Research Article

Can Special Autonomy and Fiscal Decentralization Reduce Inequality in Papua Province?

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Abstract.
The issue of regional inequality has gained prominence during the era of progress, driven by the goal of promoting equitable development and enhancing the well-being of all segments of society. Papua Province is an integral part of Indonesia, and confronts intricate hurdles in addressing regional inequality. In response to these hurdles, special autonomy status and fiscal decentralization were implemented to boost regional autonomy. This study aims to scrutinize the impact of special autonomy and fiscal decentralization on regional inequality within Papua Province. The dataset used in the study spans from 2011 to 2021 and has been sourced from the Central Bureau of Statistics for Papua Province and the Directorate General of Fiscal Balance under the Ministry of Finance of the Republic of Indonesia. Multiple linear regression analysis was applied and the analytical results underscore that granting special autonomy status has exerted a noteworthy influence in diminishing regional inequality within Papua Province. Nevertheless, an unexpected finding is that fiscal decentralization has not substantially curtailed regional inequality within the region. These revelations provide a comprehensive overview of the roles played by fiscal decentralization and special autonomy in endeavors to alleviate regional inequality in Papua Province. The implications of these findings lay the groundwork for policymaking and developmental planning that foster inclusivity and sustainable progress within the Province of Papua.

Keywords: special autonomy, fiscal decentralization, regional inequality

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1. Introduction

Province of Papua, as an integral part of the Republic of Indonesia, boasts vast natural resources, including valuable mineral reserves, abundant forest products, extensive marine resources, and stunning natural landscapes, including diverse flora and fauna [1]. The Regional Development Planning Agency of Papua Province notes that within the PT Freeport Indonesia concession area in Mimika Regency alone, there are estimated mineral reserves worth US$161.15 billion, or approximately Rp 2,352.81 trillion, consisting of 38.6 billion pounds of copper worth Rp 1,690.68 trillion, 33.8 million ounces of gold worth Rp 625.24 trillion, and 152.6 million ounces of silver worth Rp 36.9 trillion [2].

On the other hand, there are productive forest areas that can be considered for large-scale plantation development, capable of producing up to 130,000 barrels of biodiesel per day, with export values reaching US\$5.6 billion per year [3]. Of the total land area in Papua Province, covering 31,406,664 hectares, more than 14 million hectares are protected and conservation forests, containing extraordinary potential for endemic flora and fauna [3]. Papua also boasts a coastline spanning 1,170 nautical miles, an extensive water area of 228,000 km^2, and sustainable fisheries potential of up to 1.3 million tons per year [4].

With these abundant natural resources, there is a significant opportunity to improve the welfare of the local population and make a positive contribution to the national economy. This potential could be the key to enhancing the quality of life for the people of Papua. However, the current reality shows significant regional disparities in Papua compared to other provinces in Indonesia. The Central Statistics Agency of Papua Province records that the Williamson Index for Papua Province remains very high, indicating substantial regional inequality [5, 6]. Regional inequality is an increasingly important issue in the era of global growth, with efforts to achieve prosperity for all [5, 6]. This phenomenon refers to unequal and/or unfair distribution of resources and opportunities among specific community groups within a region or country [7]. Regional inequality can manifest in various forms, such as economic, social, and infrastructure disparities [7].

Our research motivation is related to two main aspects. First, previous studies have explored the autonomy's response to reducing regional inequality. For example, Abrar et al. [8] found that regional autonomy has a significant impact in reducing inequality. Similarly, Hayati et al. [9] found that special autonomy funds have a significant influence in addressing development inequality mediated by economic growth. However, Tamberan et al. [10] found that special autonomy funds in the realm of community economic empowerment do not have a significant impact on regional economic inequality. According to Law Number 21 of 2001 on Special Autonomy for Papua Province (as amended by Law Number 35 of 2008 on the Ratification of Government Regulation in Lieu of Law Number 1 of 2008 concerning Amendments to Law Number 21 of 2001 on Special Autonomy for Papua Province), Papua Province is granted special autonomy status with various authorities. To implement special autonomy, the central government allocates Special Autonomy Funds for Papua Province, aiming to accelerate economic development, improve the welfare and progress of the Papua people, with the goal of achieving equality and balance with other provinces [11]. Special autonomy is a form of

asymmetric autonomy that gives Papua Province greater control over its governance and development affairs in its territory. This includes special regulations related to natural resources, culture, and various aspects of social and economic life. However, despite its implementation, the question arises as to how effective special autonomy can be as an instrument in reducing regional inequality in Papua Province. Second, since the implementation of regional autonomy, the Indonesian Government has been working to address regional inequality. From a fiscal perspective, regional governments receive budget transfers from the central government to carry out development and reduce financial inequality between regions in a more flexible manner. In the long term, it is expected that regional governments can work better and begin to demonstrate balanced regional development and create prosperity for all citizens. The main instrument of fiscal decentralization in Indonesia is the policy of transfers to regions, consisting of general allocation funds (DAU), special allocation funds (DAK), and revenue-sharing funds (DBH) derived from tax revenues and natural resources [12]. This policy aims to improve the efficiency of providing public sector services in regions, in order to achieve better community welfare. This is because regional governments are considered to have a better understanding of the conditions of their local communities, leading to the expectation of better public services [13]. Several empirical studies have explored the fiscal decentralization response to reducing regional inequality. For example, Liu et al. [14], Rodríguez-Pose & Ezcurra [15], Bonet [16], found that fiscal decentralization has a positive impact on inequality, while Suwanan & Sulistiani [17] found that fiscal decentralization can reduce regional inequality, where additional income provided to regional governments can lead to regional growth and narrowing the gap between regions. With fiscal decentralization in place, Papua Province can manage its revenue and allocate funds according to regional needs. However, the question arises as to how much fiscal decentralization can have a positive impact on reducing regional inequality in Papua Province. In general, effective fiscal decentralization can reduce regional inequality by giving more authority and responsibility to regions, allowing them to respond to local community needs more quickly and effectively. Fiscal decentralization can also enhance community involvement in decision-making processes that affect their regions, increasing awareness of regional interests and reducing regional inequality.

Our research contributes significantly to the existing literature in several aspects. First, we investigate the impact of special autonomy in Papua Province with a comprehensive approach. This includes an analysis of how special autonomy affects resource allocation, development policies, and the autonomous region's ability to meet local community

needs. The results of this analysis will provide important insights into the effectiveness of special autonomy as a tool for reducing regional inequality. Second, we approach the issue of fiscal decentralization with a focus on financial aspects. We investigate how fiscal decentralization affects budget management at the regional level in the context of Papua Province. This will involve in-depth analysis of how the allocation of transfer funds from the central government plays a role in reducing regional inequality. Third, we examine the interaction between special autonomy and fiscal decentralization in the Papua context. This will provide a better understanding of how these two concepts work together or may complement each other to achieve better regional inequality reduction. Fourth, we consider the social and cultural context of Papua Province in our analysis. This will allow us to understand how these factors influence the implementation of special autonomy and fiscal decentralization, as well as their impact on regional inequality. With this comprehensive approach, our research aims to provide a deeper understanding of the role of special autonomy and fiscal decentralization in reducing regional inequality in Papua Province. Our research can fill gaps in understanding regional inequality in Papua Province, guiding researchers and practitioners toward key aspects to consider in policy development and development programs in this region. Thus, our research not only provides deeper insights into regional inequality in Papua Province but also provides a foundation for more effective policy measures in addressing this issue.

The remainder of this paper is organized as follows. Section 2 discusses the literature review, Section 3 covers the research methods, data, and analysis instruments. Section 4 presents the results and discussions. Section 5 is the conclusion of the paper and our recommendations.

2. Literature Review

2.1. Regional inequality

The theory of regional inequality essentially covers three main issues: first, whether regional equality is increasing or decreasing over time; second, the causes of this inequality; and third, development strategies that can be used to reduce regional inequality [18]. Since the 1950s, there has been intense debate between two main approaches: convergence and divergence. Neoclassical theory and the "inverted U" model are common examples of convergence views. Neoclassical growth theory emphasizes the importance of equilibrium conditions and the role of markets in resource

allocation. They view regional inequality as temporary and an unavoidable stage in achieving the final balance. In contrast, the "inverted U" theory argues that regional inequality tends to increase in the early stages of economic development and decreases as the economy matures [19]. Some intellectuals, such as Perroux and Hirschman, advocated government intervention and the development of economic growth centers. This approach is known as "top-down" or "bottom-up" development [20]. However, in the 1970s, when poverty and regional inequality remained problems, an approach emphasizing divergence and the cumulative effects of its causes emerged. Radical political economy perspectives, for example, saw regional inequality as inevitable within the context of a capitalist system. They had a pessimistic view of the policy's impact on reducing regional inequality.

According to Kuznets [21], inequality is the result of development and economic growth, which tends to increase in the early stages of development. Kuznets also identified key factors contributing to inequality, such as capital accumulation among high-income individuals, the shift from agriculture to more advanced industrial sectors, and differences in the availability of natural resources [22]. Some argue that increasing inequality can create pressure for reducing inequality. Sitaraman in Peterson [23], argued that the progressive era in the United States, which contributed to reducing inequality, was triggered by high income and wealth inequality. However, there is a pessimistic view that increasing inequality is a fundamental characteristic of civilized societies, which can only be slowed down by wars, revolutions, civil unrest, and widespread disease outbreaks, as articulated by Scheidel in Peterson [23]. Modern explanations of increasing inequality today involve technological changes that support skilled workers [24] and the complex impacts of globalization. Although various factors play a role, economic inequality remains a complex issue with diverse theories and practices associated with it.

2.2. Asymmetric decentralization

One of the major trends in multi-level governance over the past few decades has been the increasing use of asymmetric approaches in assigning public responsibilities to subnational governments. This approach results in subnational governments at the same level, such as regions or cities, being given different political, administrative, or fiscal powers depending on factors such as population size, ethnicity, language, cultural identity, geographic characteristics, or fiscal capacity. In the last seven decades,

asymmetric decentralization has become increasingly common, especially in unitary states [25].

Asymmetric decentralization, also known as special autonomy [26], is a state policy involving decentralization with special treatment that does not apply to all regions. In Indonesia, some regions granted this special treatment include Naggroe Aceh Darussalam Province, DKI Jakarta Province, Daerah Istimewa Yogyakarta Province, Papua Province, and West Papua Province [27].

For example, Papua Province implements asymmetric decentralization, regulated under Law Number 21 of 2001 on Special Autonomy for Papua and amended by Law Number 35 of 2008. This law defines special autonomy as special authority granted to Papua Province to regulate and manage the interests of local communities based on their aspirations and basic rights. The grant of special autonomy aims to reduce development disparities between Papua and other provinces and to improve the welfare and living standards of the indigenous people of Papua.

2.3. Fiscal decentralization

Fiscal decentralization, also known as fiscal federalism, involves the transfer of fiscal authority from the central government to regional and local levels [28]. It is based on the theory of fiscal federalism, which highlights the benefits of transferring responsibilities to lower levels of government. The main reason is that local governments are closer to local communities and have a better understanding of their needs. This allows them to allocate resources more efficiently for services tailored to local needs [29]. From an economic perspective, fiscal decentralization is seen as a way to increase efficiency by creating competition between local governments. This competition allows citizens to choose jurisdictions that offer the optimal combination of services and taxes. This promotes allocative efficiency [30].

Fiscal decentralization aims to achieve two main goals: vertical fiscal equalization and horizontal fiscal equalization. Vertical fiscal equalization means equalizing the allocation of funds between the central government and regions, while horizontal fiscal equalization involves the allocation of funds between autonomous regions. The goal is to address fiscal imbalances due to differences in capacity and fiscal needs between regions [27]. In Indonesia, the allocation of funds aims to achieve financial equalization between regions. This is done through Revenue Sharing Funds (DBH),

General Allocation Funds (DAU), and Special Allocation Funds (DAK) allocated by the central government (Law Number 33 of 2004).

3. Methods

The data used in this research are time series data from 2011 to 2022 for Papua Province. For the special autonomy variable, we approximated it using the special autonomy fund (DOK), while for the fiscal decentralization variable, we approximated it using the general allocation fund (DAU), special allocation fund (DAK), and revenue-sharing fund (DBH). This data was obtained from the Central Statistics Agency (BPS) and the Directorate General of Financial Balance of the Ministry of Finance of the Republic of Indonesia.

In this study, the data was analyzed using statistical analysis with the Eviews 12 software. To measure the level of regional inequality, we used the Williamson Index with the following formula [19]:

$$IW = \frac{(Y_i - Y)^2 . f_i/n}{Y}$$

Where: IW is the Williamson Index, Yi is the per capita income of region i, Y is the average per capita income of all regions, fi is the population of region i, and n is the total population of all regions.

The proposed model is a linear regression model with four independent variables and one dependent variable, which is regional inequality. Econometrically, the specification of this model is as follows:

IW= $\beta_0 + \beta_1$LN_DOK + β_2LN_DAU + β_3LN_DAK + β_4LN_DBH + ϵ

IW: Regional Inequality proxied by the Williamson Index

DOK: Special Autonomy Fund

DAU: General Allocation Fund

DAK: Special Allocation Fund

DBH: Revenue Sharing Fund

β_0: Constant

β_1-β_4: Coefficients of Independent Variables

ϵ: Error Term

Before conducting the analysis, the data will be tested to ensure the fulfillment of classical assumptions such as data normality, heteroskedasticity, multicollinearity, and

autocorrelation. If these assumptions are not met, corrective actions or data transformations will be applied.

4. Results and Discussion

4.1. Descriptive statistics

Table 1 presents the descriptive statistics of all research variables used. From the table, it can be observed that the mean values for each variable are different, indicating variation in the data. Additionally, significant standard deviations in some variables such as DOK and DAU suggest a relatively large data dispersion. This indicates that the data has a considerable degree of variability within the observed range of values. The IW variable has a relatively small range of values and a low standard deviation, indicating that the data has a lower level of variation compared to the other variables.

TABLE 1: Descriptive statistics.

Variable	N	Minimum	Maximum	Mean	Std. Deviation
DOK	11	3.957.459.547.550,00	8.674.676.695.000,00	6.859.291.992.322,7280	1.656.282.023.789,87
DAU	11	1.276.285.908.000,00	8.112.620.037.000,00	2.679.600.428.827,2725	1.851.064.348.850,81
DAK	11	72.115.650.000,00	2.584.442.972.000,00	687.745.894.153,8182	745.716.904.026,32
DBH	11	413.012.330.146,00	2.299.531.410.000,00	757.153.164.998,3636	534.415.267.130,11
IW	11	1,27	2,36	1,7755	0,29774

4.2. Measurement model analysis

As previously explained, we conducted classical assumption tests in this regression analysis to ensure that the results obtained are in line with basic assumptions. Based on the analysis results shown in Table 2, all independent variables have Variance Inflation Factor (VIF) values below 10. This indicates that there is no multicollinearity issue with the independent variables. Normality test results also show that the Jarque-Bera probability is greater than 0.05, indicating that the distribution of the research data tends to be normal. Meanwhile, the autocorrelation test using the Breusch-Godfrey Serial Correlation LM Test method shows values greater than 0.05. With these results, we can conclude that the regression model does not suffer from autocorrelation problems. Furthermore, the heteroskedasticity test results using the Breusch-Pagan-Godfrrey method also show

values greater than 0.05. Therefore, we can conclude that there is no indication of heteroskedasticity in the regression model.

TABLE 2: Summary of data analysis results.

Variable	Coefficient	Std. Error	t-Statistic	Prob.	VIF
C	32.64396	13.50884	2.416489	0.0521	
DOK	-0.001174	0.000473	-2.480900	0.0477	4.252
DAU	2.49E-06	0.000411	0.006056	0.9954	9.140
DAK	6.08E-05	0.000147	0.413624	0.6935	7.467
DBH	7.73E-05	0.000305	0.253248	0.8085	5.392
Dependent Variable	IW	Jarque-Bera			0.343155
R-squared	0.729252	Prob(Jarque-Bera)			0.842335
Adjusted R-squared	0.548753	Heteroskedasticity Test Breusch-Pagan-Godfrrey			0.0692
F-statistic	4.040201	Breusch-Godfrrey Serial Correlation LM Test			0.0669
Prob(F-statistic)	0.063268				

Based on Table 2, the model's goodness-of-fit test results show that the variables DOK, DAU, DAK, and DBH collectively influence IW. The calculated F-value is 4.040 with an F probability of 0.063. Because the F probability is less than 0.1 (the significance level used), we can conclude that these independent variables have a significant simultaneous effect on regional inequality proxied by the Williamson Index.

The adjusted coefficient of determination (Adj. R-squared) with a value of 0.548 indicates that approximately 54.8% of the variation in regional inequality proxied by the Williamson Index is explained by the independent variables, namely special autonomy funds, general allocation funds, special allocation funds, and revenue-sharing funds. The remaining 45.2% is the result of other factors not included in the research model.

Furthermore, in partial terms, the t-statistic test results indicate that only the special autonomy funds variable has a significant effect on regional inequality proxied by the Williamson Index. The negative coefficient value of special autonomy funds with its probability less than 0.1 indicates that an increase in special autonomy funds will lead to a reduction in regional inequality proxied by the Williamson Index.

4.3. Discussion

4.3.1. The impact of special autonomy funds on regional inequality

Based on the analysis results, we found that special autonomy funds have a significant negative impact on the level of regional inequality in Papua Province. This result indicates that by increasing the allocation of special autonomy funds to Papua Province, the level of regional inequality in this area will decrease. In the context of Regional Economic Growth theory, this finding can be explained as a crucial step in achieving more equitable regional development. This theory emphasizes the importance of proper resource allocation in specific regions to promote balanced economic growth. In the context of Papua Province, special autonomy funds can be seen as additional resources allocated to the region. The primary goal of allocating these funds is to address regional inequality through efforts such as accelerating economic development, improving welfare, and advancing the Papua community, with the ultimate goal of achieving equality and balance with other provinces [11]. Special autonomy funds can only be allocated to support programs in education, healthcare, community empowerment, and infrastructure for the indigenous people of Papua. By increasing income and improving access to education, healthcare, and infrastructure services, these special autonomy funds have the potential to reduce poverty levels among the indigenous population of Papua. This positive impact, in turn, can contribute to the reduction of regional inequality. This finding is consistent with data from the Central Statistics Agency [4], which shows that the poverty rate in Papua Province is generally concentrated among the indigenous population of Papua. It also supports the view of Khan et al. [31] that education and healthcare play a crucial role in a country's development by accumulating human resources and driving the development process. In other words, this finding highlights the importance of allocating special autonomy funds as a policy instrument that can support the implementation of regional economic growth theory. Through the proper and effective use of these funds, Papua Province can move towards more equitable and inclusive regional development. This research result is also in line with [9], which found that special autonomy funds have a significant influence in addressing development inequality. This indicates that the budget planning formulated has taken into account geographical aspects to achieve development goals effectively.

4.3.2. The impact of fiscal decentralization on regional inequality

Based on the analysis results, we found no significant relationship between fiscal decentralization, proxied by general allocation funds, special allocation funds, and revenue-sharing funds provided by the central government, and the level of regional inequality in Papua Province. This means that, based on the investigated data, there is no strong evidence to support the argument that an increase in intergovernmental transfer funds will significantly reduce regional inequality in Papua Province.

In terms of allocation, intergovernmental transfer policies essentially aim to improve the efficiency of public sector service provision in regions to achieve better public welfare. This is because local governments are considered to have a better understanding of the conditions of their region's population, which is expected to lead to better public service provision [13]. Thus, the research findings indicate that the utilization of intergovernmental transfer funds by local governments has not been maximized. This can be understood given Papua Province's challenging geographical conditions, making it difficult to access, and, as a result, public services funded by these funds may not be accessible to the entire population of Papua. Additionally, prolonged social conflict and security challenges in some areas of Papua Province may also contribute to the suboptimal utilization of intergovernmental transfer funds by local governments. These conditions undoubtedly hinder the implementation of development programs and investments that should support the reduction of regional inequality in Papua Province.

The lack of a significant impact of fiscal decentralization on regional inequality in Papua Province can also be attributed to the unfair formula for intergovernmental transfer allocation. The allocation mechanism for intergovernmental transfers typically takes into account population size, resulting in areas with larger populations receiving larger transfer funds. According to the Badan Pusat Statistik Provinsi Papua [4] report, although the number of poor people in Papua Province is larger than in DKI Jakarta, DKI Jakarta receives a larger share of intergovernmental transfer funds due to its larger population. This research result is in line with the findings of Liu et al. [14], Rodríguez-Pose & Ezcurra [15], Bonet [16], which found that fiscal decentralization leads to increased inequality due to the lack of a fair transfer system. While transfer rules cover some redistributive issues, the resources transferred based on these criteria are very limited.

5. Conclusion and Suggestions

This research concludes significant main findings. First, special autonomy has a significant negative impact on the level of regional inequality in Papua Province. This suggests that increasing the allocation of special autonomy funds can reduce regional inequality. These funds are considered a vital instrument in achieving more equitable and inclusive regional development. Proper utilization of these funds to support education, healthcare, infrastructure, and community empowerment programs can further enhance the well-being of the local population. Second, no significant relationship was found between fiscal decentralization, proxied by general allocation funds, special allocation funds, and revenue-sharing funds provided by the central government, and the level of regional inequality in Papua Province. This implies that an increase in intergovernmental transfer funds from the central government does not have a significant impact on reducing regional inequality in Papua Province. Factors such as challenging geographical conditions and social conflicts may hinder the optimal utilization of intergovernmental transfer allocations by local governments. Moreover, the unfair formula for intergovernmental transfer allocation contributes to fiscal decentralization's inability to reduce regional inequality in Papua Province.

The findings of this research have significant implications. First, the finding that special autonomy has a positive impact on reducing regional inequality in Papua Province underscores the importance of sustaining special autonomy policies. Increasing the allocation of special autonomy funds should be considered a strategic step to support more equitable development in Papua Province. These funds are regarded as a crucial instrument in achieving more equitable and inclusive regional development. Proper use of these funds to support education, healthcare, infrastructure, and community empowerment programs can enhance the well-being of the local population. Second, the finding that fiscal decentralization does not have a significant impact on reducing regional inequality in Papua Province reminds us of the importance of efficient management in the use of transfer funds from the central government to local governments. Reform in the intergovernmental transfer allocation formula is also necessary to ensure fair allocation that takes into account Papua Province's specific conditions. Additionally, strict audits of transfer fund usage are needed to ensure that the funds are used for their intended purpose of reducing regional inequality. Local governments should also involve more local communities in the planning and implementation of development

programs, with the hope that Papua Province can achieve more equitable, inclusive, and sustainable development, reducing the existing level of regional inequality.

Although this research provides valuable insights, several limitations should be acknowledged. First, this research is limited to the provincial level of analysis in Papua Province, so its results may not be directly applicable to the district or city levels within the province. Therefore, future research may consider conducting more in-depth analyses at the more local level to gain a more detailed understanding of regional inequality in Papua Province. Second, in this analysis, the primary focus was on the variables chosen as proxies for fiscal decentralization and special autonomy. There is a possibility that other factors not included in this research model may also have an impact on regional inequality. Therefore, future research may consider incorporating additional relevant variables to gain a more comprehensive understanding of this phenomenon. Finally, the social, cultural, and political conditions in Papua Province are highly complex, and this research cannot cover all relevant aspects. As a result, some contextual factors that can influence regional inequality may not be fully explored in this research. Thus, future research may involve a more interdisciplinary approach and engage local stakeholders to gain a deeper understanding of on-the-ground conditions.

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