The allocation of special autonomy funds and their impact on regional economic inequality in Papua Province

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Abstract. Allocation of Special Autonomy Funds and Their Impacts on Regional Economic Inequality (Case Study in Papua Province in 2010-2018). This study aimed to determine the impact of the allocation of special autonomy funds in the field of regional economic inequality both directly and indirectly through the human development index in Papua Province. The type of data used was panel data and data collection was done by the documentation method. The data were analyzed using the Simultaneous Equation Model approach with the help of the Amos 21 SPSS software. The results showed that the variable of special autonomy funds in education and health had a significant positive effect on the human development index, while the variable of special autonomy funds in infrastructure and in the field of community economic empowerment was not significant to the human development index. Furthermore, the special autonomy fund in infrastructure directly has a significant negative effect on regional economic imbalances. While the special autonomy fund in the field of community economic empowerment does not have significant effect on regional economic inequality. Indirectly through the HDI, variables of special autonomy funds in the fields of education, health, infrastructure, and community economic empowerment do not have a significant effect on regional economic inequality.

1. Introduction
The benchmarks for the achievement of development can be observed or measured through two indicators consisting of economic indicators and social indicators. Economic indicators include economic growth rate, regional economic structure, and income distribution. While social indicators include: Human Development Index (HDI), poverty rate and unemployment rate.

The development carried out so far has been quite capable of encouraging an increase in the regional economic growth rate, but in many cases, it is relatively unable to reduce disparities in development between regions. Basically, the tendency of high regional economic inequality between developed and developing regions is influenced by several factors, including the progress of economic development [1] political situation and fiscal decentralization [2], and also HDI [3].

Todaro (2003) explains that the negative impacts of extreme inequality include economic inefficiency, weakening social stability and solidarity, and high inequality which is generally seen as unfair conditions [4].
Heading to the southern region of Papua Province that inequality in economic development in this region is a serious macroeconomic problem and is a joint commitment at the central, provincial and district/city government levels. Based on this, on November 21, 2001, Act No. 21 of 2001 concerning the Special Autonomy for Papua was established. The granting of special autonomy for Papua is intended to bring about justice, upholding the rule of law, respect for human rights, accelerating economic development, improving the welfare and progress of the people of Papua, in the framework of equality and balance with the progress of other provinces.

| Year | Williamson Index |
|------|------------------|
| 2010 | 0.81             |
| 2011 | 0.86             |
| 2012 | 0.73             |
| 2013 | 0.87             |
| 2014 | 0.93             |
| 2015 | 1.02             |
| 2016 | 0.76             |
| 2017 | 0.70             |
| 2018 | 0.77             |

*Source: Central Bureau of statistics of Papua Province (processed data)*

The acceleration of economic development in question is an increase in income per capita of the population, acceleration of economic growth, equitable distribution of income through empowering people's economy and increasing the Human Development Index (HDI). As a source of funding for the implementation of development in the Papua Province during the special autonomy era, the Central Government issued the Law No. 21 of 2001 Article 34 concerning sources of provincial revenue, one of which was the Balancing Fund for the Papua Province, Regency/City in the context of Special Autonomy. From the total amount of the special autonomy funds, 20% was given to districts/cities and 80% to the provinces, which prioritized 30% in education, 15% in health, 25% in infrastructure and 20% in people's economic empowerment.

The primary purpose of the transfer implementation is to internalize fiscal externalities that arise across regions, improve the taxation system, correct fiscal inefficiencies, and fiscal equity across regions [5]. Fiscal decentralization in developing countries is motivated by the government's efforts to improve economic efficiency, achieve cost efficiency, improve accountability, or increase resource mobilization[6]. [7], government and fiscal decentralization are driven by the urge to provide more efficient government services. This transfer is very important in implementing decentralization in Asia.

2. Method

2.1. Type and source of data

The type of data in this study which were used as the analysis material using secondary time series data approach (time series) was in the form of regional economic inequality data, HDI, special autonomy fund for education, special autonomy fund for health, special autonomy fund for infrastructure, special autonomy fund in the field of community economic empowerment from 2010 - 2018.

The data obtained in this study were from the Central Bureau of Statistics of Papua Province for the Human Development Index data and the special autonomy fund data from the Regional Financial and Asset Management Agency of Papua Province and the results of the author's study.
2.2. Data analysis technique

In this study, the data analysis technique was carried out using the simultaneous equation model approach using SPSS Amos 21 software. The data analysis technique was guided by a significant level of 5% or 0.05.

Mathematically, the model can be stated in the following function:

**IPM Model**

\[
Y_1 = f(X_1, X_2, X_3, X_4) \quad \text{......................................................(1)}
\]

**Regional Economic Inequality Model**

\[
Y_2 = f(X_1, X_4, Y_1) \quad \text{......................................................(2)}
\]

Based on the functional relationship above, several substructure equations can be described as follows:

The equation of the IPM model substructure

\[
e^{Y_1} = X_1^a_1 X_2^a_2 X_3^a_3 X_4^a_4 e^{\alpha_0 + \epsilon_1}
\]

\[
\ln Y_1 = \ln \alpha_0 + \alpha_1 \ln X_1 + \alpha_2 \ln X_2 + \alpha_3 \ln X_3 + \alpha_4 \ln X_4 + \epsilon_1 \quad \text{.................................(3)}
\]

Equation substructure equation of Regional Economic Inequality

\[
e^{Y_2} = X_1^\beta_1 X_4^\beta_2 e^{\beta_0 + \beta_3 Y_1}
\]

\[
\ln Y_2 = \ln \beta_0 + \beta_1 \ln X_1 + \beta_2 \ln X_4 + \beta_3 \ln Y_1 + \epsilon_2 \quad \text{.................................(4)}
\]

The influence of special autonomy fund in education, special autonomy fund in health, special autonomy fund in infrastructure and special autonomy fund in the field of community economic empowerment through HDI with the substitution of equation (3) to equation (4) so that it can be formulated as follows:

Substitution of equation (3) to equation (4)

\[
\ln Y_1 = \alpha_0 + \alpha_1 \ln X_1 + \alpha_2 \ln X_2 + \alpha_3 \ln X_3 + \alpha_4 \ln X_4 + \epsilon_1
\]

\[
\ln Y_2 = \beta_0 + \beta_1 \ln X_1 + \beta_2 \ln X_4 + \beta_3 \ln Y_1 + \epsilon_2
\]

\[
= \beta_0 + \beta_1 \ln X_1 + \beta_2 \ln X_4 + \beta_3 (\ln \alpha_0 + \alpha_1 \ln X_1 + \alpha_2 \ln X_2 + \alpha_3 \ln X_3 + \alpha_4 \ln X_4 + \epsilon_1) + \epsilon_2
\]

\[
= \beta_0 + \beta_1 \ln X_1 + \beta_2 \ln X_4 + \alpha_0 \ln \beta_1 + \alpha_1 \beta_1 \ln X_1 + \alpha_2 \beta_2 \ln X_2 + \epsilon_1
\]

\[
\ln Y_2 = \ln \beta_0 + \ln \alpha_0 \beta_1 + \beta_1 \ln X_1 + \beta_2 \ln X_4 + \alpha_1 \beta_1 \ln X_1 + \alpha_2 \beta_2 \ln X_2 + \epsilon_1
\]

\[
\alpha_1 \beta_1 \ln X_1 + \alpha_2 \beta_2 \ln X_2 + \alpha_4 \beta_3 \ln X_4 + \epsilon_1 \quad \text{.................................(5)}
\]

Next, it is simplified to be:

\[
Y_2 = \ln \delta_0 + \delta_1 \ln X_1 + \delta_2 \ln X_2 + \delta_3 \ln X_3 + \delta_4 \ln X_4 + \mu \quad \text{.................................(6)}
\]

with:

- \(Y_1\) : Regional Economic Inequality
- \(Y_2\) : Human Development Index
- \(\alpha_0, \beta_0\) : constant
- \(\alpha_1, \alpha_2, \alpha_3, \alpha_4\) : Slope or coefficient or intercept
- \(\beta_1, \beta_2, \beta_3\) : Slope or coefficient or intercept
- \(X_1\) : Special Autonomy Fund in Education Field
- \(X_2\) : Special Autonomy Fund in Health Field
- \(X_3\) : Special Autonomy Fund in Infrastructure Field
- \(X_4\) : Special Autonomy Fund in Community Economic Empowerment Field
- \(\epsilon_1, \epsilon_2, \epsilon_3\) : error term

3. Result and discussion

Technical data analysis was performed using the simultaneous equation model with the help of the Amos 21 SPSS software. The results of the statistical analysis are shown in the table below.
Table 2. Results of statistical analysis of direct effects

| Variable | Direct Effects | Indirect Effects | Total Effects | P    | Label |
|----------|----------------|------------------|---------------|------|-------|
| Y₁<---X₁ | .021           | .470             | 2.821         | .003 | S     |
| Y₁<---X₂ | .562           | .389             | 1.897         | .014 | S     |
| Y₁<---X₃ | .012           | .166             | .070          | .066 | NS    |
| Y₁<---X₄ | .128           | .136             | .939          | .148 | NS    |
| Y₂<---Y₁ | .025           | .022             | 1.124         | .261 | NS    |
| Y₂<---X₄ | .001           | .018             | .076          | .940 | NS    |
| Y₃<---X₃ | -.027          | .022             | -1.248        | .011 | S     |

Source: Output of SPSS Amos 21.

Table 3. Results of statistical analysis of indirect effects

| Variable | Direct Effects | Indirect Effects | Total Effects | Information |
|----------|----------------|------------------|---------------|-------------|
| X₁       | -              | .912             | .912          | NS          |
| X₂       | -              | .863             | .863          | NS          |
| X₃       | .001           | 1.771            | .0017         | NS          |
| X₄       | -.027          | 1.231            | -.0332        | NS          |

Information:
α : 5% or 0.05
S : Signifikan
NS : Not Significant

3.1. The effect of special autonomy funds for education on HDI and regional economic inequality

Based on the results of statistical analysis in Table, special autonomy fund for education (X₁) has a significant positive effect on HDI (Y₁) with an estimated value of 0.021 and a probability of 0.003. These results indicate that each increase in special autonomy funds for education by 1% will increase the HDI by 2.1%. Meanwhile, indirectly through the HDI, variable of education special autonomy fund (X₁) does not have a significant effect on regional economic inequality.

3.2. The effect of special autonomy funds for health on HDI and regional economic inequality

The special autonomy fund for the health sector (X₂) has a significant positive effect on HDI (Y₁). Based on the table, it can be seen that the estimated value of the special autonomy fund variable in the health sector is 0.562 and the probability is 0.014 or <0.05 so that it has a significant positive effect on HDI. These results indicate that each increase in the special autonomy fund for the health sector by 1% will increase the HDI by 5.62%. Like the special autonomy fund for the education field, the results of the analysis show that indirectly through HDI, special autonomy fund for education variable (X₁) does not have a significant effect on regional economic inequality.

3.3. The effect of special autonomy funds for infrastructure on HDI and regional economic inequality

Infrastructure special autonomy fund (X₃) does not have a significant effect on HDI (Y₁). Based on the table, it can be seen that the estimated special autonomy fund variable in the infrastructure sector is
0.012 with a probability level of 0.066 or greater than the significant level used which is > 0.05. The results of the subsequent statistical analysis show that the special autonomy fund variable in the infrastructure sector is negative and significant to regional economic inequality (Y2) with an estimated result of -0.027 with a probability level of 0.011. This means that every 1% increase in the special autonomy fund for infrastructure will reduce regional economic inequality by 1.1%. While indirectly through HDI, the variable of special autonomy fund for the field of infrastructure does not significantly affect the regional economic imbalances.

3.4. The effect of the special autonomy fund for community economic empowerment on HDI and regional economic inequality
The special autonomy fund for the field of community economic empowerment (X4) does not have a significant effect on HDI (Y1). Based on the table, it can be seen that the estimated value of special autonomy fund variable in the field of community economic empowerment is 0.128 with a probability of 0.148 or > 0.05. On the other hand, the results of statistical analysis show the effect of HDI (Y1) on regional economic inequality (Y2). The results of the analysis show that the special autonomy fund variable in the field of community economic empowerment does not have a significant effect on regional economic inequality (Y2) with an estimated result of 0.001 and a significant level of 0.940. Finally, it is seen that indirectly through HDI, the special autonomy fund variable in the field of community economic empowerment does not have a significant effect on regional economic inequality.

4. Conclusion
Based on the results discussed previously, it can be concluded that the special autonomy fund has not yet had a significant impact on regional economic inequality in Papua Province in 2010-2018. This indicates that there is a need for a more focused budget planning formulation by looking at geographical aspects to achieve the development goals effectively.

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