDI, poverty and GRDP and provide policy directions that can increase GRDP optimally.

2. LITERATURE REVIEW

2.1. Gross Regional Domestic Product (GRDP)

Gross Regional Domestic Product (GRDP) describes the level of economic activity in a region whether carried out by the public, private sector or government in a certain period so that GRDP can indirectly be used as an indicator in assessing the results of regional economic development activities as a whole that are sustainable (BPS-Jambi, 2023). Therefore, GRDP also influences economic growth, if GRDP increases then the output value of activities in a region will increase (Romhadhoni, Faizah, & Afifah, 2019).

Sustainable economic growth is an important issue to achieve a better future. Economic growth indicates an increase in the production capacity of an economy that achieves increasing national income (Juwita & Widia, 2022). In the macro analysis, the country's economic growth is measured by the balance of real national income achieved by one country (Ginevicius, Kliestik, Stasiukynas, & Suhajda, 2020). Economic growth is different from economic development. Economic growth focuses more on the rate of Gross Regional Domestic Product (GDP) without worrying about welfare whereas economic development focuses more on people's welfare (Haque, Kibria, Selim, & Smrity, 2019; Sun, Wang, Wang, & Zhang, 2019).

GRDP is one of the macroeconomic indicators that play a role in policy planning for development and evaluating the results of regional development (Rahman, Vu, & Nghiem, 2022). In the spatial economy, the economic growth rate is an indicator of the regional economic growth rate by sector to find out which sectors can change an area's economic growth (Juwita & Widia, 2022). In sectoral economic measurements, GRDP uses two price approaches: an index approach based on current prices or an index based on a predetermined constant price. An approach based on current prices shows the added value of goods or services at prices that apply each year and takes into account inflation and other factors such as the relevant economic structure. The approach based on constant prices considers the added value of goods or services at prices valid every year which is the primary reference without considering inflation or other factors such as the relevant economic structure (BPSb, 2022).

2.2. Human Development Index (HDI)

The Human Development Index (HDI) is used to determine the output of human development by considering several essential components of the quality of human life (Kuc-Czarneck, 2019; Lind, 2019; Rahmat et al., 2021). HDI is constructed through a three dimensional approach that includes a long and healthy life, knowledge and a decent life (Nainggolan, Lie, Siregar, & Nainggolan, 2022; Yin, Lepinteur, Clark, & D'ambrosio, 2023). These three dimensions are broad due to various factors related to measure aspects of the essential quality of human life (Ghifara, Iman, Wardhana, Rusgianto, & Ratnasari, 2022). To measure HDI, it uses the health dimension, life expectancy at birth, the knowledge dimension, a combination of literacy rate indicators and an average length of schooling (BPS, 2021; Jazid & Ibrahim, 2020). The measurement of the living dimension uses an indicator of the purchasing power of the people for several basic needs as measured by the average amount of spending per capita as the basis for achieving a decent life from the income they spend (UNDP, 2022).

The HDI is a comparative measurement method of life expectancy, literacy, education and living standards for all countries worldwide (BPSa, 2022). HDI is used to measure the impact of efforts to increase basic human capital capabilities; if HDI increases, it will affect economic growth and have an impact on reducing growth disparities in the economy (Rahmat et al., 2021). To make HDI, the UNDP (United Nations Development Program) completed a project empowering the economic and development team to explain the human development conditions of countries in the world called the Human Development Report (UNDP, 2022). The measurement of human development was introduced by UNDP which introduced a new idea for measuring human development worldwide. Since the annual Human Development Report (HDR) has explained how citizens can access development outcomes regarding income, health, education and so on. According to UNDP (2022), HDI measures human development achievements based on several basic quality of life components.

2.3. Poverty

 Indonesia uses a basic needs approach to measure poverty. This measurement sees poverty as an economic inability to meet basic needs in the form of food and non-food on the expenditure side (BPS, 2021). Considering the poverty measurement approach, this population has an average monthly expenditure per capita below a predetermined poverty line (Dewi, Majid, Aliasuddin, & Kassim, 2018). Poverty is related to alternative life choices that residents can make by ignoring participation in policy-making which can be used as a reference (UNDP, 2022).

According to Widarni and Bawono (2022), poverty is a situation where a person is unable to take care of himself according to the group's standard of living and is also unable to use his mental and physical strength in that group. Poverty is one of the fundamental issues that has become the center of attention for policymakers in many countries including Indonesia (Singh & Chudasama, 2020). Indonesia has implemented various policies for poverty alleviation such as reducing income distribution inequality but this still needs to be improved (Sianturi, Syafii, & Tanjung, 2021).

3. RESEARCH METHOD

This study uses the library research method whose primary object is books or other literary sources which obtain data through a literature review of books relevant to the discussion. The secondary data used in this study are time series and cross-sectional data for thirteen years from 2010-2022 in 11 urban districts in Jambi Province. This research is descriptive and quantitative. At the same time, secondary data is indirect data from various references such as articles, books, journals, several report documents and statistical data.

Researchers use panel data to provide more information on more variables, reduce collinearity problems between observed variables, provide more degrees of freedom and be more efficient. For example, researchers use the cointegration and Fully Modified Least Squares (FMOLS) panels. The cointegration test is a research model to test whether the time series data is stationary. The test assesses stationary time series data, a linear combination of variables that becomes the structure of the variance of non-stationary time series data. The author refers to several researchers who have conducted cointegration tests such as Abid et al. (2020); Adeel-Farooq, Bakar, and Raji (2020); Osabohien, Awolola, Matthew, Itua, and Elomien (2020) and Onakoya, Johnson, and Ogundajo (2019).

The FMOLS approach is used to estimate the long-term relationship in equilibrium, FMOLS data analysis is used to see the impact of the independent component on the dependent component and to help overcome non-stationary data with the following equation:

$$LOG\ (GRDP)\ =\ \beta_1\ +\ \beta\ LOG\ (HDI)_{it}\ +\ \beta\ LOG\ (POVERTY)_{it}\ +\ \varepsilon_{it}$$

Where Log GRDP is the log of GRDP, β is the regression constant, HDI is the human development index, poverty is the poverty rate, ε is an error, i is cross-sectional data and t is time series data.

4. RESULTS AND DISCUSSION

Before performing the test, it is necessary to test the quality of the time series data whether the data is stationary or not. They are testing for data stationarity to ensure that there are no estimation results that lead to spurious regression. The results of the data stationarity test using the unit root test. The results of the unit root test are presented in Table 1.

Table 1 shows that all research variables such as the GRDP variable have stationary data with a p-value of 0.0001 at the level using the stationary test criteria of Augmented Dickey-Fuller, ADF - Fisher Chi-square. In addition, the HDI variable has stationary data with a p-value of 0.0030 at the level and the poverty variable has a p-value of 0.0002 at the level test. After ensuring the research variables have stationary data, we conducted the panel integration Johansen test to determine which model has a reasonable estimate. The Johansen cointegration panel test results show the estimation results for all three possibilities with significant probability.

Table 1. Estimated results of unit root test calculations.

Root test at level			
Variables	**Statistic**	**Prob**	**Conclusion**
GRDP	56.206	0.0001	Stationary
HDI	44.595	0.003	Stationary
Poverty	53.079	0.0002	Stationary

Table 2. Results of Johansen cointegration panel testing.

No	Hypothesized no. of CE(s)	Fisher stat.* (From trace test)	Prob.	Fisher stat.* (From max-eigen test)	Prob.
1	None	49.32	0.000	49.32	0.000
2	At most 1	100.4	0.000	100.4	0.000
3	At most 2	2897.0	0.000	2897.0	0.000

Note: * Probabilities are computed using the asymptotic Chi-square distribution.

From the panel cointegration test results shown in Table 2, the p-value is less than 5% which means that the panel data equation has cointegration to produce a long-run equilibrium estimate. The trace test and max-Eigen value indicate the existence of a long-run relationship with a p-value of less than 5%. We use the FMOLS approach to obtain good estimation results. We tested the error or residual values from the previous FMOLS results by looking at the first difference (residloggrdp-1) to find out the short-run relationship.

Table 3. The result of fully modified least squares (FMOLS).

Variable	Coefficient	Std. error	t-statistic	Prob.
Long-run relationship				
LOGHDI	7.210	3.382	2.131	0.035
LOGPOVERTY	-0.021	0.206	-0.102	0.918
R-squared	0.946	Mean dep. var.	7.013	S.E. of regr. =
Adjusted R-squared	0.935	S.D. dep. var.	0.239	0.060
Short-run relationship				
LOGHDI	5.195	2.125862	2.443	0.016
LOGPOVERTY	-0.110	0.177022	-0.623	0.534
RESIDLOGGRDP (-1)	0.291	0.060743	4.802	0.000
R-squared	0.979	Mean dep. var.	7.044	S.E. of regr. =
Adjusted R-squared	0.974	S.D. dep. var.	0.226	0.036

Table 3 show the probability for the long-run relationship of the HDI variable to be significant at the 5% error level which means that this variable is significant. However, the poverty variable is not proven significant referring to a p-value greater than 5% namely 0.9184. The HDI variable has a significant effect on GRDP and the poverty variable has no significant effect on GRDP. However, if we examine further, the calculation results show that the coefficient of the poverty variable is negative which indicates that an increase in GRDP can reduce poverty. Similarly, the results of calculations regarding the relationship between research variables show that short-term relationships also show no difference from the results of long-term relationship estimates. The calculation results show that the short-term relationship is stronger than the long-term relationship. The calculation results indicate that the balance level of the short-run relationship is more robust and decreases at the balance level of the long-run relationship. The R-square results for short-run relationships are greater than the value of 0.9797 compared to the R-square results for long-run relationships namely 0.9469. The results of the partial test analysis show that only the HDI variable significantly influences the dependent variable.

The analysis results show that the HDI variable has a probability value of 0.0353. At a significance level of 5%, the HDI variable significantly influences the GRDP of Jambi Province. The regression coefficient value of 0.0907 indicates that the HDI positively affects the GRDP of Jambi Province. If the HDI increases by 1%, it will increase Jambi Province's GRDP by 7.2100%.

The effect of poverty on the GRDP of Jambi Province shows that poverty has a probability of 0.9184. At a significance level of 5%, the individual poverty variable is insignificant in influencing Jambi Province's GRDP. The regression coefficient value of -0.0211 indicates that poverty does not affect Jambi Province's GRDP. However, the coefficient value is negative indicating an increase in GRDP and a decrease in poverty.

The adjusted R-squared is 0.9356 for long-run relationships and 0.9740 for short-run relationships. This result means that the contribution of all independent variables to explain the dependent variable is 93.56% for long-run relationships and 97.40% for short-run relationships. Other variables outside the model explain the rest. The panel data analysis shows that the HDI significantly influences the district or city GRDP in Jambi Province. Therefore, it is not proven that poverty affects the GRDP in Jambi Province.

The study results indicate that the development of HDI can increase GRDP. The research results indicate that human development is a process to provide many choices owned by humans including only income which can improve aspects of people's lives by obtaining income, health, education and so on. With sufficient income, the community can provide more life choices to fulfill a decent quality of life (Sianturi et al., 2021). The availability, quality and costs of education, educational facilities and opportunities to obtain an education are achievements that can increase regional economic growth (Verazulianti, Dawood, & Zulham, 2021). Availability of access to health and quality of essential health services, reproductive services, distance to health service facilities and costs

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of treatment and care are some of the indicators used to determine the level of community poverty (Miar & Greece, 2020).

The community can see the poverty level from the food they consume which indicates the adequacy of the food they consume and the quality of the food they choose (Yalina, Kartika, & Yudha, 2020). This food shows the availability of food stocks, the calorie intake of the poor and nutrition (Arif, Isdijoso, Fatah, & Tamyis, 2020). Limited access to work and business opportunities, the lack of protection for owned business assets, different wages or salaries and job security especially for women and underage workers, indicate poverty.

Some indices include limited access to housing and sanitation services, healthy and livable homes and healthy and decent residential environments. As well as access to clean water, control of water resources and low quality of water. These indicate community poverty (Laurens & Putra, 2020).

Ownership and control of land for farmers is an indication of poverty in society (Kurnianto, Rakhmasari, Ikhsan, Apriyanto, & Nurdin, 2018).

The causes of poverty are complex such as globalization, conditions that give birth to winning and losing countries. The winners are generally developed countries while developing countries are often increasingly marginalized by competition and the free market which is a prerequisite for globalization in which developing countries are marginalized, so the amount of poverty in developing countries is far greater than in developed countries (Schröder, Lemille, & Desmond, 2020). Moreover, the development pattern applied has given rise to several forms of poverty such as rural poverty which is the condition of rural areas experiencing poverty due to a development process that marginalizes rural areas and urban poverty, namely the condition of poverty caused by the nature and speed of economic growth where not all groups benefit (Ivanic & Martin, 2018).

The social conditions of society do not benefit some groups in society. For example, poverty experienced by women, children   and minority groups is caused by unfavorable social conditions. The social conditions referred to gender bias, discrimination or economic exploitation (Brady, 2019). External factors that cause poverty are conflict, natural disasters, environmental damage   and a   high population. These factors lead to the emergence of poverty in society (Widarni & Bawono, 2022). The study results indicate that human development and poverty reduction can increase the GRDP of Jambi Province, Indonesia.

5. CONCLUSION, RECOMMENDATIONS AND LIMITATIONS
Each aspect of HDI has a significant influence on GRDP. If there is an increase in HDI, it will cause an increase in GRDP. The HDI is a reference used to look at human development quantitatively, if the HDI increases, it means that people's welfare will increase. On the other hand, the poverty aspect has no effect on the GRDP. However, the coefficient results show a negative value indicating that a decrease in poverty accompanies an increase in GRDP. Therefore, it is necessary to eradicate poverty before poverty reduction can contribute to GRDP.

The authors recommend that the regional governments of Jambi Province and district or city governments in Jambi Province form a regional poverty reduction committee to develop regional poverty reduction strategies as the basis for mainstreaming poverty reduction in Jambi Province and encourage social activities in overcoming poverty. The implications of the research results reducing the poverty rate by developing human resources both in quantity and quality. Providing adequate access and facilities in aspects of social services such as educational facilities and access to essential health and nutrition services can be one of the top priorities of local and city governments. It is no less important to create a comprehensive public policy strategy in order to reduce the level of poverty and provide good welfare for residents of regions and cities in Indonesia.

This research still has limitations because the research variables only use human development and poverty. Further researchers can add research variables that impact economic growth in regions such as unemployment, inflation, welfare, regional disparities and developing countries.

CONFLICT OF INTEREST
The authors declare that they have no competing interests.

AUTHORS' CONTRIBUTIONS

Both authors contributed equally to the conception and design of the study.

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