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Original Article

Analysis of Inclusive Economic Growth in West Sumatra

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Abstract

This study aims to analyze the effect of inclusive economic growth in the regencies and cities of West Sumatra. The research utilizes panel data comprising a 5-year time series and a cross-section of 19 regencies and cities, resulting in a total of 95 observations. The dependent variable in this study is inclusive economic growth, while the independent variables include education, health, and government spending. The analytical method employed is panel data regression analysis. Based on the Chow test, Hausman test, and Lagrange Multiplier test, the best model selected is the Random Effect Model (REM). The classical assumption tests indicate that the data satisfy the requirements for normality and multicollinearity. The results of the panel data regression analysis reveal that education and health have a significant negative effect on inclusive economic growth, whereas government spending has a significant positive effect. These findings suggest that the government should focus on improving the quality of education and healthcare services and optimizing government spending to achieve inclusive economic growth. Such efforts should also aim to reduce poverty and income inequality.

Keywords: Panel Data, Inclusive Economic Growth, Education, Health, Government Expenditure.

1. Introduction

Various interpretations have been formulated regarding the concept of comprehensive economic development (Stuart, 2011). Since 2000, the concept of inclusivity has been employed to describe growth that benefits the poor as well as involving their participation (Klasen, 2010). Pro-poor growth has paved the way for the modern concept of inclusive growth (Viantiaraini et al., 2024). It encompasses two key concepts: relative and absolute measures of poverty alleviation (Klasen, 2010), looking at the relative perspective, it is anticipated that the income of the less affluent will increase at a faster rate compared to the more affluent or the overall income level (Ravallion, 2004), conversely, proposing a strict notion that simply necessitates a rise in the total earnings of the less fortunate, in addition to financial expansion, without taking into account shifts in disparity. The trend of economic growth, poverty rates, and the Gini ratio of West Sumatra can be seen as follows:

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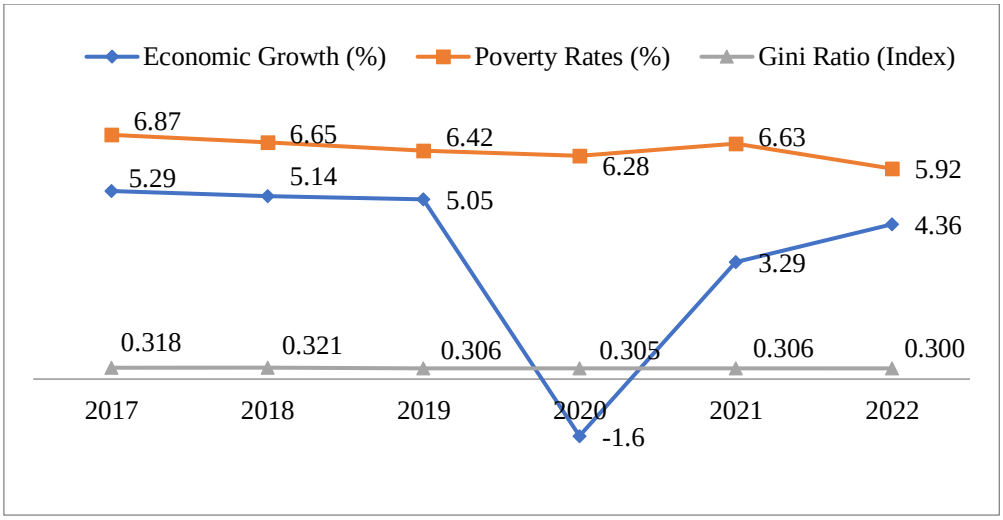

Figure 1. Economic growth trends, poverty rates, and Gini ratio

Based on Figure 1, the economic growth of West Sumatra province from 2017 to 2019 was quite stable, but in 2020 the economic growth of the province of Sumatra was negative by -1.6%, in 2020 the world was hit by the Covid-19 outbreak, where all economic activities were limited, and forced everyone to work from home. Economic growth that has decreased and increased certainly results in poverty and income inequality. Then from 2021 to 2022 economic growth began to increase, in that year economic restrictions began to be relaxed.

The poverty rate in West Sumatra province fell from 2017 to 2020, but in 2021 the poverty rate increased by 6.63%, this condition was certainly caused by negative economic growth in 2020 and resulted in an increase in the poverty rate, while the poverty rate in 2022 decreased by 5.92%. Furthermore, the development of the Gini ratio of regencies/cities in West Sumatra as a whole is below 0.4 and the trend has decreased from 2017 to 2022, this condition indicates that the Gini ratio has low inequality.

Numerous studies have shown that a variety of factors, such as health, education, and government expenditures, play a crucial role in driving inclusive economic growth (Iskandar, 2016). The author's focus lies in investigating the comprehensive economic advancement in urban and rural areas of West Sumatra by employing the Panel Data Model. This research aims to scrutinize the inclusive economic growth and the various elements that impact it.

2. Literature Review

Bappenas states that the Inclusive Economic Development Index is utilized for evaluating the inclusivity of Indonesian development on a national, provincial, and district/city scale. The Index for Inclusive Economic Development evaluates how inclusive development is in Indonesia by looking at economic growth, disparity, poverty, as well as access and opportunities. The inclusive economic development index is composed of 3 main pillars, 8 sub-pillars, and 21 indicators. Inclusive growth refers to economic expansion that generates equal opportunities for employment, entrepreneurship, and ownership among various societal groups (Dabla-Norris et al., 2015; Rajan & Zingales, 2003; Ravallion, 2004). Inclusive growth involves implementing strategies that promote the participation and advancement of individuals from diverse backgrounds such as various gender, ethnic, and religious groups, across different industries like agriculture, manufacturing, and services, in order to achieve shared economic progress (Dabla-Norris et al., 2015).

The method adopted by the Asian Development Bank (ADB) is characterized by a greater level of inclusivity (G. Rauniyar & Kanbur, 2010; G. P. Rauniyar & Kanbur, 2010). Along with focusing on the aspects of widespread involvement and involvement in the development process that are key components of inclusive growth, it also highlights considerations of gender, ethnicity, and race. The Asian Development Bank (ADB) supports the idea of inclusivity by defining inclusive growth as having equal opportunities for all. The ADB also promotes environmentally sustainable development as part of their concept (Asian Development Bank, 2014) as a determinant of inclusive growth. The comprehensive strategy, while holistic in nature, renders it impractical to analyze inclusive growth as we need to understand the extent of each individual's involvement in the growth process. In contrast to the World Bank, the ADB's perspective is centered on evaluating the relative sufficiency of growth.

3. Methods

3.1. Types of research

This study employs descriptive quantitative research methodology. The study utilizes secondary data sourced from the Central Statistics Agency (BPS) publication. The amount of data is 5 time series and 19 cross-sections, so the total data is 5 x 19 = 95.

3.2. Analysis Method

Panel data regression analysis is the chosen method for this analysis, as it combines both time series and cross-sectional data.

Table 1. Operational Definition of Research Variables

Variables	Symbol	Indicator	Source
Inclusive Economic Growth	Y	Inclusive Economic Development Index	BPS Prov.Sumbar
Health	H	Life Expectancy at Birth by Regency/City (Year)	BPS Prov.Sumbar
Education	A	Expected Length of Schooling by District/City (Year)	BPS Prov.Sumbar
Government Spending	G	Realization of District/City Government Spending in West Sumatra Province (Thousand Rupiah)	BPS Prov.Sumbar

3.3. Panel data stages

Panel data regression analysis is carried out through several systematic stages to obtain accurate results. The first stage is data collection, where panel data consisting of cross-sectional dimensions and time series dimensions are collected (Baltagi, 2008). After that, data preparation is carried out, including cleaning data from outliers, empty data, or inconsistencies, and data transformation if necessary (Wooldridge, 2010). Furthermore, descriptive statistical analysis is carried out to understand the characteristics of the data, such as distribution, average, and variance of variables (Gujarati, 2009).

After the data is ready, the next step is to select a panel data regression model. Commonly used models include Pooled OLS (assuming data homogeneity), Fixed Effects Model (FEM, controlling differences between individuals), and Random Effects Model (REM, assuming differences between individuals are random) (Baltagi, 2008). To select the most

appropriate model, a series of tests are conducted such as the Chow Test (comparing Pooled OLS and FEM), the Hausman Test (comparing FEM and REM), and the Breusch-Pagan LM Test (comparing Pooled OLS and REM) (Greene, 2012). After the model is selected, regression estimation is carried out to obtain the relationship between the dependent and independent variables. The next stage is to conduct a classical assumption test to ensure the validity of the model. This test includes multicollinearity, heteroscedasticity, and residual normality (Wooldridge, 2010). After all assumptions are met, the estimation results can be interpreted by looking at the regression coefficients, R2 values, and the statistical significance of the variables and the model as a whole. Finally, the findings from this analysis are concluded and used as a basis for providing policy recommendations or strategic steps based on the research results (Gujarati, 2009).

3.4. Conceptual framework and Specific model

Figure 2 displays the conceptual framework for the study.

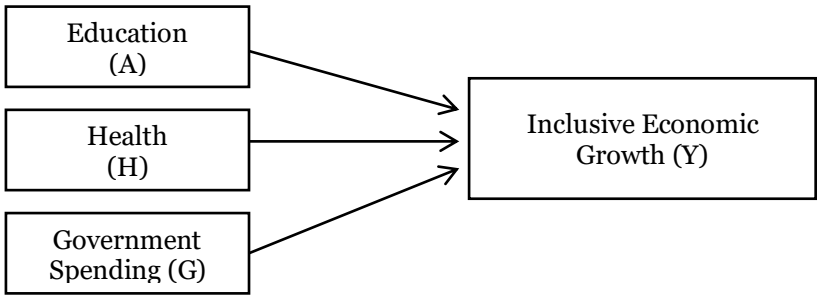

Figure 2. Conceptual Framework

Using the theoretical framework provided earlier, the structure of the study can be outlined as follows:

$$Y_{it} = \alpha_0 + \alpha_1 A_{it} + \alpha_2 H_{it} + \alpha_3 G_{it} + \varepsilon_{it} \quad \ldots (1)$$

Description:

Y_{it} = Inclusive economic growth in district/city *i* in period *t*

A_{it} = Education in District-City *i* in period *t*

$H_{2_{it}}$ = Health in District-City *i* in period *t*

$G_{3_{it}}$ = Government spending in Regency/City *i* in period *t*

α = Regression coefficient

ε_{it} = error term

4. Results and Discussion

4.1. Best model selection

In panel data regression, one must validate the effectiveness of the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM) estimation models through the Chow Test, Hausman Test, and Lagrange Multiplier (LM) Test. Below is a model selection matrix table for reference.

Table 2. Model Selection Matrix.

Testing	CEM	FEM	REM	Description
Chow Test		(Prob. 0.0000 < 0,05)		FEM
Hausman Test			(Prob. 0.0504 > 0,05)	REM
LM Test			(Prob. 0.0000 < 0,05)	REM

Source: Eviews Data Processing 9, 2024

According to the information in table 2, the Chow test has a probability value below 0.05, indicating that the optimal model is the Fixed Effect Model. On the other hand, the Hausman Prob. test has a probability value above 0.05, suggesting that the preferable model is the Random Effect Model (REM). Lastly, the Lagrange Multiplier Prob. test has a probability value below 0.05, indicating that the ideal model is the Random Effect Model (REM). Overall, based on these tests, it can be inferred that the Random Effect Model (REM) is the most suitable choice for model selection.

4.2. Classical Assumption Test

After determining the best model selection, the next step is to conduct a classical assumption test. The classical assumption test carried out in the Random Effect Model (REM) is the Normality test and the Multicollinearity test (Kuncoro, 2013).

4.2.1. Normality Test

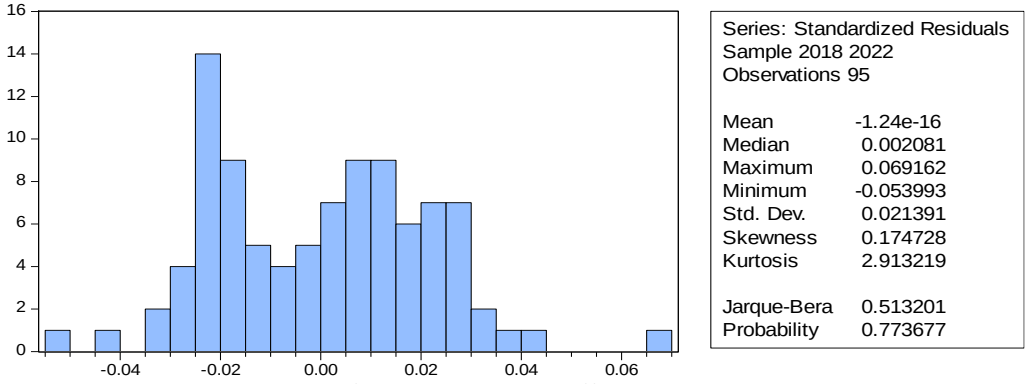

Figure 3. Normality Test

According to the given image, the Jarque-Bera normality test shows a probability value of 0.739303, which is higher than the standard probability of 0.05. Therefore, it can be concluded that the residuals in the research follow a normal distribution.

4.2.2. Multicollinearity Test

During multicollinearity testing, the goal is to assess the interrelationships among the predictor variables used in the regression analysis.

Table 3. Multicollinearity Test Results

Variance Inflation Factors
Date: 01/09/24 Time: 13:12
Sample: 2018 2022
Included observations: 95

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	7.40E+09	1.892887	NA
A	2.38E-21	7.001107	3.859338
H	1.42E-05	3.257114	2.867230
LOG(G)	2.10E-21	6.386525	3.520551

Source: Eviews Data Processing 9, 2024

According to the results from the multicollinearity test table, it is evident that the uncentered VIF values for all independent variables are less than 10, indicating the absence of multicollinearity issues among the independent variables.

4.2.3. Estimation Results

Based on the results of the Chow test and the Hausman test, it can be determined that the best model estimate is the Random effect model as follows:

Table 4. Random Effect Model Estimation Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.371007	0.167598	2.213674	0.0294
A	-0.014070	0.004859	-2.895527	0.0047
H	-0.003989	0.001740	-2.292697	0.0242
LOG(G)	0.018715	0.006787	2.757459	0.0070

Source: Eviews Data Processing 9, 2024

$$Y= 0.371007- 0.014070(A) - 0.003989(H) + 0.018715\ LOG(G) + e \ldots.(2)$$

Education (A) negatively impacts the Inclusive Economic Growth in the Regency/City of West Sumatra, as evident from equation (2) which shows a regression coefficient of -0.014070. A reduction in education levels by one year results in a boost of 0.014070 in Inclusive Economic Growth within the area. These results show a paradoxical relationship that can be caused by the uneven distribution of educational benefits or the quality of education that does not support improving community skills and productivity. This study is in line with the findings of Aponsah (2023), who also found that low quality education tends not to contribute directly to inclusive economic growth. In addition, research from Azis & Nugroho (2020) also shows that education investment needs to be directed at strengthening human resource capacity so that it is relevant to the needs of the labor market. Thus, it is crucial to prioritize enhancing the quality and significance of education in order to promote widespread economic advancement.

Poor health in West Sumatra has been found to hinder Inclusive Economic Growth, as evidenced by a negative regression coefficient of -0.004091. This suggests that a decrease in the region's health level by 1 year results in a corresponding increase of 0.004091 in Inclusive Economic Growth. This result indicates the potential for inefficient allocation in health services, where the increase in health spending has not fully had a significant impact on inclusive economic growth. This finding is consistent with Hartati's (2021) research, which

suggests the need for reform in the health system to ensure that its benefits are felt evenly by the community. In addition, a study by Bloom et al. (2019) revealed that low-quality access to health care is often an obstacle to inclusive development, especially in developing countries. This emphasizes the importance of improving the health care system, both in terms of access and quality.

On the other hand, Government Spending (G) has a positive effect on Inclusive Economic Growth in the Regency/City of West Sumatra, with a regression coefficient of 0.018715. This means that every 1 percent increase in government spending can drive Inclusive Economic Growth by 0.018715. This result reflects the important role of the government in encouraging inclusive development through targeted budget allocations, such as investment in infrastructure, education, and health. This study is in line with the findings of Mellisa (2021), which emphasizes the importance of effective fiscal policy in encouraging equitable distribution of the benefits of economic growth. Similar findings were also expressed by Kharisma & Rahayu (2022), who stated that government spending directed at the productive sector can increase more equitable economic growth. Therefore, the government needs to continue to ensure that public spending is focused on strategic sectors that can improve people's welfare in a fair manner. Thus, to encourage Inclusive Economic Growth in the Regency/City of West Sumatra, the policies taken need to consider the synergy between the education, health, and government spending sectors. In addition, efforts are needed to overcome structural barriers that reduce the effectiveness of education and health in supporting inclusive economic growth.

5. Conclusion

This study employs a panel data regression model known as the Random Effect Model (REM), chosen after conducting the Chow test, the Hausman test, and the Lagrange Multiplier test. According to the classical assumption test, the data has satisfied the criteria, such as passing the normality test and the multicollinearity test. The analysis of panel data regression indicates a noteworthy adverse impact between education and health on comprehensive economic development, along with a substantial beneficial impact of government expenditure on comprehensive economic growth. This finding indicates that although education and health are important factors in economic development, their effectiveness in driving inclusive economic growth still requires optimization of more targeted policies. On the other hand, government spending has been shown to have a significant positive impact, reflecting the important role of fiscal policy in supporting more equitable economic growth. The results of this study provide important implications for the government, namely the need to focus on improving the quality of education and health that are relevant to the needs of the community and the labor market, as well as ensuring a more effective allocation of government spending to support strategic sectors. It is expected that by following these steps, there will be a long-term achievement of equitable economic development in the Regency/City of West Sumatra, resulting in a reduction of poverty levels and income disparity.

It is suggested that further investigation be conducted to broaden the range of variables, such as access to infrastructure, quality of public services, or other socio-economic factors that may affect inclusive economic growth. In addition, the use of more in-depth analysis methods, such as dynamic models or spatial econometric approaches, can provide additional insights into the relationships between these variables in the context of inclusive development.

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