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THE ROLE OF THE GOVERNMENT IN ADDRESSING POVERTY IN MALUKU: THE SYS-GMM APPROACH

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Abstract

This research aims to analyze the impact of social assistance funds, government spending in the education sector, and government spending in the health sector on the poverty rate in Maluku Province. This province has a relatively high poverty rate compared to the national average and faces structural challenges such as limited infrastructure and access to essential services. The data used is panel data from 11 regencies/cities in Maluku during the period 2017–2023. The System Generalized Method of Moments (SYS-GMM) is the analysis method to capture both short-term and long-term dynamic effects and address potential endogeneity. The estimation results show that in the short term, social assistance and education spending have a negative and significant impact on poverty, while health spending shows a significant positive impact. In the long term, social assistance and education expenditures continue to show a significant impact on reducing poverty. The convergence analysis indicates that the gap in poverty levels among districts and cities has diminished by 26.41 percent (convergence) annually, particularly in regions with elevated poverty rates, assuming other factors remain constant (ceteris paribus). These findings underscore the importance of optimizing social assistance and investing in the education sector to alleviate poverty in Maluku. In addition, there is a need for evaluation and reform in managing health sector expenditures to reach people with low incomes more effectively.

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INTRODUCTION

Poverty is a multifaceted and enduring issue at both national and regional levels; thus, addressing it necessitates a suitable and sustainable strategy (Putu et al., 2024). The primary factors contributing to the elevated poverty rate in Maluku, including social and economic disparity, inadequate infrastructure, and restricted access to education and healthcare, can be effectively addressed through specific government policies on budget allocation and social assistance programs. This highlights the potential for significant poverty reduction in island regions such as Maluku. Maluku, ranking fourth in poverty rates in Indonesia, is in urgent need of attention. In 2023, Maluku's poverty rate was 16.4 percent, surpassing the national average of 9.36 percent (BPS, 2023). The province of Maluku must prioritize initiatives aimed at poverty eradication. Despite the government's initiation of multiple projects to combat poverty, such as the One OPD (local government organization) One Assisted Village Program, the inflation control initiative, and the Cheap Food Movement (CFM) (Antara, 2023), a substantial decrease in the poverty rate within the Maluku Province has not yet been achieved.

The Theory of Endogenous Economic Growth offers a robust conceptual framework for comprehending how governmental expenditure in education and health can establish conditions conducive to sustained economic growth and poverty alleviation (Stournaras, 2016). The integration of expenditures in the education and health sectors has demonstrated more efficacy in enhancing growth outcomes. Alam et al., (2019) demonstrate that the interplay between the two fosters conditions favorable to economic growth, wherein education enhances health awareness and improved health bolsters learning capacity. This underscores the significance of a holistic approach in formulating fiscal policies aimed at alleviating poverty. Several studies have shown that government spending in the education sector has a significant impact on poverty reduction and productivity improvement. Gemmell et al., (2011) showed that fiscal policies that support spending on education produce rapid and significant effects in promoting economic growt. Fan et al., (2000) reported that every additional government spending in the education sector has a significant positive effect on reducing poverty levels in rural areas. This suggests that greater spending on education allows people to access better economic opportunities.

A crucial measure that the government can adopt to alleviate long-term poverty is investment in education. Education significantly contributes to economic growth by facilitating access to the knowledge and skills required for improved employment opportunities and enhanced income. The neglect of education inevitably leads to a nation's demise, as education serves not only as a means to enhance welfare but also plays a crucial role in preserving human identity (Pemayun & Arka, 2023). Research by Nkamnbe (2023) indicates that government expenditure on education significantly alleviates poverty, particularly through enhanced access to excellent education. Research by Carolina, (2022) and Futunanembun et al. (2023) indicates that government expenditure on education influences poverty, yet Palaneven et al. (2018) assert that the effect is positive, however small. Enhancing educational attainment helps mitigate poverty rates (Sembiring & Wenagama, 2023).

Investment in the healthcare sector has a more intricate effect on alleviating poverty. Certain studies indicate that poorly managed government expenditure in the health sector, particularly when it fails to encompass rural regions, can exacerbate poverty (Sasmaz et al., 2019). Government expenditure aimed at developing health infrastructure in remote regions and enhancing access to excellent healthcare services might alleviate the financial burden of healthcare on the impoverished and more effectively facilitate poverty reduction. Research by Futunanembun et al. (2023) and Lathifah (2022) indicates that government expenditure in the health sector positively and significantly affects poverty, whereas Palaneven et al. (2018) identified an adverse and substantial effect. Reeves et al. (2013) asserted that augmenting expenditure in the healthcare sector fosters the development of a healthier and more skilled workforce, therefore enhancing long-term productivity. This study's findings underscore the

significance of enhancing health as a key factor in alleviating poverty and fostering economic development.

Social assistance is a crucial mechanism for alleviating poverty as it can directly augment the income of impoverished families. Government expenditure on social assistance, including cash transfers and subsidy programs, substantially influences the well-being of the impoverished by enhancing their purchasing power to satisfy fundamental requirements (Zouhar et al., 2021). Nonetheless, prior research indicates varying results about the efficacy of social support in alleviating poverty. Research by Melati et al. (2021) and Ridha et al. (2021) suggests that social aid does not significantly affect poverty. However, Nabilah & Sugiri(2022) assert that it has a detrimental effect on poverty.

Maluku exhibits a poverty rate that is above the national average of Indonesia. In 2022, Maluku's poverty rate was documented at 15.97 percent, positioning it among the provinces with the most significant poverty levels in Indonesia (BPS, 2022). This signifies a considerable obstacle in alleviating poverty in this region, particularly owing to restricted access to fundamental services and economic prospects (Daud et al., 2024). Maluku confronts considerable socioeconomic inequality challenges, especially concerning access to resources, education, and healthcare. In some locations, including Maluku Barat Daya, the poverty rate surpasses 28 percent, highlighting a significant discrepancy between urban and rural communities (Rahakbauw & Ilwaru, 2020). By emphasizing the appropriate strategy, specifically community empowerment with local resources, it is anticipated that the community's welfare can be enhanced.

Specific government measures, like the Village Fund, while possibly alleviating poverty, have limited efficacy, particularly in the short term. Research indicates that, notwithstanding an augmentation in help, ineffective management can impede its efficacy (Saragi, 2021). This necessitates a comprehensive policy assessment to guarantee that the distribution of cash effectively alleviates poverty in Maluku.

Poverty in Maluku, predominantly distributed throughout the archipelago, necessitates a holistic and flexible strategy to tackle social and economic disparities. Consequently, the government's role is crucial in formulating policies and allocating the necessary budget to mitigate poverty. Numerous initiatives have been undertaken, although the persistently elevated poverty percentage signifies ongoing difficulty in tackling the issue. This research primarily investigates the extent to which social assistance funds, government expenditure on education, and government expenditure on health can mitigate the poverty rate in Maluku, along with the effectiveness and contribution of each sector in addressing the region's poverty issue.

Recent studies have explored the relationship between government expenditure and poverty alleviation across various sectors, yet findings remain mixed and often context-dependent. Research on social assistance programs, for instance, has shown both limited (Melati et al., 2021; Ridha et al., 2021) and significant impacts (Nabilah & Sugiri, 2022) on poverty reduction, highlighting inconsistencies in program implementation and targeting. In the education sector, while several studies affirm a positive relationship between education spending and poverty alleviation (Carolina, 2022; Futunanembun et al., 2023; Nkamnbe, 2023), others report only marginal effects (Palaneven et al., 2018). Similarly, health sector spending has yielded varied results, with some studies identifying positive effects (Futunanembun et al., 2023; Lathifah, 2022), while others report adverse outcomes due to inefficient allocation (Palaneven et al., 2018). Methodologically, many of these studies rely on static models such as OLS or fixed effects, which often fail to address endogeneity and the dynamic nature of poverty. More recent approaches, such as the System Generalized Method of Moments (SYS-GMM), offer improved accuracy by accounting for these limitations (Arellano & Bover, 1995; Blundell & Bond, 1998). Despite its advantages, the application of SYS-GMM in subnational, geographically isolated regions like Maluku remains limited. This study addresses that gap by employing a dynamic approach to examine the sectoral impact of public expenditure on poverty in Maluku, thereby offering new empirical insights in an underexplored context.

Limitations persist in analyzing the effects of expenditures in specific sectors on poverty in Maluku, especially with a methodology that integrates short-term and long-term perspectives. Analyzing the intricate relationship between sectoral expenditures and poverty reduction in Maluku presents significant methodological challenges, particularly when aiming to integrate both short-term and long-term perspectives (Onsay et al., 2025). Numerous studies concentrate on short-term effects; nevertheless, the long-term ramifications of government policy in these industries remain insufficiently addressed. Integrating short-term and long-term perspectives is crucial for a comprehensive understanding of the dynamic interplay between sectoral expenditures and poverty reduction, yet current analytical frameworks often fall short in capturing these complexities (Dlamini & Mbonigaba, 2024). This research seeks to address that gap using a more suitable methodological approach, explicitly employing the SYS-GMM method to examine the short-term and long-term effects of social assistance, education, and health sector expenditures on poverty in Maluku.

This research offers a novel contribution to comprehending the impact of expenditures in the social assistance, education, and health sectors on poverty alleviation in the province of Maluku, utilizing the SYS-GMM method for concurrent short-term and long-term analysis. Existing research often overlooks the simultaneous short-term and long-term impacts of sectoral expenditures on poverty reduction, resulting in policies that might be suboptimal for sustained poverty alleviation (Taba, 2021). This research uniquely emphasizes the analysis of the individual consequences of each industry within the comparatively under-researched province of Maluku. This research provides insight into the efficacy of government initiatives in island regions with distinct socioeconomic features relative to other places in Indonesia. According to Fan & Zhang (2012), comprehending government expenditure in this context is anticipated to yield more precise policy recommendations for alleviating poverty in Maluku.

This research examines the government's role in mitigating poverty in Maluku. This study addresses that gap by employing a dynamic approach to examine the sectoral impact of public expenditure on poverty in Maluku, thereby offering new empirical insights in an underexplored context that could potentially inform future policy-making. It utilizes the SYS-GMM approach to analyze the effects of social assistance money and government expenditures in education and health on the poverty rate. This research aims to identify the primary reasons contributing to poverty in Maluku and assess the efficacy of government initiatives, thereby offering more precise recommendations to enhance community welfare in Maluku.

RESEARCH METHODS

This study uses quantitative approaches to examine the effects of social assistance funds and governmental expenditures in education and health on poverty. The secondary data utilized is sourced from the Central Bureau of Statistics (BPS) and the Directorate General of Fiscal Balance (DJPK), comprising panel data for the period 2017-2023, with a total of 77 observations. The Directorate General of Financial Balance (DJPK) is an agency within the Ministry of Finance of the Republic of Indonesia responsible for creating and executing policies for the distribution and management of balance funds and transfers to other areas. Furthermore, DJPK is crucial in regulating policies regional taxes and levies, aimed at achieving fiscal equilibrium between central and regional administrations. Data analysis was performed by panel data regression employing the Common Effects Model (CEM), Fixed Effects Model (FEM), and Random Effects Model (REM), chosen based on the outcomes of the Lagrange Multiplier (LM) test, Chow test, and Hausman test. Furthermore, conventional assumption tests were performed to verify the model's validity. Hypothesis testing encompasses the t-test, F-test, and the coefficient of determination (R^2) test, utilizing data analysis through Stata 17.

This study constructs the following static panel data regression model:

$Poverty_{it} = \beta 0 + \beta 1\ Social\ Assistance\ Fund_{it} + \beta 2\ Government\ Education\ Expenditure_{it} + \beta 3\ Government\ Health\ Expenditure_{it} + \varepsilon_{it}$ ……(1)

Where $Poverty_{it}$ describes the poverty level, $Social\ Assistance\ Fund_{it}$ shows the amount of social assistance received, $Government\ Education\ Expenditure_{it}$ reflects the education budget spent by the government, and Government Health Expenditureit indicates government spending in the health sector, all in the i-th Regency/City of Maluku in the t-th year. Meanwhile, εit serves as the error term that captures other variables outside the model that may influence the poverty level. This model is designed to understand the extent to which government spending in various sectors contributes to poverty reduction in Maluku.

This study uses the System-Generalized Method of Moments (SYS-GMM) model because this method is an approach for dynamic panel data that allows for the inclusion of lagged dependent variables. This serves as a solution to address the weaknesses found in the First-Difference GMM (FD-GMM) (Arellano and Bover, 1995). SYS-GMM can identify short-term and long-term effects, as well as calculate convergence values. Additionally, the methodology allows for the computation of convergence values, which can indicate how quickly regions or sectors may return to a steady state of poverty, post-expenditure changes. (Abdal *et al*., 2020). This model is also effective in addressing the issue of endogeneity that often arises in panel data, thereby providing more robust estimates *(Phung et al*., 2019). To ensure the validity of the SYS-GMM model, the Sargan test and the Arellano-Bond test are conducted to guarantee the validity of the instruments and ensure there are no specification errors in the model (Ben *et al*., 2020; Sarafidis, 2013). In addition, a test for non-bias is also necessary to ensure that SYS-GMM is the best approach to addressing the endogeneity issues that often arise in panel data regression (Khatib, 2024) .

The general model of dynamic panel data regression is as follows:

$Poverty_{it} = \beta_0 + \beta_1 Poverty_{it-1} + \beta_2 Social\ Assistance\ Fund_{it} + \beta_3 Government\ Expenditure\ in\ Education_{it} + \beta_4\ Government\ Expenditure\ in\ the\ Health\ Sector_{it} + \mu_i + \nu_{it}$…… (2)

In the dynamic panel model, the symbol μ_i represents the fixed or individual effects for each Regency and City, reflecting the unobserved heterogeneity among those Regencies and Cities. Meanwhile, ν_{it} is the error term that is expected not to be correlated with the independent variable. One commonly used approach to address the issue of endogeneity in this model is instrumental variables (IV). Endogeneity arises when the independent variable is correlated with the error term, which can lead to biased estimates. One of the commonly applied solutions is the use of external instruments that meet two main criteria: relevance, meaning the instrument must be correlated with the independent variable, and exclusion, meaning it does not affect the dependent variable except through the independent variable (Bastardoz *et al*., 2023). In the context of dynamic panel research, lagged dependent variables are often used as instruments because they can address the endogeneity issues arising from the simultaneous relationship between dependent and independent variables (Saddam & Jaafar, 2021). However, it is essential to ensure that the chosen instrument is valid and does not have a direct correlation with the dependent variable, except through the instrumented independent variable. The use of invalid instruments can result in biased estimates (Jean *et al*., 2016). Therefore, instrument testing such as the Sargan test and the Arellano-Bond test becomes crucial to ensure that the instruments are not corrupted and are acceptable in the model (Khatib, 2024).

The SYS-GMM model constructed in this research can be written as follows:

$Poverty_{it} = \beta_0 + \gamma_1 Poverty_{it-1} + \gamma_2 Poverty_{it-2} + \beta_1 Social\ Assistance\ Fund_{it} + \beta_2 Government\ Expenditure\ in\ the\ Education\ Sector_{it} + \beta_3 Government\ Expenditure\ in\ the\ Health\ Sector_{it} + \varepsilon_{it}$….(3)

This model is based on economic theory, which indicates that government spending in the social sector (including social assistance, education, and health) can contribute to reducing poverty, both in the short term and the long term. Previous research has shown that investment in education and health can improve the quality of life, which ultimately has the potential to reduce poverty levels (Piabuo & Tieguhong, 2017).

RESULTS AND DISCUSSION

Before conducting further analysis, descriptive statistical tests were conducted to provide an initial overview of the characteristics of the data used in this study.

Table 1.
Descriptive Statistical Test

Variabel	Obs	Mean	Std. Dev	Min	Maks
Poverty (Y)	77	28,448	16,136	9,35	78,72
Sosial Assistance Fund (X1)	77	6,746	6,812	0	27,5
Government Expenditure in Education (X2)	77	2,502	1,37	0,66	7,17
Government Expenditure in Health Sector (X3)	77	23,160	10,639	6,96	53,07

Source: processed data using Stata 17, 2025

Table 1 presents the findings of the Descriptive Statistics Test, encapsulating data from 77 observations concerning poverty levels, social assistance money, and governmental expenditures in the education and health sectors. The average poverty rate is 28,448,000 individuals, reflecting considerable regional disparity, with the lowest rate at 9,350 individuals and the highest at 78,720 individuals. The average social assistance payments amount to 6.746 billion, reflecting an inequitable distribution since many localities receive no aid (minimum value 0), while others obtain as much as 27.5 billion. Government expenditure on education averages 2.502 billion, with the lowest allocation at 0.66 billion and the highest at 7.17 billion. Government expenditure in the health sector averages 23.16 billion, exhibiting considerable variance, with a minimum of 6.96 billion and a maximum of 53.07 billion. This data reveals a substantial disparity in poverty levels and the distribution of social assistance money and government expenditures across different regions, suggesting an inequity in resource allocation.

Table 2.
Panel Data Modeling Test Output

	Prob	Results
Chow Test	0,000	FEM (Fixed Effect Model)
Hausman Test	0,001	FEM (Fixed Effect Model)
LM Test	0,000	REM (Random Effect Model)

Source: processed data using Stata 17, 2025

Table 2 presents the tests undertaken to identify the optimal panel model for executing panel data regression. Model comparison was performed utilizing the Chow test to differentiate between the Random Effect Model (REM) and the Fixed Effect Model (FEM), the Hausman test to distinguish between the Fixed Effect Model (FEM) and the Random Effect Model (REM), and the Lagrange Multiplier (LM) test to select between the Common Effect Model (CEM) and the Random Effect Model (REM). According to these three assessments, the optimal model in this study is the Fixed Effect Model (FEM). The model evaluation is thereafter conducted with traditional assumption testing.

Table 3.
Results Of Classical Assumption Test

Test Type	Variabel	Statistic	P-value/VIF	Interpretation
Normality Test	Residuals	Z = 2.011	0.02217	Data not normality distributed (p < 0.05)
Multicollinearity Test	X_1 (Social Assistance Fund)	VIF = 1.07	1/VIF = 0.9376	No multicollinearity (VIF < 10)
	X_2 (Education Expenditure)	VIF = 1.18	1/VIF = 0.8473	No multicollinearity
	X_1 (Social Assistance Fund)	VIF = 1.16	1/VIF = 0.8597	No multicollinearity
	Mean VIF	1.14		
Heteroskedasticity Test	Residuals (Breusch-Pagan)	Chi^2 (Breusch-Pagan)	0.0000	Heteroskedasticity detected (p < 0.05); robust standard errors recommended

Source: processed data using Stata 17, 2025

The diagnostic test results indicate several important model considerations. The normality test (Prob > z = 0.02217) reveals that the residuals are not normally distributed. However, based on the Gauss-Markov Theorem, normality is not a required condition for the OLS estimator to be the Best Linear Unbiased Estimator (BLUE), and it is only essential when conducting inference in small samples. Scholars such as Wooldridge, (2018), Gujarati & Porter, (2009), and Baltagi, (2008) affirm that in panel data models, especially those using fixed or random effects, the assumption of normality can be relaxed if other classical assumptions are met. The multicollinearity test results show that all independent variables have VIF values below 10, indicating no multicollinearity problem and confirming that the explanatory variables are sufficiently independent. Meanwhile, the heteroskedasticity test using the Breusch-Pagan method produces a p-value of 0.0000, indicating the presence of heteroskedasticity. To address this issue, it is recommended to use robust standard errors to ensure the validity of the regression estimates.

Table 4.
Robust Fixed Effects Model Output

Poverty (Y)	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Sosial Assistance Fund (X_1)	-0.077	0.0713456	-1.07	0.305	-0.232	0.079	
Government Expenditure in Education (X_2)	-1.148	0.4891336	-2.35	0.037	-2.214	-0.083	**
Government Expenditure in Health Sector (X_3)	0.050	0.0266552	1.89	0.083	-0.008	0.109	*
Constant	3.066.73	0.8718509	35.18	0.000	2.876.813	3.256.733	***
Mean Dependent Var	28.448	SD dependent va			16.13677		
R-squared	0.427	Number of obs					
Poverty (Y)	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
***p<.01, **p<.05, *p<.1							
F-test	2.585	Prof > F			0.117		
Akaike cirt. (AIC)	267.035	Bayesian crit. (BIC)			274.066		

Source: processed data using, Stata 17, 2025

The effect of social assistance funds on poverty is negative but not statistically significant, indicated by a coefficient of -0.0764589 and a probability level of 0.305. This indicates that an increase in social assistance correlates with a reduction in poverty levels. These data demonstrate that there is now insufficient evidence to assert that social assistance regularly lowers poverty rates. This aligns with a report from Antara News concerning the delivery of social aid via the Family Hope Program (PKH) in Maluku, which has exceeded 95 percent completion. A total of 77,809 Beneficiary Families (KPM) have received aid amounting to Rp66.2 billion (Anggoro, 2022). Despite the effective distribution of social aid, its efficacy in diminishing poverty rates remains contentious. The primary reason is that the benefits offered remain comparatively modest, rendering them inadequate to enhance the welfare of the receivers substantially. Furthermore, the problem of targeting inaccuracies is an obstacle, as there remain receivers who do not genuinely require aid, while those in need are overlooked. Moreover, distribution limitations, like the scarcity of bank agents and dependence on accounts that bypass formal regional banks, impede the effective allocation of aid. Consequently, while social assistance may diminish poverty rates, its efficacy requires additional assessment. Alongside enhancing distribution methods, it is essential to implement supporting initiatives like economic empowerment, ensuring that social assistance is not merely transient but also effective in achieving sustained reductions in poverty levels.

The impact of government expenditure in the education sector on poverty is negative and statistically insignificant, with a coefficient of -1.148153 and a probability level of 0.037. An increase in educational expenditure results in a reduction of 1.148153 percent of poverty. This aligns with the theory and the researcher's hypothesis regarding the impact of government expenditure on education and poverty in the Province of Maluku. The findings of this study corroborate the basic hypothesis that governmental expenditure on education influences the poverty rate in the Province of Maluku. The findings of this study align with the assertions of Aini (2020), Hidayat and Azhar (2021), and Idris et al.(2022), indicating that Government Expenditure in the Education Sector adversely affects the Poverty Rate. Enhancing the educational attainment of the impoverished will augment their abilities, facilitating their entry into the labour market and enhancing their welfare.

Government expenditure in the healthcare sector exerts a positive and significant influence on the poverty rate, with a coefficient of 0.0504402. An increase of 1 percent in government spending on education will lead to a 0.0504402 percent rise in poverty. This effect is deemed statistically insignificant, with a probability of 0.083. Government expenditure in the healthcare sector has demonstrated efficacy, yet it has not yet achieved a reduction in poverty rates. Despite its considerable impact, this spending may ultimately exacerbate poverty levels in Maluku. Health necessitates a policy aimed at diminishing poverty levels, for instance, via immunization services. This measure can avert the rise in mortality rates, hence reducing healthcare costs. Consequently, society will possess increased revenue for alternative necessities. This research aligns with the findings of Bandiyono (2018), which indicate that health expenditure exerts a positive yet insignificant impact on poverty.

The LSDV regression (Table 7) analysis indicates that Maluku Tengah Regency has the most significant poverty rate among the regions analyzed. The coefficient value of 63.696 reveals that the poverty level in this area is 63.696 more than that in Buru Regency (dum5), the reference area. Conversely, the region represented by the City of Tual exhibits a reduced poverty rate, with a coefficient value of 5.971. This signifies that poverty in this region is somewhat elevated relative to Buru Regency, rendering it the area with the second-lowest poverty rate following Buru Regency. Buru Regency possesses the lowest poverty rate, serving as the benchmark in this analysis. The notable distinction between Maluku Tengah Regency and Tual City exemplifies a substantial regional imbalance, with certain districts seeing markedly elevated poverty levels in contrast to more affluent regions such as Buru Regency.

Table 5.

LSDV Regression

Poverty (Y)	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Sosial Assistance Fund (X_1)	-0.076	0.078	-0.98	0.327	-0.229	0.077	
Government Expenditure in Education (X_2)	-1.148	0.535	-2.15	0.032	-2.197	-0.099	**
Government Expenditure in Health Sector (X_3)	0.05	0.029	1.73	0.084	-0.007	0.108	*
Maluku Tenggara	12.621	0.72	17.53	0	11.21	14.032	** *
Maluku Tenggara Barat	17.919	1.063	16.86	0	15.836	20.003	** *
Ambon	13.213	0.914	14.46	0	11.421	15.004	** *
Buru	15.531	1.088	14.27	0	13.397	17.664	** *
Kepulauan Aru	12.651	1.092	11.58	0	10.51	14.791	** *
Maluku Barat Daya	9.635	0.926	10.40	0	7.819	11.45	** *
Maluku Tengah	63.696	1.249	51.01	0	61.249	66.144	** *
Maluku Tenggara	13.171	0.372	35.39	0	12.442	13.9	** *
Maluku Tenggara Barat	16.903	1.035	16.34	0	14.879	18.931	** *
Seram Bagian Barat	31.493	0.944	33.37	0	29.644	33.343	** *
Seram Bagian Timur	15.865	0.423	37.51	0	15.036	16.695	** *
Tual	5.971	0.463	12.89	0	5.063	6.879	** *
Constant	12.626	1.06	11.92	0	10.549	14.703	*

Mean dependent var	28.448	SD dependent var	16.136
Overall r-squared	0.993	Number of obs	77
Chi-square	.	Prob > chi2	.
R-squared within	0.427	R-squared between	1.000

****p<.01*, ***p<.05*, **p<.1*

Source: processed data using Stata 17, 2025

The third-generation GMM test (the third-generation GMM estimator) yields superior computations compared to earlier GMM iterations. For the FDGMM One-Step method, certain conditions must be satisfied for the estimation findings to be valid and applicable. The instrument's validity is assessed using the Sargan Test, with the null hypothesis (H0) asserting that the employed instrument is valid. The Sargan test findings indicate a probability value of 0.0035, which is below 0.05. This signifies that the instrument employed is invalid. Nevertheless, the Arellano-Bond test reveals a Prob > z value of 0.8205, signifying the absence of autocorrelation and an unbiased coefficient (coef L1. Y) of 0.384; yet, this approach is rendered worthless due to its failure to satisfy the instrument validity criteria. Subsequently, the FDGMM Two-Step Test was conducted. In the FDGMM Two-Step test, the Sargan test probability value was 0.9288, exceeding 0.05, so confirming the validity of this instrument. The Arellano-Bond test yielded a Prob > z value of 0.9797, signifying the absence of autocorrelation in the model. The bias (coef L1. Y) of 0.682 is deemed doubtful in satisfying the bias

requirements, as it does not lie between the FEM and PLS estimates; hence, the test is considered unsuccessful. The subsequent action to verify the validity of the three tests is to perform the SYS-GMM Test.

The Sargan Test yields a Prob > chi2 value of 0.9903, signifying the validity of the instruments employed. At the same time, the Arellano-Bond Test presents a Prob > z value of 0.9849, demonstrating the absence of autocorrelation. The unbiased value (coef L1. Y) of 0.768 satisfies the unbiased requirement as it resides within an acceptable estimation range. Consequently, the SYS-GMM technique is the most appropriate for dynamic panel model analysis since it satisfies all criteria for instrument validity, consistency, and unbiased estimate. For further information, the comparison of the L.Y coefficient values for the unbiased test is presented in Table 9, indicating that the L.Y GMM value must lie between the L.Y FE coefficient value and the L.Y PLS value, expressed as L.Y FE < L.Y GMM < L.Y PLS. Consequently, the optimal model is the SYS-GMM two-step methodology.

Table 6.
Comparison of Static Panel and Dynamic Panel (GMM)

Poverty (Y)	PLS	RE	FE	FDGMM-One Step	FDGMM-Two Step	SYGMM-Two Step
L. Poverty	0.935*** (55.30)	0.935*** (55.30)	0.536*** (5.09)	0.384*** (2.80)	0.682*** (12.51)	0.768*** (4.69)
Sosial Assistance Fund (X_1)	-0.0524 (-1.76)	-0.0524 (-1.76)	-0.0725* (-2.27)	-0.143 (-1.58)	-0.103** (-2.82)	-0.0781*** (-3.81)
Government Expenditure in Education (X_2)	-0.109 (-0.68)	-0.109 (-0.68)	-0.953*** (-5.61)	-1.218*** (-4.99)	-0.959*** (-7.23)	-0.645*** (-5.46)
Government Expenditure in Health Sector (X_3)	0.0708** (2.90)	0.0708** (2.90)	0.108*** (4.07)	0.137** (3.27)	0.205*** (6.20)	0.140*** (6.10)
Constant	0.467 (0.82)	0.467 (0.82)	13.46*** (3.88)		7.177** (3.16)	5.918 (1.05)
N	62	62	62	62	62	62

Source: Data processed, 2025

Calculations utilizing the SYS-GMM method indicate that, in the short term, social assistance funds and governmental expenditure in the education sector can effectively diminish the poverty rate in Maluku.

Numerous studies indicate that government expenditure on social assistance can substantially alleviate poverty, particularly in the short term (Ajisafe et al., 2024; Habimana et al., 2021; Robson et al., 2024). Accurately focused social assistance can immediately enhance the income of impoverished households, allowing them to satisfy fundamental necessities and augment their purchasing power (Wudil et al., 2023). Additionally, another study indicates that social assistance can enhance the impoverished population's access to fundamental services such as education and healthcare, hence contributing to the long-term enhancement of quality of life (Celikay & Gumus, 2017). The SYS-GMM test estimation results in Table 9 indicate that current poverty exhibits a persistence effect, evidenced by a coefficient of 0.768*** for the lagged poverty variable (L. Poverty) and a t-statistic of 4.69, suggesting that poverty conditions are likely to endure over time. The Social Assistance Fund variable (X_1) exhibits a coefficient of -0.0781*** and a t-statistic of -3.81, indicating that an increase in social assistance can

significantly diminish the poverty rate by aiding the impoverished in fulfilling their fundamental requirements.

Moreover, governmental expenditure on education positively influences poverty alleviation, particularly in the short term (Omodero, 2019; Safarova, 2021). The enhancement of educational quality facilitates greater access to superior employment opportunities, consequently augmenting individual income. Government expenditure in Education (X2) has a coefficient of -0.645*** and a t-statistic of -5.46, suggesting that a rise in the education budget correlates with a reduction in poverty via improving workers' abilities and competitiveness. Moreover, Table 6 of the SYS-GMM test demonstrates that various estimation methods produce consistent outcomes regarding the adverse effect of education expenditure on poverty, thereby indicating that the education sector significantly contributes to poverty alleviation. Research in Nigeria indicates that while the effects are more pronounced in the long term, the education sector's contribution to poverty alleviation remains crucial (Samuel & Wale-odunaiya, 2021).

Conversely, government expenditure in the health sector demonstrates a detrimental effect. Despite increased healthcare spending, health outcomes in certain regions lag behind those of comparable middle-income countries, revealing the presence of disease burdens and unequal healthcare access (Babalola & Moodley, 2020). Government health expenditure is not a guarantee for improved results across all population segments unless expenditures are equitably distributed (Nundoochan, 2021). Government expenditure in the healthcare sector exerts a more intricate influence. While the objective is to enhance quality of life and alleviate public health burdens, certain studies indicate that ineffective management of expenditures in this domain may exacerbate poverty in the near term (Cinar & Has, 2022; Farag *et al*., 2013). If health programs are unaffordable or inequitably allocated, the supplementary costs that the impoverished cannot sustain may elevate the poverty rate (Fan & Zhang, 2012). The estimation findings in the table show that Government Expenditure in the Health Sector (X_3) has a coefficient of 0.140*** with a t-statistic of 6.10, showing that an increase in the health budget is connected with an increase in poverty. This is likely because locations with high poverty levels demand more health budgets. The uniformity of outcomes from diverse estimation techniques underscores the necessity for more focused health policies to prevent imposing an economic strain on the impoverished (Boachie *et al*., 2020). This is particularly pertinent for people in rural areas, those with minimal maternal education, and those in low- or middle-income brackets (Li & Yuan, 2019).

This SYS-GMM model suggests that poverty is often persistent; however, it can be mitigated through effective policies, including enhanced social assistance and increased educational expenditure. The positive correlation between health expenditure and poverty necessitates further examination to assess the efficacy of health budget allocation. Therefore, to mitigate poverty, the government must enhance educational and social assistance policies and ensure that health spending effectively improves community welfare.

Table 7.
Long-term SYS-GMM

Poverty (Y)	Coefficient	Std. err	z	95% conf	Interval
Sosial Assistance Fund (X1)	-0,146***	0,028	-5,180	-0,201	-0,091
Government Expenditure in Education (X2)	-2,181***	0,182	-11,980	-2,539	-1,824
Government Expenditure in Health Sector (X3)	0,265***	0,051	5,200	0,165	0,365

****p<.01, **p<.05, *p<.1*

Source: processed data using Stata 17, 2025

The SYS-GMM method calculations indicate that social assistance programs across various regions have effectively reduced poverty levels in the long term. The coefficient of the Social Assistance Fund is estimated to range from -0.201 to -0.091 with a 95 percent confidence level. Studies indicate that the distribution of financial resources for social assistance can significantly enhance the well-being

of impoverished individuals, particularly by augmenting purchasing power and diminishing economic disparity (Wudil *et al*., 2023).

These findings correspond with the notion that expenditures on social assistance can alleviate poverty, while their efficacy is significantly contingent upon competent management and strategic allocation. Government expenditure on education significantly influences poverty alleviation efforts. The findings indicate a negative and statistically significant result, with a 95 percent confidence interval, estimating the coefficient of government expenditure in the education sector to range from -2.539 to -1.824. Education enables individuals to obtain the skills and knowledge necessary to enhance their quality of life. Additional study indicates that governmental budgetary allocations for education, particularly at the primary and secondary tiers, significantly contribute to mitigating social inequality and enhancing access to economic opportunities (Rahman, 2024). Consequently, educational initiatives that prioritize universal accessibility and enhancement of quality are essential for helping the impoverished overcome the cycle of poverty (Buheji, 2019; Marin, 2020). Despite the intention of government expenditure in the health sector to enhance community well-being, data suggests that inadequate management or misalignment of funds with community requirements might exacerbate impoverished conditions. This condition frequently arises when healthcare resources are inequitably distributed or inaccessible to marginalized populations, compelling them to incur elevated healthcare expenses. In Maluku, a more focused allocation of health sector expenditures towards inclusive and equitable facilities should yield a more favourable influence on poverty reduction initiatives. The z-statistic results (Social Assistance Fund (X1) = -5.180, Government Expenditure in Education (X2) = -11.980, Government Expenditure in Health (X3) = 5.200) demonstrate that a higher absolute z value, whether positive or negative, correlates with an increased probability of statistical significance for the coefficient. The z column quantifies the degree of the coefficient's impact on the dependent variable by comparing the coefficient to its uncertainty (standard error).

The outcome of the convergence value computation utilizing the SYS-GMM method indicates that the resultant value –log (0.7678802) is 26412155, or 26.41 percent annually. This indicates that annually, the poverty disparity among districts and cities in Maluku diminishes by 26.41 percent on the premise of ceteris paribus. The convergence value enables the calculation of the projected poverty rate for the forthcoming year in a region. In the Maluku Tengah region, the poverty coefficient is 63,696, representing the greatest poverty level among all regions. The poverty rate in Maluku Tengah is projected to be 46,874 next year, derived from the calculation 63,696 – (63,696 x 26.41 percents). Analyzing the convergence value indicates that it will require time for poverty levels across districts and cities to equalize, hence diminishing the regional discrepancy in poverty levels. The convergence value of the poverty rate at 26.41 percent suggests that the adopted policies, including Social assistance programs, government expenditure on education and health, or economic reforms, may be more efficacious in alleviating poverty in economically disadvantaged regions or cities (Robson et al., 2024). Examination of the specific sectors where expenditures can yield the most significant poverty reduction outcomes requires a nuanced approach, especially in regions like Maluku, Indonesia, where geographical and socio-economic factors add complexity (Basuki, 2022).

Policies aimed at mitigating economic disparity and poverty may have more substantial outcomes. The LSDV regression results in Table 7 indicate that certain districts/cities exhibit significant poverty levels relative to others, notably Maluku Tengah region (63.696) and Seram Bagian Barat region (31.493). This suggests that the government ought to implement programs that prioritize human development, equal aid distribution, and enhancement of economic opportunities in various impoverished regions of Maluku to expedite the reduction of poverty throughout all districts and cities in the Maluku. The convergence value of 26.41 percent signifies a substantial alteration in the convergence process, pertaining to both the reduction of disparities between impoverished and affluent regions (beta convergence) and the mitigation of the uneven distribution of poverty across regions (sigma convergence) (Barro & Xavier, 1992). Location-specific policies have demonstrated efficacy in

diminishing inequities among districts and cities. Moreover, investment in the social sector, particularly in education and healthcare, significantly contributes to enhancing community welfare and alleviating poverty rates. Policies aimed at enhancing fundamental services can substantially influence the convergence among districts and cities. Another contributing aspect is fiscal decentralization, which promotes a more equitable allocation of resources to areas in need, as seen in several countries. Consequently, focused poverty alleviation initiatives and a more fair allocation of resources can expedite the convergence process among districts and cities, ultimately diminishing the poverty disparity in Maluku.

This study examines the influence of social assistance funds, government expenditure on education, and government expenditure on health on the poverty rate in Maluku Province. The research findings indicate that governmental expenditure in the healthcare sector significantly influences poverty levels in Maluku. Conversely, government expenditure on education significantly contributes to long-term poverty alleviation initiatives. This underscores the critical need for strategic investments in educational infrastructure and quality to ensure long-term sustainable economic growth and poverty reduction in Maluku Province. Strategic investments in educational infrastructure will not only enhance accessibility but also empower the population, ultimately leading to a more sustainable reduction in poverty levels (Dou, 2021; Omoniyi, 2014). This aligns with findings that emphasize the importance of targeted investments in education and health to foster inclusive development and effectively combat poverty in the region (Laksmi & Puteri, 2024). Education can improve labour skills and competitiveness while also providing access to superior economic prospects. The analytical results utilizing the SYS-GMM approach indicate an annual convergence rate of 26.41 percent. This indicates that annually, the poverty difference between districts and cities in Maluku diminishes by 26.41 percent (convergence correction). This reduction signifies that the enacted policies are beginning to affect the alleviation of welfare gaps among regions positively. This research indicates that poverty reduction initiatives in Maluku should prioritize investment in education and the formulation of policies that foster the establishment of sustainable employment (Dunga & Sekatane, 2013). The efficacy of social assistance must be frequently assessed to enhance its targeting and maximise its positive influence on community welfare (OECD, 2019; Onsay et al., 2025). In the realm of health, enhancements in fiscal management and service allocation are essential to effectively assist the impoverished without exacerbating poverty levels (Dlamini & Mbonigaba, 2024).

According to the performed analysis, numerous critical policies need consideration by the Maluku Provincial Government, specifically: Efficiency of Social Assistance Funds: While social assistance funds demonstrate beneficial effects in the near term, it is crucial to assess the distribution and disbursement mechanisms to enhance their targeting. Consequently, prioritizing economic empowerment methods for social assistance beneficiaries is essential for fostering sustainable social resilience in the future. The Education Expenditure Enhancement Program will augment financial investment in the education sector, hence facilitating access to quality education for the impoverished. This will consequently assist them in securing superior employment prospects. Consequently, the government must persist in augmenting the education budget allocation and provide equitable access throughout all regions. While expenditures in the health sector might yield beneficial long-term outcomes, enhanced money management and equitable allocation would amplify its efficacy in alleviating poverty.It is crucial to focus on underserved regions, guaranteeing that health infrastructure is inclusive and accessible to the entire population.

CONCLUSION AND SUGGESTIONS

This study demonstrates that government expenditure on education and health significantly contributes to poverty reduction in Maluku Province. Social assistance funds produce short-term

beneficial effects, but their long-term significance is insufficient. Implementing more effective policies for distributing social assistance, increasing investment in education, and improving health sector management are essential to substantially alleviate poverty in Maluku. The main emphasis should be on equalizing access to affordable education and health services to generate long-term benefits for the poor in Maluku.

This study also has several limitations, especially related to the scope of the independent variables which only include social assistance funds, education expenditure, and health expenditure. Other variables that may have an effect, such as inflation, unemployment rate, or income inequality, are not considered in this analysis. Implementing more effective policies in distributing social assistance, increasing investment in education, and better health sector management are very crucial steps to substantially alleviate poverty in Maluku. Further research needs to consider the spatial dimension in observing the impact of inter-regional distribution in poverty alleviation efforts, especially in island areas such as Maluku.

REFERENCE

Abdal, N. M., Nur, W., & Abdal, A. M. (2020). Penaksiran Generalized Method of Moments dengan Penggunaan Metode Marquardt-Levenberg. *Indonesian Journal of Fundamental Sciences*, *6*(1), 37. https://doi.org/10.26858/ijfs.v6i1.13943

Aini. (2020). Analisis Pengaruh Pengeluaran Pemerintah Sektor Pendidikan, Kesehatan dan Perlindungan Sosial Terhadap Kemiskinan Pada Kabupaten/Kota di Jawa Timur. *Jurnal Ekonomi Universitas Diponegoro*, *8*(2), 50–75.

Ajisafe, R. A., Okunade, S. O., & Fatai, M. O. (2024). Modelling structural breaks in social cash transfers effects on poverty and inequality reduction in Africa: A case of Nigeria. *Scientific African*, *23*, e02106. https://doi.org/10.1016/j.sciaf.2024.e02106

Alam, A., Uddin, M., & Yazdifar, H. (2019). Institutional determinants of R&D investment: Evidence from emerging markets. *Technological Forecasting and Social Change*, *138*, 34–44. https://doi.org/10.1016/j.techfore.2018.08.007

Anggoro, F. B. (2022). *Realisasi penyaluran bansos PKH di Maluku lebih dari 95 persen, semoga tepat sasaran*. Antara News. https://ambon.antaranews.com/berita/139729/realisasi-penyaluran-bansos-pkh-di-maluku-lebih-dari-95-persen-semoga-tepat-sasaran

Antara. (2023). Pemprov Maluku melaksanakan tiga program entaskan kemiskinan. *Antara News*. https://www.antaranews.com/berita/3777942/pemprov-maluku-melaksanakan-tiga-program-entaskan-kemiskinan

Babalola, T. K., & Moodley, I. (2020). Technical Efficiency and Productivity of Public District Hospitals in Kwazulu-Natal Province, South Africa. *Journal of Public Health Research*, *9*(1). https://doi.org/10.4081/jphr.2020.1741

Baltagi, B. H. (2008). Econometrics. In *Econometrics*. https://doi.org/10.1007/978-3-540-76516-5

Bandiyono, A. (2018). Pengaruh Belanja Pemerintah Daerah Berdasarkan Fungsi Terhadap Peningkatan Ipm Dan Pengentasan Kemiskinan (Studi Pada Kabupaten/Kota Di Provinsi Aceh). *Info Artha*, *2*(1), 11–28. https://doi.org/10.31092/jia.v2i1.235

Barro, R. J., & Xavier, S.-M. (1992). Convergence. *Journal of Political Economy*, *January 1991*, 223–251. https://doi.org/10.1086/261816

Bastardoz, N., Matthews, M. J., Sajons, G. B., Ransom, T., Kelemen, T. K., & Matthews, S. H. (2023). Instrumental variables estimation: Assumptions, pitfalls, and guidelines. *Leadership Quarterly*, *34*(1). https://doi.org/10.1016/j.leaqua.2022.101673

BASUKI, A. T. (2022). Analysis of the Impact Regional Expenditures on Poverty in Indonesia. *Journal of Economics, Finance And Management Studies*, *05*(04). https://doi.org/10.47191/jefms/v5-i4-05

Ben, A., Mtiraoui, A., Ben, A., & Mtiraoui, A. (2020). *Qualité institutionnelle et Croissance économique : Application sur données de Panel dynamique (GMM) To cite this version : HAL Id : hal-02740504 données de Panel dynamique (GMM) Institutional Quality and Economic Growth : Application on Dynamic Panel*.

Boachie, M. K., Põlajeva, T., & Frimpong, A. O. (2020). Infant Mortality in Low- and Middle-income Countries: Does Government Health Spending Matter? *Journal of Development Policy and Practice*, *5*(1), 54–73. https://doi.org/10.1177/2455133320909916

BPS. (2023). *Persentase Penduduk Miskin (P0) Menurut Provinsi dan Daerah (Persen), 2023*. BPS. https://www.bps.go.id/id/statistics-table/2/MTkyIzI=/persentase-penduduk-miskin--maret-2023.html

Buheji, M. (2019). Eliminating Poverty Through Educational Approaches-The Indian Experience. *Review of*

European Studies, *11*(3), 32. https://doi.org/10.5539/res.v11n3p32

Carolina, M. (2022). Pengaruh Pengeluaran Pemerintah Di Bidang Subsidi, Pendidikan, dan Kesehatan Terhadap Kemiskinan. *Jurnal Budget : Isu Dan Masalah Keuangan Negara*, *7*(1), 165–180. https://doi.org/10.22212/jbudget.v7i1.125

Celikay, H., & Gumus, S. (2017). The impact of social assistance on access to education and health services among impoverished populations. *Journal of Social Policy and Development*, 5(2), 101–115.

Cinar, S., & Has, B. (2022). Yoksulluk ve kamu sağlik harcamalari ilişkisi: panel veri analizi. *Hukuk ve İktisat Araştırmaları Dergisi*, *14*(2), 135–151. https://doi.org/10.53881/hiad.1079077

Daud, J., Pulubuhu, D. A. T., & Hasniati, H. (2024). Analysis of Women's Poverty in Maluku Province. *ESTIMASI: Journal of Statistics and Its Application*, *5*(1), 14–26. https://doi.org/10.20956/ejsa.v5i1.31236

Dlamini, M., & Mbonigaba, J. (2024). The impact of regional poverty on public health expenditure efficacy across South Africa's provinces: investigating the influence of historical economic factors on health. *Frontiers in Public Health*, *12*. https://doi.org/10.3389/fpubh.2024.1442304

Dou, X. (2021). The "Chinese Approach"for Poverty Alleviation through Education. *2021 2nd International Conference on Computers, Information Processing and Advanced Education*, 712–716. https://doi.org/10.1145/3456887.3457049

Dunga, S. H., & Sekatane, M. B. (2013). Education and Poverty Linkage in Malawi: A District Level Analysis. *Mediterranean Journal of Social Sciences*. https://doi.org/10.5901/mjss.2013.v4n14p213

Fan, S., Hazell, P., & Thorat, S. (2000). Government Spending, Growth and Poverty in Rural India. *American Journal of Agricultural Economics*, *82*(4), 1038–1051. https://doi.org/10.1111/0002-9092.00101

Fan, S., & Zhang, X. (2012). Public expenditure, growth, and poverty reduction in rural Uganda. *Public Expenditures for Agricultural and Rural Development in Africa*, 178–201. https://doi.org/10.4324/9780203124529

Farag, M., Nandakumar, A. K., Wallack, S., Hodgkin, D., Gaumer, G., & Erbil, C. (2013). Health expenditures, health outcomes and the role of good governance. *International Journal of Health Care Finance and Economics*, *13*(1), 33–52. https://doi.org/10.1007/s10754-012-9120-3

Futunanembun, B. A., Rorong, I. P. F., & Siwu, H. F. D. (2023). Pengaruh Pengeluaran Pemerintah Di Sektor Pendidikan Dan Kesehatan Terhadap Kemiskinan Di Provinsi Papua Barat. *Jurnal Berkala Ilmiah Efisiensi* , *23*(7), 217–228.

Gemmell, N., Kneller, R., & Sanz, I. (2011). The Timing and Persistence of Fiscal Policy Impacts on Growth: Evidence from OECD Countries. *The Economic Journal*, *121*(550), F33–F58. https://doi.org/10.1111/j.1468-0297.2010.02414.x

Gujarati, D. N., & Porter, D. C. (2009). Basic Econometrics. In *Introductory Econometrics: A Practical Approach*.

Habimana, D., Haughton, J., Nkurunziza, J., & Haughton, D. M.-A. (2021). Measuring the impact of unconditional cash transfers on consumption and poverty in Rwanda. *World Development Perspectives*, *23*, 100341. https://doi.org/10.1016/j.wdp.2021.100341

Hidayat1, A. Y., & Azhar2, Z. (2021). *Analisis Pengeluaran Pemerintah Di Sektor Kesehatan, Pendidikan, Dan Infrastruktur Terhadap Tingkat Kemiskinan Di Indonesia*. *4*, 65–74.

Idris, M. P. A., Zahro, G. F., Nugraheni, N., & Kurniawan, A. (2022). Analisis Pengaruh Pengeluaran Pemerintah Sektor Pendidikan dan Kesehatan terhadap Pengentasan Kemiskinan di Daerah Istimewa Yogyakarta. *Seminar Nasional Hasil Riset (SNHR)*, *9*(1), 45–53.

Jean, R.-J. "Bryan," Deng, Z., Kim, D., & Yuan, X. (2016). Assessing endogeneity issues in international marketing research. *International Marketing Review*, *33*(3), 483–512. https://doi.org/10.1108/IMR-02-2015-0020

Khatib, S. F. A. (2024). An assessment of methods to deal with endogeneity in corporate governance and reporting research. *Corporate Governance (Bingley)*. https://doi.org/10.1108/CG-12-2023-0507

Laksmi, A. C., & Puteri, S. A. (2024). The Effect of Government Expenditure on Education and Health Sectors on Poverty Rate (Study at Kuningan Regency, West Java). *International Journal on Economics, Finance and Sustainable Development*, *6*(8), 129–141. https://doi.org/10.31149/ijefsd.v6i8.5311

Lathifah, I. (2022). Pengaruh IPM, Pengeluaran Pemerintah Bidang Kesehatan, Pendidikan dan Laju PDRB Terhadap Kemiskinan Di Jawa Tengah. *Jurnal Paradigma Multidisipliner (JPM)*, *2*(4), 407–418.

Li, J., & Yuan, B. (2019). Understanding the effectiveness of government health expenditure in improving health equity: Preliminary evidence from global health expenditure and child mortality rate. *The International Journal of Health Planning and Management*, *34*(4). https://doi.org/10.1002/hpm.2837

Marin, I. (2020). The role of education in reducing poverty social exclusion. *Proceedings of the International Conference on Business Excellence*, *14*(1), 505–513. https://doi.org/10.2478/picbe-2020-0047

Melati, A. M., Sudrajat, & Burhany, D. I. (2021). The Effects Of Education Expenditure, Health Expenditure And Social AssistanceExpenditure On Poverty In Regencies And Cities In West Java. *Indonesian Accounting Research Journal*, *1*(3), 422–430.

Nabilah, R., & Sugiri, D. (2022). Apakah Bantuan Sosial dan Belanja Modal Mempengaruhi Tingkat Kemiskinan Daerah di Provinsi Sumatera Selatan? *Fokus Bisnis Media Pengkajian Manajemen Dan Akuntansi*, *21*(1), 85–98. https://doi.org/10.32639/fokbis.v21i1.115

Nkamnbe, O. E. (2023). *Integrating Climate Change Adaptation into Flood Risk Management : Global Perspectives*. *August*. https://doi.org/10.51244/IJRSI

Nundoochan, A. (2021). Improving equity in the distribution and financing of health services in Mauritius, a small island state with deeply rooted welfare state standards. *BMJ Global Health*, *6*(12), e006757. https://doi.org/10.1136/bmjgh-2021-006757

OECD. (2019). *Social Protection System Review of Indonesia*. OECD. https://doi.org/10.1787/788e9d71-en

Omodero, C. O. (2019). Government Sectoral Expenditure and Poverty Alleviation in Nigeria. *Research in World Economy*, *10*(1), 80. https://doi.org/10.5430/rwe.v10n1p80

Omoniyi, M. B. . (2014). Unlocking Potentials in Developing Country through Education: A Panacea for Economic Growth and Poverty Alleviation. *Mediterranean Journal of Social Sciences*. https://doi.org/10.5901/mjss.2014.v5n23p868

Onsay, E. A., Arapoc, J., & Rabajante, J. F. (2025). Multidimensional impact evaluation of the national conditional cash transfer on poverty alleviation and economic development in the poorest region of Luzon, Philippines. *Development and Sustainability in Economics and Finance*, *6*, 100053. https://doi.org/10.1016/j.dsef.2025.100053

Palaneven, T. O. M., Walengwangko, E. N., & Sumual, J. I. (2018). Pengaruh Pengeluaran Pemerintah Sektor Pendidikan Dan Sektor Kesehatan Terhadap Ipm Dan Dampaknya Terhadap Kemiskinan Di Sulawesi Utara. *Jurnal Berkala Ilmiah Efisiensi*, *18*(4), 52–61.

Pemayun, & Arka. (2023). Analisis Faktor-Faktor yang Mempengaruhi Tingkat Kemiskinan di Kabupaten Karangasem Provinsi Bali. *E-JURNAL EKONOMI DAN BISNIS UNIVERSITAS UDAYANA*, *12*(12), 2414–2420. https://doi.org/https://doi.org/10.24843/EEB.2023.v12.i12.p10

Phung, T. D., Thuy Van, V. T., Thuong, T. T. H., & Ha, N. T. T. (2019). Innovation and economic growth: The contribution of institutional quality and foreign direct investment. *Asian Economic and Financial Review*, *9*(11), 1266–1278. https://doi.org/10.18488/journal.aefr.2019.911.1266.1278

Piabuo, S., & Tieguhong, J. (2017). Health expenditure and economic growth-a review of the literature and an analysis between the economic community for central African states (CEMAC) and selected African countries. *Health Economics Review*, *7*, 1–13. https://doi.org/10.1186/s13561-017-0159-1

Putu, N., Sri, N., Yanti, D., Agung, A., Ayuningsasi, K., Kunci, K., Pendapatan, K. ;, Daerah, A., Pengangguran, ;, Jumlah, ;, & Koresponding, P. (2024). Analisis Faktor-Faktor Yang Berpengaruh Terhadap Kemiskinan Di Kabupaten/Kota Provinsi Bali. *E-JURNAL EKONOMI DAN BISNIS UNIVERSITAS UDAYANA*, *13*(04), 745–756. https://doi.org/https://doi.org/10.24843/EEB.2024.v13.i04.p10

Rahakbauw, D. L., & Ilwaru, V. Y. I. (2020). Penerapan Jaringan Saraf Tiruan Learning Vector Quantization Untuk Pemetaan Wilayah Berpenduduk Miskin di Provinsi Maluku. *Tensor: Pure and Applied Mathematics Journal*, *1*(1), 25–30. https://doi.org/10.30598/tensorvol1iss1pp25-30

Rahman. (2024). The Role of Education in Reducing Poverty and Social Inequality. *International Journal of Science and Research (IJSR)*, *13*(4), 50–54. https://doi.org/10.21275/sr24329223914

Reeves, A., Basu, S., McKee, M., Meissner, C., & Stuckler, D. (2013). Does investment in the health sector promote or inhibit economic growth? *Globalization and Health*, *9*(1), 43. https://doi.org/10.1186/1744-8603-9-43

Ridha, M. R., Sinring, B., & Baharuddin, D. (2021). Pengaruh Bantuan Sosial Dan Pemberdayaan Masyarakat Melalui Usaha Mikro Kecil Menengah Terhadap Pengentasan Kemiskinan Di Kota Parepare. *Economos : Jurnal Ekonomi Dan Bisnis*, *4*(1), 75–81. https://doi.org/10.31850/economos.v4i1.782

Robson, M., Vollmer, F., Doğan, B. B., & Grede, N. (2024). Distributional impacts of cash transfers on the multidimensional poverty of refugees: The Emergency Social Safety Net in Turkey. *World Development*, *179*, 106599. https://doi.org/10.1016/j.worlddev.2024.106599

Saddam, S. Z., & Jaafar, M. N. (2021). A Systematic Review of Literature on Reverse-Causality Relationship between Intellectual Capital and Firm's Financial Performance : Dynamic Panel Approach. *International Journal of Academic Research in Accounting Finance and Management Sciences*, *11*(2), 202–221. https://doi.org/10.6007/IJARAFMS

Safarova, N. (2021). CROSS-COUNTRY ANALYSIS OF THE IMPACT OF EDUCATION ON POVERTY REDUCTION. *Конференции*. https://doi.org/10.47100/conferences.v1i1.957

Samuel, D. A., & Wale-odunaiya, E. (2021). Analysis of the Impact of Education on Poverty Reduction and Economic Development in Nigeria. *European Journal of Business and Management*, *13*(23), 37–44. https://doi.org/10.7176/ejbm/13-23-03

Sarafidis, M. J. G. B. and V. (2013). Dynamic panel data models. *Handbook of Empirical Economics and Finance*, 373–396. https://doi.org/10.1093/oxfordhb/9780199940042.013.0003

Saragi, N. B. (2021). Indonesia's Village Fund Program: Does It Contribute to Poverty Reduction? *Jurnal Bina Praja*, *13*, 65–80. https://doi.org/10.21787/jpb.13.2021.65-80

Sasmaz, M. U., Ozturk, O. F., & Yayla, Y. E. (2019). *The Effect of Health and Education Expenditures on Poverty* (pp. 177–197). https://doi.org/10.4018/978-1-5225-8109-3.ch010

Sembiring, B. H., & Wenagama, I. W. (2023). Pengaruh Tingkat Pendidikan, Pertumbuhan Ekonomi Terhadap Tingkat Pengangguran dan Kemiskinan Kabupaten/Kota Provinsi Bali. *E-JURNAL EKONOMI DAN BISNIS*

UNIVERSITAS UDAYANA, *13*(5), 957–965. https://doi.org/https://doi.org/10.24843/EEB.2024.v13.i05.p09

Stournaras, C. F. (2016). Endogenous Fiscal Growth and Public Macroeconomics. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.2307077

Taba, M. I. (2021). A Research On Poor Household Of Coastal Community In South Sulawesi. *Psychology and Education Journal*, *58*(1), 01–09. https://doi.org/10.17762/pae.v58i1.649

Wooldridge, J. M. (2018). *Econometrics Introductory Modern Approach*.

Wudil, A. A., Saad, N. M., Omercic, J., Zakaria, L., & Muhammad, R. (2023). Government Budgets and Poverty Reduction in Developing Countries: a Systematic Review of the Role of Social Welfare Programs and the Challenges Ahead. *Economics and Finance*, *11*(2), 67–72. https://doi.org/10.51586/2754-6209.2023.11.2.67.72

Zouhar, Y., Jellema, J., Lustig, N., & Trabelsi0, M. (2021). *Public Expenditure and Inclusive Growth – A Survey*.