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Poverty statistics of South Sulawesi Province based on Human Development Index and GRDP using panel data

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ABSTRACT

This study examines the impact of Human Development Index (HDI) and Gross Regional Domestic Product (GRDP) on poverty in South Sulawesi Province using quantitative methods with multiple regression analysis techniques and panel data from 24 Districts/Cities. Results from SPSS version 26 indicate that HDI insignificantly affects poverty ($p = 0.413$, $t = 0.821$, $\beta = 1.523$), while GRDP significantly influences poverty ($p = 0.000$, $t = 5.441$, $\beta = 0.978$). These findings suggest that policymakers should consider GRDP growth to alleviate poverty, rather than relying solely on HDI. This research provides valuable insights for the South Sulawesi government to address poverty based on income levels, as reported by the South Sulawesi Central Bureau of Statistics, and to monitor HDI and GRDP trends annually.

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1. INTRODUCTION

Poverty represents an ongoing challenge, extending beyond mere economic incapacity to encompass the inability to secure basic rights and equitable treatment in society(Thomas 2017). According to BAPPENAS (2004), poverty is defined as a condition where a person or group of people, men and women, are unable to fulfill their basic rights to maintain and develop a dignified life. These basic rights include the fulfillment of food, health, education, employment, housing, clean water, land, natural resources, the environment, security from the treatment or threat of violence and the right to participate in the social environment(Young 2008). The ramifications of poverty are diverse, impacting both societal well-being and national progress(Daw et al. 2011). High costs associated with poverty mitigation efforts can impede economic development, compounded by the low purchasing power of the impoverished, which reverberates through various social strata.

Numerous factors contribute to poverty, including structural inequities such as structural, stemming from societal systems that favor certain segments while marginalizing others(Thomas 2017). This imbalance perpetuates disparities across economic, social, political, and cultural spheres, hindering skill development, stifling creativity, and limiting community involvement in developmental endeavors(Saaida and Saaidah 2023). Cultural poverty manifests as a mindset or cultural norms that obstruct progress, sometimes paradoxically escalating with increased poverty alleviation efforts(Eegunlusi 2016).

Developing nations face formidable hurdles in poverty eradication, with higher unemployment rates compared to developed counterparts and a technological gap favoring the latter(Canagarajah and Sethuraman 2001). Within the framework of population science, Prathama and Mandala (2008) define the workforce as individuals actively seeking employment within the 15-64 age bracket. However, not all within this demographic are counted as part of the labor force, underscoring the complex dynamics of employment and education(Fan 2002).

Poverty is a pervasive issue affecting both developed and developing nations(Godo 2005). As a developing country, poverty is one of the major issues in the Indonesian economy, as if it is a "homework" that cannot be resolved(Musnandar 2014). The government's efforts to solve the problem of poverty have actually been taken in various ways, ranging from capital or cash assistance programmes to the poor to transmigration programmes(Nyberg–Sørensen, Hear, and Engberg–Pedersen 2002). In the context of Indonesia's persistent socioeconomic challenges, exemplified by high poverty rates, South Sulawesi province stands as a pertinent case study, offering a more in-depth understanding of the dynamics of poverty at the local scale(Idrus 2022).

Table 1. Poverty Line in South Sulawesi

District/City	**Poverty Line (IDR/Capita/Month) by District/City in South Sulawesi (IDR/Capita/Month)**									
	2013	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Kepulauan Selayar	261261	276769	286032	296540	310978	348608	370380	396822	406732	430976
Bantaeng	249131	260236	272703	274318	284108	310753	330161	351180	369022	390040
Jeneponto	200302	209080	217595	223408	234286	260263	309357	340890	363342	394116
Takalar	265921	277413	291408	302113	315702	356319	359883	366453	374407	384299
Gowa	253415	262202	278538	286537	299721	335989	356973	364378	380564	399062
Sinjai	278068	290592	306328	316428	333002	365503	385820	390917	408435	429222
Maros	215481	222751	231732	240245	250551	281301	294916	329819	352490	374226
Pangkep	278520	286937	307717	336579	348726	376749	405944	414324	424637	450275
Barru	235875	243054	251700	256549	268367	300219	322958	358061	368096	389613
Bone	246303	253904	263210	280316	289371	307904	322248	337047	351924	368150
Soppeng	233943	244415	252392	260552	272555	309076	325422	345009	360177	380513
Wajo	202666	207084	213164	220192	225936	253457	297546	315455	341484	365650
Sidrap	238194	244212	253164	258821	264376	297121	311017	350765	361181	375022
Pinrang	235406	242303	255135	271301	276558	299332	312800	349452	360591	383134
Enrekang	221717	228150	234897	250163	256054	280746	294349	336346	345892	366808
Luwu	235269	244643	258472	275971	283653	312674	331667	338731	352147	371669
Tana Toraja	229799	239157	252549	271804	281195	305722	318911	347539	359925	381015
Luwu Utara	217981	226762	238838	251452	261573	299570	316911	336877	350220	366753

Luwu Timur	240721	251627	265822	288081	299339	329967	342277	354669	368716	382251
Toraja Utara	231447	240729	254957	277520	289214	315478	333739	350576	371947	394158
Makassar	316276	341070	367325	393478	408827	309806	314426	328096	348611	364343
Pare-pare	288040	297197	321094	347723	366430	386545	418831	442513	475444	511081
Palopo	248270	256303	270508	281951	292685	308337	323839	363710	383471	402126
	224562	228881	246727	261056	274319	328001	348896	372716	389672	411202

Source: Badan Pusat Statistik

The average monthly income by rupiah of people categorized as poor above shows that within a period of 10 years in each Regency / City ranges from Rp. 200,000 to Rp. 500,000, the lowest figure is in 2013 in Jeneponto Regency with an income value of Rp.200,302, while the highest figure is in Makassar City in 2022 with a figure of Rp.511,081 in 2022. The low community income figures above should be a concern and consideration for local governments, academics and practitioners to interpret some of the development mistakes that have occurred(Roseland 2000).

To measure poverty, Indonesia through *Badan Pusat Statistik* (BPS) employs a basic needs approach, quantified by the Head Count Index, which identifies the number and percentage of individuals living below the poverty line(Sumarto and De Silva 2014). The Human Development Index (HDI) is a summary measure of average achievement in the key dimensions of human development, a long and healthy life, being knowledgeable and having a decent standard of living(Sumarto and De Silva 2014). An increase in the HDI can enable increased output and income in the future so that it will increase economic growth(Ranis 2004). The increase in the HDI in a region or country can be seen from the increase in the quality and quality of human resources in that area(Ranis 2004).

The increase in HDI, which is capable of reducing poverty, has been highlighted in several research findings(Jahan 2002). Ari's (2018) research found that HDI has a significant negative effect on the poverty rate with a path coefficient value of -0.71 with a significant $p < 0.001$ which is less than 5% with a standard error of 0.067. This shows that if the HDI value increases by 1%, it will reduce the poverty rate by around 0.71%, assuming other variables are considered constant(Canagarajah and Sethuraman 2001). The reduction in the poverty rate due to an increase in HDI indicates that HDI can increase human labor productivity, which will increase income to meet the needs of a decent life(Richards and Gelleny 2007).

However, economic growth does not significantly have an effect on reducing the poverty rate particularly when the probability value of 0.23 exceeds the 5% probability level(Bourguignon 2000). If economic growth increases, it will not have a significant impact on reducing the number of poor people during the period (Mukhtar & Saptono, 2019). Suliswanto's (2010) research found that from the results of panel data regression concluded that partially GRDP and HDI have a negative and significant effect on the related variable (Poverty), only different levels of significance, namely for GRDP significant at α 20% and for HDI significant at α 5%. The coefficient of determination $R2$ is 0.9928.

Based on the data regarding the average monthly income of individuals as presented above and the explanation of HDI in its influence on the poverty rate, specific problem formulations for each district/city are derived(Kusuma and Faridatussalam 2022). These include inquiries such as whether the Human Development Index significantly affects poverty in South Sulawesi Province and whether the Gross Regional Domestic Product (GRDP) similarly influences poverty levels across the province.

2. RESEARCH METHOD

This research employs a quantitative descriptive method for data analysis, involving the examination and description of quantitative data followed by the utilization of statistical tools for analysis. In this study, the variables are operationally defined as follows: Poverty, as defined by BPS, pertains to individuals falling below the poverty threshold, quantified in rupiah income units. The Human Development Index gauges a region's socio-economic progress, amalgamating aspects of education, health, and the quality of living environment, expressed as a percentage(Martín and Mendoza 2013). GRDP denotes the sustained elevation in Regional income, resulting in escalated production of goods and services, measured in rupiah units.

The data collection technique used is library research where library research is a research method to obtain information from literature related to this research, such as research journals, theses, dissertations and published books related to this research. The data collection technique used is direct recording in the form of panel data, which is a combination of cross section data and time series data, consisting of 24 districts / cities and a time interval of 10 years (Longhi 2014) originating from the South Sulawesi Central Bureau of Statistics and the number of samples from the cross section series is 240 samples. Cross-section data is data consisting of one or more variables collected at the same time(Deaton 1985). While time series data is data consisting of one or more variables collected over time. After that, the collected data will be analyzed to address the research objectives.

Panel Data Regression Analysis, a component of regression modeling, is employed to scrutinize the causal relationship between variable. Multiple linear regression analysis is conducted utilizing regression correlation to determine the final dependent variable. The formula utilized is as follows:

$$Y = f + (X1it, X2it,)$$
$$LnY = f + (X1it, LnX2it,)$$

Description:
X1 = Human Development Index
X2 = GRDP
Y = Poverty

The testing parameters include the coefficient of determination (R2) to assess the adequacy or precision of the relationship between independent and dependent variables in a regression equation. A higher R square value indicates a better explanatory ability of the independent variable for the dependent variable. An R square value above 0.5 in SPSS output is considered favorable, as the R square value ranges from 0 to 1.

Hypothesis tests are conducted to evaluate the significance of the relationship between independent and dependent variables. Hypothesis tests including partial testing (t-test) evaluates how much one explanatory variable individually elucidates the variation in the dependent variable (Kuncoro, 2012). The t-test criteria stipulates that a significance value >0.05 implies no discernible influence between the independent variable and the dependent variable, while a significance value <0.05 indicates a statistically significant influence. The hypotheses to be tested are as follows:

H_0: bi = 0. then X1, X 2, have no effect on Y.
H_a: bi ≠ 0. then X1, X2, has an effect on Y.

In hypothesis testing, there is also a simultaneous testing (F-test) that assesses whether all independent variables included in the analysis model collectively impact the dependent variable. In the F-test, if the significance value of F_{count} is >0.05, it signifies that the independent variables do not collectively impact the dependent variable. Conversely, if the F_{count} significance value is <0.05, it indicates that the independent variables together exert a statistically significant influence on the dependent variable (Ghozali, 2014). The hypothesis to be tested is as follows:

H_0: bi = 0. then the independent variable simultaneously has no effect on Y.

H_a: bi ≠ 0. then the independent variable simultaneously affects Y.

3. RESULTS AND DISCUSSIONS

3.1. Research Results

Table 2. Summary of Regression Results

Research Variables	Regression Coefficient	t-statistic	Sig.
IPM (X_1)	1.523	0.821	0.413
PDRB (X_2)	0.978	5.441	0.000
C	289287.047	24.183	0.000

F-statistic = 16.516
(F-Sig) = 0.000
**) Sig. at α = 5%; R^2 = 0.122*
N = 240

The coefficient of determination from the table above shows a figure of 0.122, which means that the total contribution value of the HDI and GRDP variables is 12.20% to Poverty in South Sulawesi Province, this figure also means that other variables still have a large effect on Poverty where the number of other variables is at 87.80%.

The significance value of HDI in the table above shows 0.413, the t-statistic value of 0.821 and the regression coefficient value of 1.523, which means that partially the HDI variable has a positive and insignificant effect on Poverty in South Sulawesi Province. The significance value of GRDP in the table above shows a figure of 0.000, a t-statistic value of 5.441 and a regression coefficient value of 0.978, which means that partially the GRDP variable has a positive and significant effect on Poverty in South Sulawesi Province. The significance value of F in the table above shows 0.000, which means that simultaneously the HDI and GRDP variables have a significant influence on Poverty in South Sulawesi Province.

3.2. Discussion

The Human Development Index is conceptually expected to be able to lead the poverty of the people of South Sulawesi based on this research has not been able to become a tool for poverty alleviation, poverty that can occur structurally and systematically in the era of global capitalism in developing countries is something that is still difficult to solve as long as the development of economic growth is not in line with the concept of welfare in question, with the panel data model used by the author presumably can be an academic reference, so that the concept of data and programmes by each region in South Sulawesi in poverty alleviation can be changed, because the level of needs, natural resources, human resources and financial resources is different in each region. The inability of the poor in each district/city has similarities and differences, for example in coastal areas that need natural resources from mountainous areas, industrial production from urban areas, distribution services, education and health services. Similarly, people in mountainous areas need protein from sea fish and some industrial products.

4. CONCLUSION

The results of this study which obtained positive and insignificant numbers in terms of the effect of HDI on poverty and the positive effect of GRDP on Poverty, while the contribution value is only at

12.20%, this means that the element of poverty through statistical glasses is not ready to fully measure the causes of poverty, the qualitative part of the causes of poverty in South Sulawesi needs to be considered in depth, GRDP which has a positive and significant value can certainly be a reference to the increase in income (Rupiah) of each Regency / City community in South Sulawesi Province. Although statistically poverty can be measured but not the happiness of the people of South Sulawesi. The results of these findings can be a reference for all groups and layers of society including the government. The level and distribution of the fulfillment of the needs of different Regency / City communities can be a reference to equity, but not necessarily to alleviate poverty.

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