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Benefit Incidence Analysis of Education Sector in Divided Region in North Sulawesi

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Abstract

This research was conducted to understand the impact on the economic development, fiscal capacity, and public service in South Minahasa District and Tomohon City by Benefit Incidence Analysis (BIA), for helping the government to evaluate the program. It showed that the benefit of education expenditure in South Minahasa District on 2015 has mostly benefited. The next revenue group benefiting from most of the education expenditures is the third, or middle, revenue quintile, and it is similar to Tomohon City. In conclusion, the

education expenditure benefit at South Minahasa District in 2015 is enjoyed mostly by the first and second revenue quintiles.

Análisis de incidencia de beneficios del sector de educación en una región dividida en Sulawesi del Norte

Resumen

Esta investigación se realizó para comprender el impacto en el desarrollo económico, la capacidad fiscal y el servicio público en el Distrito Sur de Minahasa y en la Ciudad de Tomohon mediante el Análisis de Incidencia de Beneficios (BIA), para ayudar al gobierno a evaluar el programa. Mostró que el beneficio del gasto en educación en el distrito sur de Minahasa en 2015 se ha beneficiado principalmente. El siguiente grupo de ingresos que se beneficia de la mayoría de los gastos en educación es el tercer o medio quintil de ingresos, y es similar a Tomohon City. En conclusión, el beneficio del gasto en educación en el distrito sur de Minahasa en 2015 se obtiene principalmente por el primer y segundo quintiles de ingresos.

Palabras clave: Análisis de incidencia de beneficios, descentralización fiscal.

1. INTRODUCTION

Regional government management in Indonesia has entered a new era since the implementation of regional autonomy and fiscal decentralization on January 1, 2001. According to Indonesia Regulation Law 33/2004, decentralization is the delegation of authority from the central government to the regional one in order to manage and decide the governmental affairs within the Republic of Indonesia. The country's economic history shows that decentralization has meant not only a push to decrease the power of the central government (centrality), but also to bolster the regions' aspirations in a

variety of ways involving not only economic potential but also regional identity. The meaning of this power shift is not only about the freedom to run their own government, but also to obtain more fair and better treatment from the central government. In the days of centralized Indonesian under the Orde Baru (New Order), the surplus of production and natural resources from the rich regions was divided by the central government instead of being invested in those regions' development, causing regional development to become very slow. As a result, a developmental imbalance occurred between the outer regions and the center. Regional autonomy as the public policy from the central government in the regulation form is not a way to guarantee the ability to increase regional financing and fiscal decentralization and also guarantee frugality in expenditure management unless the issued regulations can clearly and transparently encompass all aspects of financial management.

The implementation of regional autonomy in Indonesia pushed several districts, cities, and provinces to divide so as to move public policymaking and geopolitical and geoeconomic considerations closer to the people, accelerating the regions' economic growth by fixing the regional economic development framework based on local potential. According to the research of Hermanislamet (2005), by the development of new autonomous regions, the variety of potential economic opportunities which were ignored before will now be available and exploitable; moreover, the regional division can also absorb more and larger resources, either in the private or governmental sector, that can open new jobs by dividing the power in the political and governmental sector: what occurs within the society will support

the regional division by improving economic opportunities either directly or indirectly. Another reason involves the regional financial and political aspects which, according to Lewis (2001), arise as the effect of the change in the national financial allocation system that has been implemented along with regional autonomy. In this system, each of newly divided regions obtains an allocation of equalization funds from the central government, in the form of Dana Bagi Hasil (Profit-Sharing Funds), Dana Alokasi Umum (General Allocation Funds), or Dana Alokasi Khusus (Special Allocation Funds). The political aspects include people's desire to get, through political figures, new positions, either as region chiefs or as representatives in the new House of Representatives and the new regional working units (Sjafrizal, 2008).

The Province of North Sulawesi is one of the most strategic provinces in Eastern Indonesia. In the first decade of the twenty-first century, there was among the people arise in inspiration and aspirations for the regional division. Administratively, the region of North Sulawesi Province consisted of five districts and three municipalities: there were the Minahasa, Bolaang Mongondow, Gorontalo, Sangihe, and Talaud Districts, and the Municipalities of Manado, Bitung, and Gorontalo. According to the data gathered by Central Board of Statistics, the locally generated revenue of South Minahasa District was IDR11.9 billion in 2013, IDR15.4 billion in 2014, and IDR20.4 billion in 2015. Meanwhile, the locally generated revenue of Tomohon District was IDR12.7 billion in 2013, IDR21.2 billion in 2014, and IDR24.9 billion in 2015. For the education sector, the School Enrollment Rate (Indonesian: Angka Partisipasi Sekolah, APS) of the South Minahasa District in 2011 was 98.02% for ages 7-

12, 87.59% for ages 13-15, 60.77% for ages 16-18, and 15.16% for ages 19-24. In 2014, it was 99.33% for ages 7-12, 94.59% for ages 13-15, 72.22% for ages 16-18, and 21.31% for ages 19-24. Meanwhile, APS of Tomohon City in 2011 was 97% for ages 7-12, 85.32% for ages 13-15, 59.49% for ages 16-18, and 16.72% for ages 19-24. In 2014, it was 98.32% for ages 7-12, 91.80% for ages 13-15, 73.80% for ages 16-18, and 25.13% for ages 19-24. With those data, it can be inferred that an increase in, both locally generated revenue and APS occurred in the South Minahasa District and Tomohon. The purpose of this research is to understand the impact of the division on economic development, fiscal capacity, and public service in the South Minahasa District and Tomohon City by Benefit Incidence Analysis (BIA), to see the impact of the division policy that was implemented by the government, to help the government to evaluate the efficiency and fairness of the program.

1.1. Basic concept of regional economy

In the regional economy discussion, general economy knowledge's materials are required to be modified and developed until becoming suitable to the regional economy knowledge's characteristic. Tarigan (2005) mentioned that the main purposes of the economic policy are full employment, economic improvement, and price stability. For those purposes, there is an impossible purpose to do with the regional government if the region works alone, that is price stability. Besides those two purposes, there are several other main purposes that can be managed by regional government better than by

central government. Those purposes are to (1) sustain living environment preservation, (2) equalize the development and region, (3) make more harmonious, synergic, and sustainable linkage amongst sectors in the region, (4) establish the region's superior sector, and (5) fulfill the region's food provision.

1.2. Theory of region dividing

The region dividing is an establishment of the new region, either in the province, district, or city. This is regulated in Indonesian Law 32/2004 about regional government. The new region establishment basically purposes to increase the people's prosperity through better service, more developing democratic life, faster economic growth, better security and order, and harmonious relation amongst regions. According to Sjafrizal (2008), the region's establishment process is based on three requirements. This is also mentioned in Indonesian Law 32/2004 which in the region's new establishment (region dividing), every region must fulfill three requirements. Administrative requirements for the province are the approvals of districts'/cities' House of Representative and Regent/Chief that will become the scope of the province's region, the approvals of parent province's House of Representative and Governor, and the recommendation of Minister of Home Affairs. Technical requirements are factors to become the reason of region's establishment involving economic ability, the regions potential, socio-politics, population, region area, defense and security, and other factors allowing the conducting of regional autonomy. Physical requirements are the region that will be divided (in

the establishment of the province covering minimum five districts/cities, in the establishment of the district covering minimum five subdistricts and the establishment of the city needs minimum four subdistricts), the capital candidate's location, and the government's means and infrastructure.

The aspects of indicators in order to achieve the development of this dividing are:

•   Performance of Region's economy, Non-Oil & Gas Gross Regional Domestic Product per capita (x);

•Performance of Regional Government's Finance (x);

•Performance of Public Service (x);

•Performance of Regional Government's apparatus (x);

According to the research conducted by Nazara and Nurkholis (2007), generally a region will be divided if that region lies outside Java and Bali Island; district-status region has its own regional revenue of big total expenditure, not the new dividing-result region, has a gross regional domestic product contributing dominantly to the total gross regional domestic product (of the applied basic price), all districts/cities that will be divided are in one province, have a large amount of people, have a quite large region, have big General Allocation Funds and relatively small gross regional domestic product value.

1.3. Fiscal decentralization

Mardiasmo (2009) mentioned that the purposes of fiscal decentralization are:

•Decreasing fiscal discrepancy amongst central government and regional ones and also among regions.

•Increasing public service quality, so it will not occur the public service discrepancy among regions.

•Increasing national resource's benefit efficiency.

•Supporting fiscal sustainability in macroeconomic policy.

As a consequence of fiscal decentralization, the region needs sufficient financing sources to fund the government activities. Those sources can come from locally-generated revenue, the equalization fund from the central government, or other revenues. The research of Zhang and Zou (1997) found that fiscal decentralization has a positive influence and sometimes significant to the regional economic growth in India. Meanwhile, Lin and Liu (2000) stated that fiscal decentralization positively and significantly influences economic growth in China. It is a contrast to the opposite general findings that fiscal decentralization was related to the lower growth for China case by Zhang and Zou (1997), in the United States by Davoodi and Zou (1998), and for all samples of both developing and developed countries. Woller and Philips (1998) were failed to find the statistically significant and strong correlation between fiscal decentralization and economic growth for developing countries' panel.

1.4. Theory of government expenditure

Demery (2000) stated that government expenditure influences the people in several ways: First, fiscal policy influences macroeconomic balance, especially finance and trade deficit and

inflation level. These changes otherwise influence living standards and directly influence real revenue and indirectly through a change of economic growth level. Second, public expenditure creates revenue directly, some of them may be helpful for poor households. Otherwise, this revenue creates other revenues by revenue-expenditure multiplication process. Here is what is called primary-income effect. Third, public expenditure creates a transition to the people. This can be in cash transition or financial transition such as social assistance, insurance payment, and so on, including the government's service subsidies like health care, education, and infrastructure service. Figure 1 shows the correlation between each other. At the first line shows that if the budget of public service provision at a sector is addressed especially to the activity that has little impact on the expenditure for that sector in the people's circle generally, then the correlation will be weakened. For example, the expenditure for the tertiary public facility will not benefit the people in general; that facility is used especially for better citizens.
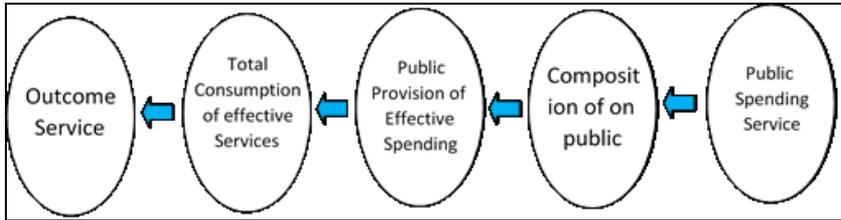
(x)

Figure 1. The correlation of public expenditure and spending

Second correlation line is the budget interpretation into more effective people service. If that health care sector is in an inefficient state, then the expenditure level of that sector cannot be the indicator of how good or bad the service provision is, although that expenditure is allocated to potential service provision. Third correlation line shows how the number of effective people's service provision is influenced by people's expenditure, so the people spend bigger expense to get better people's service in various sectors, such as healthcare, education, etc. Bigger, expense surely will be conducted by strong economy groups; therefore, the government needs to give the subsidies to the weaker economy groups so those groups will still get good service.

1.5. Earlier research

Wibowo's research (2008) titled Lessons from previous taxes' studies to Indonesian local and regional governments after Fiscal Decentralization. This research analyzes the correlation between fiscal decentralization and regional economic growth in Indonesia. Using panel fixed effect estimation, this research brought up two things, fiscal decentralization in Indonesia generally gives the positive influence to the regional development for the 1999-2004 period and fiscal decentralization's new era gives relatively better effect to the regional development than decentralization regime before. According to Deddy (2006), benefit or loss come up as the effect of region dividing is the simple indicator to understand how far the region dividing become a solution or otherwise become a problem for increasing people's prosperity and accelerating regional development. There are some economic indicators (x) that can be used to evaluate the result of regional dividing, there is (1) income per capita, (2) poverty, (3) economic growth, (4) investment, (5) discrepancy amongst regions, and (6) new economic growth centers (Yusfany, 2015).

Specific Allocation Funds and all funds were prioritized to build various infrastructures that can give impact directly to the people, like built new subdistrict and village offices, built health care center in every subdistrict, built elementary and junior high school in every subdistrict, besides building physical infrastructures almost all new autonomous regions had the effort to increase the number of government employees in order to make public service more effective. The number of new government employees accepted every year can be up to 500 persons. Moreover, it also stated by Yusfany (2015) about

another effort conducted by the regional government to preserve the
dividing is by giving proper facilities for the sake of investors,
especially for mining, marine, timber management, and oil palm
plantation. All those efforts, at least can give the job vacancies for the
people. Ferrazzi and Rohdewohld (2007) found out that as long as a
state is divided into two or three and those new states, obtain more
revenue than when those states were united; the aspiration of the
establishment of new regions in that country will not end after all. This
phenomenon can be studied in Poland. Although the Ministry of
Finance stated the objection of 71 unfulfilled-requirement regional
regions, the ministry finally lost the fight because most of the regions
were getting stronger to establish new region hoping for more transfer
payment from the central (Shehu & Sidique, 2014). The same
phenomenon is also seen in Indonesia, the euphoria to conduct region
dividing at most of the region in Indonesia all this time tend due to
hoping to obtain bigger additional regional revenue than when united
with the parent region (Ferrazzi and Rohdewohld, 2007).

Furthermore, although the region is assumed can get the
government closer to the people, according to Kerlin (Ferrazzi &
Rohdewohld, 2007). Here is seen the failure of achieving the purpose
of region dividing. The study conducted by Docarmooliveira and
Martinez-Vazquez (2001) in the Czech Republic earlier has stated the
failure of the dividing. After leaving the communist state nation, the
number of small regions (district/municipality) in the Czech Republic
has rapidly increased, pushed by public pressures wanting of
increasing democracy. Research conducted by Bappenas (2008)
(National Development Planning Agency) cooperated with UNDP

titled Evaluation Study of the Effect of Region Dividing in the year 2001-2007, the evaluation methods used were qualitative and quantitative analysis to evaluate performance and condition of new autonomous regions. There were four things to evaluating; economic, government's finance, public service, and government's apparatus performance. The obtained evaluation result is after five years of dividing, the new autonomous regions that become the sample have not better condition than their parent regions. This is described by a new autonomous regions' condition still under the state of parent regions. From four things evaluated by Bappenas (2008) and UNDP, only the economic performance will be used as the basis for determining the success of dividing in that research. Choosing the economic performance was based on the data availability for all divided districts/cities.

2. METHODOLOGY

The research was conducted in the divided districts/cities in North Sulawesi, and the research objects were South Minahasa District and Tomohon City, both of which were the result of the division of Minahasa District. The analysis methods used were descriptive analysis and BIA. Descriptive analysis was used to understand the effect of the division on the region's economic development and fiscal decentralization. Economic development growth was measured by Gross Regional Domestic Product data, and the region's fiscal capacity

growth was measured by the region's revenue and expense budget data after the division. The emphasis in this analysis was on the rate of gross regional domestic product and region revenue. In order to count the growth rate of gross regional domestic product and the growth rate of the region's revenue, the foundation of the rate of economic growth can be expressed as follows (Muana, 2001; Iran & Carlos, 2018):

$$g = \frac{Y_t - Y_{t-1}}{Y_{t-1}} x100\%$$

(1)

Where:

g = Economic Growth

Y_i = This year's Gross Domestic Product

Y_{t-1} = Last year's Gross Domestic Product

The equation above can be transformed into one that can be used to count the growth rate of Gross Regional Domestic Product and of the region's revenue, as follows:

Gross Regional Domestic Product's Growth Rate:

$$LPPDRB_t = \frac{PDRB_t - PDRB_{t-1}}{PDRB_{t-1}} x100\%$$

where:

$LPPDRB_t$ = Gross Regional Domestic Product's growth rate at the t year

$PDRB_t$ = Gross Regional Domestic Product value at the t year

$PDRB_{t-1}$ = Gross Regional Domestic Product value at the t-1 year

Region Revenue's Growth Rate:

$$LPPD_t = \frac{PD_t - PD_{t-1}}{PD_{t-1}} x100\%$$

where:

$LPPD_t$ = region revenue's growth rate at the t year

PD_t = region revenue value at the t year

PD_{t-1} = region revenue value at the t-1 year

Next, the public service effectiveness appraisal in this research used the Benefit Incidence Analysis (BIA) method. This method was applied for the purpose of giving a statistical summary of the distribution of benefits to recipients of the education and health care services in the two divided regions of Tomohon City and South Minahasa District. Benefit incidence can be reflected through household access level to the education (School Operational Assistance) and health care (Community Health Insurance) services. This revenue or expense grouping was very important in BIA because it served as the indicator of people's prosperity that would determine whether those government subsidies were given to those who really needed them, the poorest communities. The formula used in the BIA computation was as follows (Demery, 2000):

$$X_j = \sum_{k=1}^{n}\sum_{i=3}^{m} \frac{E_{ijk}}{E_i}\left(\frac{s_{ik}}{s}\right) \equiv \sum_{k=1}^{n}\sum_{i=1}^{m} e_{ijk}s_{ik}$$

where:

X_j = Total value of education subsidy correlated with the group (j);

E_{ijk}= Number of people (students/patients) listed in the group (j) at the education level of

(i)

E_i = Total of listed number (among all groups) at the level of public expense usability

in education and health care sector; and

S_i = Government's net expenditure for School Operational Assistance and Community

Health Insurance.

BIA computation was also supported by the formulation of discrepancy in people revenue, based on the computation of gini index and Lorenz curve. The gini coefficient is the area ratio of the Lorenz curve and the 45-degree straight line to the area below the 4-degree line (Figure 2). The index value can be classified in Table 1.
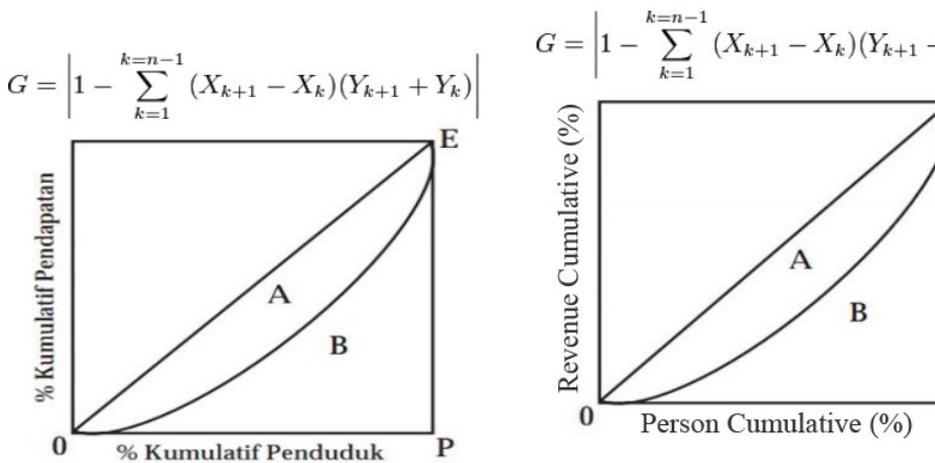
$$G = \left| 1 - \sum_{k=1}^{k=n-1} (X_{k+1} - X_k)(Y_{k+1} + Y_k) \right|$$

$$G = \left| 1 - \sum_{k=1}^{k=n-1} (X_{k+1} - X_k)(Y_{k+1} - \right.$$

Figure 2. Lorenz curve

Table 1. The Category of Gini Coefficient Value Distribution's Discrepancy

Gini Coefficient	Revenue Distribution
< 0.4	Low Discrepancy Level

0.4 – 0.5	Average Discrepancy Level
> 0.5	High Discrepancy Level

The revenue distribution was given different categories in this research. Those categories, as shown in Table 1, were relatively equal (< 0.4), nearly low (0.4-0.5), and relatively low (> 0.5). The appraisal of public service can be acknowledged based on the change of BIA and gini coefficient value. Effective public service is a service that shows increased access and low discrepancy. Increased access shows that the government policy has performed well because increased access goes with increased prosperity. Increased prosperity, supported by low revenue discrepancy, proves that the people's prosperity can overcome discrepancy.

3. RESULTS

3.1. Descriptive analysis

At the first step, that of exploring descriptively the divided region's economic development results, two variables were studied: Gross Regional Domestic Product and Gross Regional Domestic Product's growth rate, also known as economic growth. At the second step, exploring the description of fiscal capacity, two variables were studied: the region's revenue and the region's revenue growth rate. The data are from 2011 to 2015. Tomohon City's Gross Regional Domestic Product has increased from year to year, starting at IDR 589 billion and reaching IDR 785 billion. The highest rate of growth of Gross Regional Domestic Product was in the year 2015, with an increase of about 11.28%. The growth rate of revenue per capita

increased from .65% in 2011 to 8.38% in 2015. Tomohon City's economic growth rate decreased from 7.58% in 2011 to 6.09% in 2012 and then tended to increase until it reached 6.67% in 2015, Table 2.

Table 2. Description of Tomohon city

Year	Gross Regional Domestic Product (IDR thousand)	Revenue Growth (%)	Economic Growth (%)
2011	589,501,660	6.65	7.58
2012	625,401,930	6.93	6.09
2013	663,557,590	7.24	6.10
2014	705,785,960	7.61	6.29
2015	785,451,177	8.38	6.67

South Minahasa District's Gross Regional Domestic Product increased from year to year from IDR 494 billion in 2011 until it reached IDR 658 billion in 2015. The highest Gross Regional Domestic Product was in the year 2012 when it increased by 17.51%. The growth rate of revenue per capita increased from 6.13% in 2011 to 8.45% in 2015. The district's economic growth rate increased from 5.02% in 2011 to 6.09% in 2013, then decreased to 5.77% in 2014, and increased to reach 6.33% in 2015, Table 3.

Table 3. Description of South Minahasa District

Year	Gross Regional Domestic Product (IDR thousand)	Revenue Growth (%)	Economic Growth (%)
2011	494,332,100	6.13	6.19
2012	580,926,000	6.60	7.00

2013	609,285,200	7.28	6.24
2014	635,732,800	7.59	6.62
2015	658,939,600	8.45	6.56

3.2. Benefit Incidence Analysis result at Tomohon City and South Minahasa District

The data used are the raw data of Susenas from the Central Agency of Statistics in 2009 and 2013 for those two regions. The variables measured are the people's revenue or expense data every month, whether they have a child in elementary school (7-12 years of age) and/or junior high school (13-15 years of age) age, whether they are recipients of Community Health Insurance assistance, and whether they have been inpatients or outpatients. The steps of the BIA method are as follows:

1. All people's revenue in every region was divided into five quintiles, based on revenue and poverty: the poorest, poor, average, rich, and very rich quintiles for the year 2009 and 2013. The value of every quintile is determined based on the poverty line for the year 2013, and the people's revenue in every region. Those poverty lines (Province of North Sulawesi's Central Agency of Statistics, 2015) are:

a. IDR 287,381.00 for Tomohon City; and

b. IDR 217,891.00 for South Minahasa District.

2. The number of households receiving School Operational Assistance and Community Health Insurance in every group or revenue quintile was calculated.

3.The percentage of households receiving School Operational Assistance and Community Health Insurance in every group or revenue quintile were calculated (Aguilardeborja, 2018).

4.The average of public service benefit levels for every group or revenue quintile was calculated.

5.The access discrepancy among revenue quintiles was calculated by the gini index.

6.The condition of 2009 and 2013 was compared.

These tools of analysis are focused on the identification of concentration and segmentation of the benefits of the social programs, whether for the poor groups or instead to the rich groups. Groups or quintiles are divided based on the amount of revenue obtained from each group's family (quintile), with the detailed as follows:

1. Quintile 1 (Q1): lowest income/poor, revenue of below IDR 1,000,000

2. Quintile 2 (Q2): lower-middle income, revenue of IDR 1,000,000 to IDR 2,000,000

3. Quintile 3 (Q3): middle income, revenue of IDR 2,000,001 to IDR 3,000,000

4. Quintile 4 (Q4): upper-middle income, revenue of IDR 3,000,001 to IDR 6,000,000;

5. Quintile 5 (Q5): rich, revenue of above IDR 6,000,000.

The model used in this research is the BIA model, to analyze government policy in subsidies of education and health care services (School Operation Assistance and Community Health Insurance) to the public and to appraise the effects of the benefits of the people's prosperity. In BIA, the analysis of the distribution of the government

subsidies is conducted in different groups inside the community, studying the difference in households' total revenue. BIA is focused on analyzing whether the public spending policy implemented by the government is a progressive policy, that is, a program promoting a more equitable distribution of the region's prosperity.

3.3. BIA of South Minahasa District's education

The benefit distribution of education expenditure is determined by comparing the education expenditure for each group with the total education expenditure for all revenue groups. The computation of the benefit distribution of government education expenditure for each income group at each education level in the South Minahasa District is presented in Table 4, as for 2015, as presented in Table 5, can be explained as follows.

Table 4. Benefit distribution of education expenditure based on revenue group

Resume Group	Number of Student (Person)	Value of Education Expenditure (IDR)	Percentage of Real Benefit (%)	ART Percentage of Age 7-18 years (%)
1(<IDR 1,000,000)	30,973	184,114,849,273	27.20	16.85
2(IDR 1,000,001 -	38,622	213,924,983,225	31.60	21.01

IDR 2,000,000)			
3 (IDR 2,000,001 - IDR 3,000,000)	36,411	126,068,069,248	18.62	19.80
4 (IDR 3,000,001 – IDR 6,000,000)	38,918	89,434,719,660	13.21	21.17
5 (> IDR 6,000,000)	38,938	63,436,282,698	9.37	21.18
Total	183,862	676,978,904,105	100.00	100.00

The Table 5 shows that overall (elementary, junior high, senior high/vocational school), the poorest two quintiles enjoyed the highest education expenditure benefit, compared to the third, fourth, and fifth quintiles; that is, the first quintile received about 27.20% of the state senior high/vocational schools' total expenditure in South Minahasa District in 2015 while the second quintile received around 31.60%. The education expenditure benefit of the third quintile is 18.62%. The fourth quintile received the lowest expenditure benefit, 9.37%, although it was not very different from the fifth quintile which received 13.21%.

Table 5. Summary of benefit distribution received by every
community group of the government expenditure at education sector in
South Minahasa District on 2015

Revenue Group	Benefit Percentage (%)			
	Element ary	Junior High	Senior High	Total
1 (< IDR 1,000,000)	27.14	27.75	26.13	27.20
2 (IDR 1,000,000-IDR 2,000,000)	35.60	18.73	26.73	31.60
3 (IDR 2,000,000-IDR 3,000,000)	17.55	22.66	18.09	18.62
4 (IDR 3,000,000-IDR 6,000,000)	11.00	20.55	15.18	13.21
5 (> IDR 6,000,000)	8.71	10.31	13.78	9.37
Total	100.00	100.00	100.00	100.00

The progressivity of the government's education program in the
South Minahasa District can be seen on the concentration curve from
the Benefit Incidence Analysis. That curve shows the cumulative
distribution of government expenditures in the education sector,
especially as the education subsidy is correlated with the cumulative
distribution. The detailed curve can be seen in Figure 3. In that figure,
the education program's progressivity is shown by the orange-colored
concentration curve, compared to the 45-degree diagonal line which
represents the perfect-equilibrium boundary. The education subsidy
policy also can be expressed as a pro-poor policy, because the benefit
is significantly enjoyed by the lower-income community. Generally, it

can be explained that the distribution of education expenditure benefit started from state elementary to senior high school progressively (the red line above the blue line on the Lorenz curve) among five quintiles. One of the reasons why the biggest benefit is received by the first quintile is that those in the first quintile have the money to access this education service. As we know, from elementary to senior high school, the government provides School Operational Assistance for the student. Most of the poor households can access the elementary to senior high school education service in the South Minahasa District. This constitutes an achievement for the government of the South Minahasa District, the ability to provide individuals from ages 7-18 years, especially from the lowest revenue group, access to the education service, starting from state elementary and continuing through senior high/vocational school (Elijah et al., 2018).

The research results show that the education expenditure for the ages of 7-18 is more progressive. Most of the expenditures for the primary, middle, and high school education are subsidized for the poor community. The high-revenue community group only enjoys 22.58% of the education expenditure given by the government (9.37% is enjoyed by the fifth revenue group and 13.21% is enjoyed by the fourth revenue group). This research result should be considered together with the findings of Lanjouw & Lanjouw (2001), who also concluded that the primary school education expenditure is received at the highest level by the poorest group, while the middle education expenditure is received at the highest level by the richest group. Lanjouw & Lanjouw (2001) applied the BIA to the education and health care subsidies in Indonesia using 1998 Susenas data. Their

research result showed that primary education expenditure is more progressive and the middle education expenditure is more regressive. The research results of the present study show that the first revenue group obtains a benefit distribution of 27.20%, meaning that the first revenue group receives about 27.20% of the education funds benefit from the government of the South Minahasa District. The second revenue group obtains a benefit distribution of 31.60%, meaning that the second revenue group receives about 31.60% of the education funds benefit from the government of the South Minahasa District. The corresponding figures are 18.62% for the third revenue group, 13.21%, for the fourth revenue group, and 9.37% for the fifth revenue group.

3.4. BIA of Tomohon City's education

The benefit distribution of education expenditure is determined by comparing the education expenditure for each group with the total education expenditure for all revenue groups. The computation of the benefit distribution of government education expenditure for each income group at each education level in Tomohon City for 2015, as presented in Table 6, can be explained as follows.

Table 6. Summary of the benefit distribution received by each community group of the government expenditure in the education sector in Tomohon City on 2015

Revenue Group	Benefit Percentage (%)			
	Elementary	Junior High	Senior High	Total
1 (< IDR 1,000,000)	21.51	27.21	17.62	22.29

2 (IDR 1,000,000-IDR 2,000,000)	31.27	16.80	19.30	27.95
3 (IDR 2,000,000-IDR 3,000,000)	17.07	24.46	22.87	18.75
4 (IDR 3,000,000-IDR 6,000,000)	15.59	19.10	24.21	16.75
5 (> IDR 6,000,000)	14.55	12.42	16.00	14.62
Total	100.00	100.00	100.00	100.00

Table 7 shows that overall (elementary, junior high, senior high/vocational school), the poorest two quintiles enjoyed the highest education expenditure benefit compared to the third, fourth, and fifth quintiles; that is, the first quintile received about 22.29% of the state senior high/vocational schools' total expenditure in Tomohon City on 2015, while the second quintile received around 27.95% of the education expenditure benefit. The education expenditure benefit of the third quintile is 18.75%. The fourth quintile received the lowest expenditure benefit, about 14.26%, although it is not very different from the fifth quintile, which received around 16.75% of the expenditure benefit.

Table 7. Benefit distribution of education expenditure based on revenue group

Revenue Group	Number of Student (Person)	Value of Education Expenditure (IDR)	Percentage of Real Benefit (%)	ART Percentage of Age 7-18 years (%)

1 (< IDR 1,000,000)	35,669	198,083,768,983	22.29	16.64
2 (IDR 1,000,000-IDR 2,000,000)	47,745	248,335,436,454	27.95	22.27
3 (IDR 2,000,000-IDR 3,000,000)	39,919	166,618,606,057	18.75	18.62
4 (IDR 3,000,000-IDR 6,000,000)	42,598	148,850,374,064	16.75	19.87
5 (> IDR 6,000,000)	48,421	126,724,472,917	14.26	22.59
Total	214,352	888,612,658,475	100.00	100.00

The education program's progressivity in Tomohon City can be seen on the concentration curve formed by the results of the Benefit Incidence Analysis. That curve is the description of the cumulative distribution of government expenditure in the education sector, especially the education subsidy correlated with the cumulative distribution. The detailed curve can be seen in Figure 4. In that figure, the progressivity of the education program as implemented by the government of Tomohon City is shown by the orange-colored concentration curve, compared to the 45-degree diagonal line with represents the perfect-equilibrium boundary. The education subsidy policy also can be expressed as a pro-poor policy because the benefit is

much enjoyed by the lower-income community. Generally, it can be explained that the distribution of education expenditure benefits started from state elementary to senior high school progressively (red line above the blue line at Lorenz curve) among five quintiles. One of the causes for the big benefit received by the first quintile is because the first quintile has the money to access this education service. As we know, from elementary to senior high school, the government provides School Operational Assistance for the students. Most of the poor households in Tomohon City can access the elementary to senior high school education service. This is an achievement for the government of Tomohon City, being able to provide the individuals from 7-18 years of age, especially from the lowest revenue group, access to the education service started from state elementary to senior high/vocational school.

The research result shows that the education expenditures for ages 7-18 years are more progressive. Most of the primary, middle, and high school education expenditures are subsidized for the poor community. The two higher-revenue groups together only received 31.01% of the education expenditure given by the government. The first revenue group, in Tomohon City obtained a benefit distribution of 22.29%, the second revenue group obtained a benefit distribution of 27.95%, with 18.75% for the third, 16.75% for the fourth, and 14.26% for the fifth. As with the South Minahasa District, the figure represents the portion of the education funds benefits disbursed to the each respective revenue quintile.

4. CONCLUSIONS

Based on the results of this analysis, it can be concluded that the education expenditure benefit of the South Minahasa District on 2015 is enjoyed mostly by the first and second revenue quintiles. The revenue group that obtained the next-highest education expenditure benefit is the third quintile. Thus, it can be concluded that the education expenditure benefit in South Minahasa District tends to be progressive, as most of the education expenditure is disbursed to the poor community and used less by the richer groups. At the elementary school level, the education expenditure benefit has a progressive magnitude for each revenue group, so it can be concluded that the education expenditure's benefit distribution at the elementary school level tends to be progressive. At the junior high and senior high/vocational school levels also, the education expenditure benefit is used more by the poorest revenue group than the richest one, so it can be concluded that the benefit distribution at these levels tends to be progressive as well.

Meanwhile, at Tomohon City on 2015, the education subsidy is also enjoyed mostly by the first and second revenue groups. The next-highest education expenditure benefit was obtained by the third revenue group. Thus, it can be concluded that the education expenditure benefit in Tomohon City, as in the South Minahasa District, tends to be progressive, with most of the education expenditure going to the poor community and used by the richer groups less. At the elementary school level, the education expenditure benefit has a progressive magnitude for each revenue group, so it can

be concluded that the education expenditure's benefit distribution at the elementary school level tends to be progressive. At the junior high and senior high/vocational school levels also, the education expenditure benefit is used to a greater degree by the poorest revenue groups than the richest ones, so it can be concluded that the beneficial distribution at these levels is also progressive.

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