Analysis of Fisheries, Agriculture and Forestry Sector Contributions to Aceh's Economic Growth

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Abstract: *The aimed of this study is to identify the contribution of the fisheries, agriculture and forestry (FAF) sector to gross regional domestic product (GRDP), absorption labor force, and the rate of economic growth in Aceh. The method used is calculating contribution of the FAF sector to Aceh's GRDP, towards absorption workforce, and towards Aceh's economic growth using the secondary data. The highest contribution of this sector to the Aceh economy was in 2001 which amounted to 23.53 percent. Economic growth in this sector averaged only 1.52 percent annually, but was able to absorb 56.31 percent of the workforce in 2006 and 49.62 percent in 2007. This proves that the FAF sector is a sector that is very influential on the economy Aceh so that it can become a leading sector in Aceh.*

Keywords : Economic Growth, Absorption Labor, Gross Regional Domestic Product, Aceh

Economics represents the study of how to allocate limited resources (Naufal, Fahrudin, & Kusumastanato 2019). Furthermore, resources must be managed properly so they do not deplete (Naufal, Kusumastanto, & Fahrudin 2016). The amount of contribution of natural resources to economic growth is in accordance with the contribution of natural resource to the increase in gross domestic product (Feng-Jun 2004).

The FAF sector is the second largest revenue generating sector in the formation of Aceh's GRDP after the mining and quarrying sector. The FAF sector contributes an average of 20.97 percent per year to the formation of regional GRDP during the period 2000-2007. Based on that informations, the aim of this study is to identify the contribution of the FAF sector to GRDP, absorption labor force, and the rate of economic growth in Aceh.

STUDY OF LITERATURE

Regional Development Planning

Regional Growth

Regional economic growth is the increase in community income that occurs in the region, namely the increase in all added value that occurred in the region. The increase in income is measured in real value, meaning that it is measured in constant prices. It also illustrates the remuneration for the factors of production operating in the area. The prosperity of an area is determined not only by the amount of added value created in the region but also by how much transfer payments occur, that is, the portion of income that flows outside the region or receives a flow of funds from outside the region (Richardson, 1991).

There are two approaches that can be used (Richardson, 1991). First, adapting the macroeconomic models used in the theory of aggregative growth and secondly interpreting the growth of an area according to the structure of its industrial dynamics. For the first approach there are three general models used, namely the Neo-classical model, the Export Base, and Harrod-Domar. In the Neo-classical model the growth rate consists of three sources namely capital accumulation, labor, and residue - which can be called technical progress (Richardson, 1991). Meanwhile, according to the Export Base model, the growth of a region depends on the growth of industries, its exports and the increase in demand that is extreme for the region concerned is the main determinant of regional growth. The economic sectors of a region are grouped into base and non-base sectors. The base sector is a sector that has a comparative advantage (compared to other regions in a wider area) with the main target to be exported to other regions.

The Harrod-Domar model focuses on the key role of investment in the process of economic growth, taking precedence over the dual character of investment. He creates income (the impact of demand) and enlarges the production capacity of the economy by increasing capital stock (the impact of supply). This model can also be used to analyze regional growth by calculating interregional capital and labor transfers (Richardson, 1991). The higher the desire of people in an area to save and if their capital-output ratio is lower, then the region will grow faster. Net imports are in addition to a region's total savings, so

regions that have an import surplus can grow faster than other regions.

Gross Regional Domestic Product

One of the macroeconomic indicators that play a role in making policy planning in development, determining the direction of development and evaluating the results of development of an area is the Gross Regional Domestic Product. GRDP can be used as an indicator of the sectoral economic growth rate so that it can be known which sectors cause changes in economic growth. The size of the GRDP that can be produced by an area / region depends on the amount of natural resources that have been used, the amount and quality of human resources, government policy, geographical location and the availability of facilities and infrastructure in the region. There are several measures of national income, including: Gross National Product (GNP), Gross Domestic Product (GDP), Net National Product (NNP), and National Income (NI) (Dumairy, 1996).

Gross National Product (GNP / GDP) is the sum of the value of the final product of goods and services produced by society over a certain period (usually one year) without calculating the value of intermediate products. Gross Domestic Product (GDP) in its calculation excludes the income of citizens who are abroad but includes all domestic production including income received by foreign nationals. Whereas GDP for regional level in a country is known as Gross Regional Domestic Product (GRDP) (Gilis *et al* 2004). GRDP calculation can be done by two methods (Dumairy 1996): Direct Method and Indirect Method. In calculating GRDP by direct method, the calculation is left entirely to regional data that is separate from national data, so that the calculation results cover all products and services produced by the region. In this method the GRDP can be measured by three approaches, namely: Production Approach, GRDP is the final amount of goods and services produced by various production units in a region within a certain time period. Income Approach, GRDP is the amount of remuneration received by factors of production participating in the production process in a region within a year. Repayment of production services in question includes wages and salaries, land rent, capital and profits. Expenditure Approach, GRDP is the sum of all components of final demand, including (1) household consumption consumption and private institutions that are not looking for profit; (2) gross domestic fixed capital formation and stock changes; (3) government consumption expenditure; and (4) net exports (i.e. exports less imports) within a year.

GRDP calculation with Indirect Method is to Calculate the added value of a group of economic activities by allocating national added value into each group of economic activities at the regional level. As an indicator, the indicators that have the most influence or are closely related to the productivity of these economic activities are used as allocators. The use of each approach is very dependent on the data available. In fact, the use of the two methods will support each other, because the direct method will encourage improvement in the quality or quality of regional data. Judging from the explanation above, the GRDP of an area / region shows more on the amount of production of an area not the actual income received by the surrounding population concerned. However, GRDP is the most representative data in showing income compared to other data.

RESEARCH METHODS

Data Types and Sources

The type used in this research is secondary data. Data needed includes: (1) sectoral GRDP of each regency / city in the Aceh area based on constant prices, (2) population by district / city, (3) percentage of population aged 15 years and over who work according to employment (4) Nanggroe Aceh Darussalam province in numbers, and (5) various other secondary data. The sources were obtained from: (1) the Central Statistics Agency, (2) the Aceh Statistics Agency, (3) the Aceh FAF Service, and (4) from the publication of several previous research results. The analysis period in this study was between 2000 and 2007. Data processing was carried out with the help of Microsoft Excel 2007 software.

Analysis of FAF Sector Contribution to GRDP, Absorption Labor and Aceh's Economic Growth Rate

To calculate the contribution of the FAF sector to the GRDP, the formula is used:

$$P_{it} = \frac{S_{it}}{T_t} \times 100\% \qquad\qquad 1$$

Where:
P_{it} = The contribution of the FAF sector in the t-year (%)
S_{it} = FAF sector GDP in the t-year (rupiah)

T_t = Total GRDP in t-year (rupiah)

Then calculate the amount of growth in the FAF sector achieved during a certain period of time using the formula:

$$G_{it} = \frac{P_{it} - P_{it-1}}{P_{it-1}} \times 100\%$$ 2

Where:

G_{it} = Growth of the FAF sector in t-year (%)
P_{it} = Higher GDP of FAF sector in the t-year (rupiah)
P_{it-1} = GDP of the FAF sector in t-1 year (rupiah)

RESULTS AND DISCUSSION

Contribution of FAF Sector to GRDP, and Absorption Labor Aceh

Aceh province is an FAF area, community life is very dependent on the FAF sector. The contribution of FAF to the economy of Aceh (in million) in Table 1. The FAF sector is a sector that accounts for the second largest revenue in GRDP formation Aceh after mining and quarrying. The FAF sector contributed an average of 20.97 percent per annum to the region's GRDP for the period 2000-2007.

The contribution of the FAF sector is quite large when compared to the contribution of other sectors, although it is still below the contribution of the mining and quarrying sector which contributes an average of 29.74 percent per year to Aceh's GRDP. From the amount of these contributions it can be seen that the FAF sector is a sector that plays a role in economic growth in Aceh. The third largest contributor to Aceh's GRDP was the manufacturing sector, which averaged 16.50 percent, followed by the trade, hotel and restaurant sector and the service sector in the fourth and fifth place respectively at an average of 13.47 percent and 9.38 percent.

The dominance of the FAF sector occurred in almost all districts / cities in Aceh. As many as 20 of the 23 regencies / cities that exist other than the city of Banda Aceh, Lhokseumawe city, and North Aceh Regency, the FAF sector is the biggest contributor to the formation of GRDP. The role of the FAF sector and its changes during the period 2000-2007 can be seen in Appendix 10. In the city of Banda Aceh the economy is dominated by the trade, hotel and restaurant sectors. While the city of Lhokseumawe and the district of

North Aceh the economy is dominated by the mining and quarrying sector. Because these two regions are rich in liquefied natural gas, the city of Lhokseumawe and the district of North Aceh have high per capita incomes ranging from 4-6 times that of other regions. This relatively high number is thought to interfere with the calculation, so it is excluded from the count. The contribution of FAF to the economy of Aceh (in million) in Table 1.

Table 1. Average Governmental Sectoral GRDP of Aceh According to Business Field at 2000-2007 at Constant Prices 2000

Sector	Years								Average
	2000	2001	2002	2003	2004	2005	2006	2007	
Fisheries, agriculture and forestry	7.453.800 (20,77%)	7.622.100 (23,41%)	7.648.800 (19,14%)	7.911.000 (18,73%)	8.068.980 (19,99%)	7.754.980 (21,37%)	7.872.780 (21,36%)	8.262.810 (22,93%)	20,97%
Mining and excavation	12.225.500 (34,07%)	7.662.100 (23,53%)	14.705.900 (36,80%)	16.155.600 (38,25%)	12.263.940 (30,38%)	9.489.930 (26,15%)	9.244.910 (25,09%)	7.243.960 (20,10%)	29.74%
Processing industry	6.496.900 (18,11%)	6.108.800 (18,76%)	7.122.700 (17,82%)	7.237.900 (17,14%)	7.407.250 (18,35%)	5.755.450 (15,86%)	4.996.610 (13,56%)	4.491.750 (12,46%)	16.50%
Clean electricity, gas and water	43.06 (0.12%)	44.06 (0.14%)	43.02 (0.11%)	50.05 (0.12%)	60.38 (0.15%)	59.02 (0.16%)	66.34 (0.18%)	82.06 (0.23%)	0.15%
Construction	1.748.700 (4,87%)	1.312.300 (4,03%)	1.486.500 (3,72%)	1.500.600 (3,55%)	1.514.430 (3,75%)	1.269.980 (3,50%)	1.884.770 (5,11%)	2.147.330 (5,96%)	4.31%
Trade, hotels and restaurants	4.288.200 (11,95%)	4.773.900 (14,66%)	4.877.800 (12,21%)	4.997.600 (11,83%)	4.863.750 (12,05%)	5.186.540 (14,29%)	5.571.090 (15,12%)	5.665.990 (15,72%)	13.47%
Transportation and Communication	1.331.700 (3,71%)	1.432.500 (4,40%)	1.448.200 (3,62%)	1.550.800 (3,67%)	1.516.650 (3,76%)	1.734.880 (4,78%)	1.925.570 (5,22%)	2.136.860 (5,93%)	4.39%
Finance, leasing and corporate services	232.01 (0.65%)	251.07 (0.77%)	312 (0.78%)	408.07 (0.97%)	488.21 (1.21%)	441.07 (1.22%)	493.07 (1.34%)	523.43 (1.45%)	1.04%
Services	2.062.700 (5,75%)	2.159.900 (6,63%)	2.279.700 (5,70%)	2.426.600 (5,74%)	4.190.710 (10,38%)	4.595.260 (12,66%)	4.798.100 (13,02%)	5.484.320 (15,22%)	9.38%
Total GRDP of Aceh	35.883.100 (100%)	32.565.100 (100%)	39.960.800 (100%)	42.239.300 (100%)	40.374.280 (100%)	36.287.920 (100%)	36.853.870 (100%)	36.038.110 (100%)	100%

The FAF sector has a significant contribution to Aceh's GRDP, besides that the majority of Aceh's population works in the FAF Sector. In 2006, this sector was the largest labor absorber sector, accounting for 56.31 percent of the total population aged 15 years and over in Aceh. In 2007 this sector was still the largest employment sector for Aceh despite a decline of several percent to 49.68 percent.

Contribution of the FAF Sector to Aceh's Economic Growth Rate

The FAF sector grows at an average of 1.52 percent per year (Table 2), while Aceh's economic growth rate is 0.57 percent per year. This growth rate is low due to the tsunami disaster at the end of 2004, which resulted in a significant decline in the rate of growth of the FAF sector. In 2005, the decline in the economic growth rate of the FAF sector occurred in almost all districts / cities in Aceh. The decline resulted in a decrease in Aceh's economic growth rate of -10.10 percent in the same year. The services sector absorbed most of the displaced economic activity from FAF (Philipp & Neumayer, 2019).

Table 2. Average Economic Growth Rate of the FAF Sector in District / Municipality of Aceh in 2000-2007 (%)

No	District / City	Years							Average
		2001	2002	2003	2004	2005	2006	2007	
1	Simeulu	1,29	1,3	1,53	1,66	-1,85	-0,82	-0,42	0,38
2	Aceh Singkil	7,24	1,59	3,5	4,74	1,35	1,76	2,6	3,25
3	Aceh Selatan	2,63	2,8	4,38	4,29	2,38	0,62	4,56	3,09
4	Aceh Tenggara	44,8	21,1	-35,05	5,1	81,75	21,86	-8,05	18,79
5	Aceh Timur	1,01	0,99	1,87	2,12	2,3	2,08	1,86	1,75
6	Aceh Tengah	2,74	2,26	0,51	1,77	11,38	7,39	5,47	4,50
7	Aceh Barat	7,17	1,52	1,93	12,15	-28,38	3,3	7,72	0,77
8	Aceh Besar	1,05	2,23	2,85	3,17	-2,14	1,1	1,18	1,35
9	Pidie	0,79	1,64	1,95	12,34	-3,9	3,28	3,84	2,85
10	Bireun	1,5	2,97	2,21	3,18	0,21	1,79	0,49	1,76
11	Aceh Utara	3,89	3,5	7,7	7,39	2,81	1,75	2,7	4,25
12	Aceh Barat Daya	-	-	-	3,39	2,49	2,23	4,26	3,09
13	Gayo Luwes	-	-	-	-	3,64	3,03	2,17	2,95
14	Aceh Tamiang	1,44	1,6	2,71	2,98	6,41	4,27	10,16	4,22
15	Nagan Raya	2,9	2,79	3,01	46,31	-4,39	10,23	8,28	9,88
16	Aceh Jaya	1,47	2,58	2,4	3,55	-40,49	1,52	2,04	-3,85
17	Bener Meriah	0,44	0,81	1,1	2,05	0,85	2,48	1,64	1,34
18	Pidie Jaya	2,11	2,75	2,18	2,76	1,99	2,88	2,85	2,50
19	Banda Aceh	4,39	4,44	4,08	4,03	-35,8	3,15	0,87	-2,12
20	Sabang	2,49	1,3	0,4	3,08	0,95	2,91	2,13	1,89
21	Langsa	1,2	1,74	2,23	2,86	0,82	1,74	1,87	1,78
22	Lhokseumawe	1,55	1,6	2,64	3,15	1,83	1,86	1,49	2,02
23	Subulussalam	3,46	4,49	2,94	3,4	0,93	1,98	1,71	2,70
	Aceh	2,79	-0,17	3,43	2	-3,89	1,52	4,95	1,52

CONCLUSIONS AND SUGGESTIONS

Conclusion

The FAF sector has a significant role in the economy of the Aceh region, contributing

an average of 20.97 percent per year to the GRDP. The largest contribution from this sector occurred in 2001 amounting to 23.53 percent, the smallest contribution occurred in 2003 which was 18.73 percent. Economic growth in the FAF sector averaged only 1.52 percent per year, but was able to absorb 56.31 percent of the workforce in 2006 and 49.62 percent in 2007.

Suggestion

The FAF sector whose growth is relatively small but has a significant role in the GRDP, and employment is expected to be given more attention in its improvement, and become a priority in development, so that it can remain a leading sector in Aceh.

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