International Journal of Economics, Business and Innovation Research
https://e-journal.citakonsultindo.or.id/index.php/IJEBIR
E-ISSN : 2964-0865
IJEBIR

Impact of the Agricultural Sector on Output, GDRP and Workforce Compensation

Eddy Silamat[1*], Priyono[2], and Hernawati[3]

[1]Agribusiness Department, Pat Petulai University, Bengkulu, Indonesia,
[2]Indonesian Center for Animal Research and Development, Bogor, Indonesia
,[3]Agribusiness Department, Nahdlatul Wathan University, Mataram, Indonesia

[*]Corresponding author: eddysilamat9@gmail.com

Abstract

The agricultural sector plays a strategic role in the structure of the Indonesian economy. The agricultural sector policy will be optimal if it considers subsectors that have high multipliers. An increase in final demand in the sub-sector will increase the output of the sub-sector itself and other sub-sectors in the economy. The objective of this study was to calculate the contribution of the agricultural sector in the structure of the national economy, calculate the value of the multiplier effect and the relation of the agricultural sector to other sectors, and analyzing the impact of the agriculture, livestock, forestry and fisheries sectors on output, gross domestic regional product (GDRP), and workforce compensation. Secondary data were obtained from the Input-Output 2010 table released by BPS in December 2015 and Input-Output table updating by BEKRAF in December 2017. Results showed that the agriculture, livestock, forestry, and fisheries were still the mainstay after the processing industry with a contribution accounted by 13.28%. The plantation crops sub-sector has the forward linkages highest with a multiplier effect accounted by 3.1251. The sub-sectors which have the highest direct backward linkages were the livestock sub-sector with multiplier effect accounted by 1.6185. The plantation crops sub-sector has the highest contribution to the output, GDRP, and workforce compensation for agriculture, livestock, forestry, and fisheries. Household consumption was the most dominant contributor and LNPRT consumption was the minimum contributor for output, GDRP, and workforce compensation.

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

International Journal of Economics, Business and Innovation Research
https://e-journal.citakonsultindo.or.id/index.php/IJEBIR
E-ISSN : 2964-0865
IJEBIR

Keywords: multiplier effect, agricultural sectors, input-output

INTRODUCTION

The agricultural sector became an income source for most Indonesian people who depend on their living as farmers. The agricultural sector aslo has an important contribution to the structure of the Indonesian economy. The large potential of natural resources and human resources in Indonesia will provide employment opportunities. So, agricultural sector becomes one of the key sectors in development in Indonesia. However, the economic activity still dominated by rural economic practices, although it is supported by abundant natural resources such as water, land, forest, sea, and biodiversity as the basic capital of national economic development. Agricultural development in Indonesia is directed to be a leading sector in terms of absorbing labor and it is hoped that this potential can be utilized as a foundation for equitable community welfare (Wilaga et al., 2017). Based on BPS data, the percentage of the total workforce employed in the agricultural sector from 2006 to 2015, and an average of 38.84% of the total workforce working in the agricultural sector, while the remaining 61.16% worked in the non-agricultural sector.

A wealth of natural resources in Indonesia should be an opportunity to develop the agricultural sector so that it can sustain people's lives, but in reality, the agricultural sector in Indonesia is still underdeveloped (Widyawati, 2017). In 2005-2014, the agricultural sector was volatile and tended to increase, but the growth was still below the national GDP growth and was still low compared to other sectors. The most important contribution to the agricultural sector, especially in strengthening food security, poverty alleviation, creating jobs, and also equity for income for most people (Niara and Zulfa, 2019). As a supporting and supporting sector in the development of other sectors, the role of the agricultural sector is expected not only to be seen from its contribution to GDP but also can be seen from its influence and relation to other sectors as a provider of inputs (goods and services) which can ultimately affect national economic growth (Widyawati, 2017). Linkages between sectors cause changes in demand in the interacting sectors.

The role of the agricultural sector in other sectors of the economy has been carried out by researchers using an Input-Output analysis. Sukanto (2010) and Widyawati (2017) said that the agricultural sector showed more direct future relationships that are greater than direct backward links. Some of the studies were carried out partially in the regions and not many have separated per sub-sector nationally. Changes in demand will have an impact on the amount of output produced. Changes in output can affect changes in

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

remuneration for the production of goods and services produced. Changes in output come from changes in production inputs. One input of production is labor. Therefore, changes in demand can impact the demand for labor. The large role of the agricultural sector given to economic development, makes the agricultural sector must continue to be developed by the government, but on the other hand, the role of the agricultural sector has also declined (Oktavia et al, 2016).

In making policies for the development of the agricultural sector needs to be done through careful planning following the roadmap prepared with experts. Policy development of a sector will be optimal in sectors that have a higher multiplier effect. The output multiplier occurs if in a condition there is an increase in final demand for a sub-sector which will increase the output of the sub-sector itself and other sub-sectors in the economy. The magnitude of the multiple changes in output due to changes in the final demand of a sub-sector is called the output multiplier (Dornbusch et al. 2008). The results of the analysis multiplier effect in the agricultural sector are important to be carried out as a policy brief for leaders in making strategic policies in agricultural development.

The multiplier effect is an effect in the economy where an increase in national spending affects income and consumption to be higher than before (Dornbusch et al. 2008). Multiplier effect or multiplier is based on the relations of various economic forming sectors that are interrelated and have a dependency on the economy in a region. Thus, any changes to the base sector as one of the sectors forming the economy will affect changes in the overall economic structure in a region (Manacika, 2010). There are two bases used to measure multiplier effects such as the number of jobs, the level of income received and several other studies measure it through the GDP (Domanski and Gwosdz, 2010). However, this measurement is not absolute because some opinions also include the measurement of multiplier effects outside the economic field. This is because of the impact on the economy itself will ultimately result in other fields if there is an increase or decrease in economic activity (Jamieson et al., 2004).

The Input-Output (IO) table presents information about goods and services transactions that occur between economic sectors in the form of a matrix presentation that shows how the output of a sector is allocated to meet intermediate and final demands while the column shows the use of intermediate inputs and primary inputs by a sector in the production process (BEKRAF, 2017; Siregar, 2016). The Input-Output table is compiled with the aim of presenting an overview of the interrelationships and interrelationships between activity units (sectors) in the economy in Indonesia as a whole.

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

With the IO table, it can be seen how the output from one economic sector is distributed to other sectors and how also a sector obtains the inputs needed from other sectors. The data presented in the OI table is detailed information about sectoral inputs and outputs which are able to describe the inter-sectoral linkages in economic activities (Siregar, 2016). In accordance with the basic assumptions used in the preparation process, the input-output model is static and open.

According to Arifin (2004), agricultural development is not only revamping the structure of the agricultural sector in the economic map, but serious and systematic efforts to translate the alignments paradigm into concrete steps that can be understood and implemented by many people. Thus, several solutions are needed in agricultural development in order to overcome the problem of poverty. Munajat (2009) states that steps that can be taken to overcome poverty in the agricultural sector can be done through the implementation of corporate farming, increasing agricultural productivity, developing the processing industry, intervening in the upstream and downstream subsystem, and increasing agricultural human resources.

Economists often stated that the main goal in the macroeconomy is: (a) Achieving high output with the rate of economic growth was great; (b). Achieving and maintaining full employment, and (c). distribution of income more evenly distributed. Economic growth is one of the indicators most often used by a country, especially for developing countries. Indicators of economic growth are measured from the level of output growth or the rate of GDP growth of a country concerned (Dornbusch et al., 2008).

The output multiplier is calculated in units of change in output as the initial effect, an increase or decrease in output of one monetary unit. Each element in the inverse matrix shows the total purchase of inputs directly or indirectly from a sector of one monetary unit to the final demand. Leontief's reverse matrix contains information on the structure of the economy that is studied by determining the level of inter-sectoral relations in the regional economy.

The income multiplier is done by measuring the increase in income due to changes in output in the economy (Daryanto and Hafizrindia, 2010). In Table IO, income is wages and salaries received by households, including dividends and bank interest. Furthermore, the labor multiplier shows changes in labor caused by initial changes in the output side. The labor multiplier is not only obtained from Table IO because Table IO does not contain elements related to labor. The labor multiplier is obtained by adding a line that shows the number of workers for each sector in the economy of a region or country. Add this line to

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

get the labor coefficient. How to obtain the coefficient of labor by dividing each amount of labor in each economic sector of a region or country by the total output of each sector.

Based on this, the research questions developed in this paper are: (1) What is the contribution of the agricultural sector in the structure of the national economy?; (2) What is the value of the multiplier effect and the relation of the agricultural sector to other sectors?; (3) What is the impact of the agriculture, livestock, forestry, and fisheries sectors on output, gross value added, and labor compensation? This study aims to: (1) Calculate the contribution of the agricultural sector in the structure of the national economy; (2) Calculate the value of the multiplier effect and the relation of the agricultural sector to other sectors; (3) Analyze the impact of the agriculture, livestock, forestry, and fisheries sectors on output, GDRP, and workforce compensation.

METHOD

The type of data used for analysis is secondary data. Secondary data sources were obtained from the Indonesia Input-Output Table 2010 released by BPS in December 2015 and the-Output Table Updating 2014 Creative Economy released by BEKRAF in December 2017. The scope of the analysis in this research are: (1) Entry Input-Output Table data of 63 sub-sectors with demand between 63 x 63 sub-sectors; (2) to classify the back of the 63 sub-sectors into 10 main sectors for analysts material is descriptive; (3) identify the linkages of the agricultural sector with other related subsectors; (4) measuring the multiplier effect of all sub-sectors; and (5) analyze the impact of the agricultural sector on output, GDRP, and workforce compensation.

The stages of the analysis, firstly, analysis of the contribution of the agricultural sector in the structure of the national economy. This analysis is done descriptively using Microsoft Excel. In this paper, a descriptive analysis of the structure of demand for goods and services, the output structure, the input structure, the GDRP structure, and the labor compensation structure are carried out. Secondly, analysis of the value of the multiplier effect and analysis of the linkage of the agricultural sector to other sectors. Analysis Multiplier explains the impact that occurs on endogenous variables due to changes in exogenous variables. The multiplier can be obtained through Table IO, which shows each of the multiplier quantities as well as several multiplier quantities expressed in the form of a multiplier matrix.

Thirdly, the multiplier matrix in the IO table in this paper is used for linkage analysis (dispersion power and degree of sensitivity), output impact analysis, gross value added,

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

and labor compensation. Stages of multiplier calculation are input data between intermediate requests, final requests, and variables needed in the Input-Output Table using Microsoft Excel. Make the input coefficient (Matrix A) with the formula:

$$a_{ij} = \frac{X_{ij}}{X_j} \qquad (1)$$

Where,

a_{ij} = coefficient of input to the i sector by j to sector

X_{ij} = use of sector input i by sector j

X_j = output sector to j.

next make the identity matrix (Matrix I) in accordance with the number of variables observed, in this paper using a matrix of 63 x 63. Forth, the next step is to calculate the matrix (IA) by subtracting an identity matrix from the input coefficient matrix. Fifth, calculate the multiplier matrix (B) and the total multipliers, forward linkages, and backward linkages. Sixth, arranging the power distribution index and index of the degree of sensitivity of the numbers in the multiplier matrix that has been obtained previously. Analysis of the impact of the agriculture, livestock, forestry, and fisheries sectors on output, gross value added, and labor compensation. Based on the multiplier matrix that has been obtained, followed by an economic impact analysis, which includes an analysis of output impacts, the impact of gross domestic regional product, and the impact of workforce compensation. To find out the impact, we can use formula $X = (I - A)^{-1}F$. This means that the multiplier matrix is multiplied by the final demand matrix.

RESULTS AND DISCUSSION

Analysis Multiplier Effect of Agricultural Sector in Indonesia

Demand structure of the 63 sub-sectors which are then grouped into 10 main sectors in Indonesia shows that the agriculture, livestock, forestry, and fisheries sectors are still the mainstay after the processing industry with the contribution of the demand of 13.28%. The manufacturing industry sector is still the dominant sector with the highest contribution both for intermediate demand, final demand, and total demand.

Total demand between the agriculture, livestock, forestry, and fisheries sectors was 1,291.41 billion of the total demand of 9,727.07 billion. This value positions the agricultural sector in the order of the largest contribution after the processing industry. But in terms of final demand, the agricultural sector is still below the average of other sectors recorded at 600.03 billion, so it only contributes 4.64%. However, when seen from

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

International Journal of Economics, Business and Innovation Research
https://e-journal.citakonsultindo.or.id/index.php/IJEBIR
E-ISSN : 2964-0865
IJEBIR

total demand, the agriculture, livestock, forestry, and fisheries sectors contributed 8.35%. The contribution places the agriculture sector side by side with the trade, hotel and restaurant sector, and the creative economy sector with a contribution of around 8%. The contribution value of this final demand is still below the contribution of the manufacturing sector by 32.57% and the construction or building sector by 12%. Seen from the output structure, gross value added, and labor compensation it is noted that the contribution of the agriculture, livestock, forestry, and fisheries sectors respectively was 8.89% for output; 14.04% for GDRP, and 10.72% for workforce compensation.

Table 1.Output structure, GDRP, and workforce compensation classification of 10 sectors in Indonesia

No	Sector	Output (Rp. Billion)	%	GDRP (Rp. Billion)	%	Workforce Compensation (Rp. Billion)	%
1	Agriculture, Livestock, Forestry, and Fisheries	1,784.05	8.89	1,450.19	14.04	365.65	10.72
2	Mining and Quarrying	1,225.06	6.10	982.33	9.51	160.90	4.72
3	Processing Industry	5,579.93	27.79	2,020.52	19.57	605.48	17.75
4	Electricity, Gas and Water Supply	639.08	3.18	144.83	1.40	33.15	0.97
5	Construction or Building	2,712.21	13.51	1,008.96	9.77	403.17	11.82
6	Trade, Hotels and Restaurants	1,967.70	9.80	1,308.49	12.67	377.94	11.08
7	Transportation and Communications	1,587.48	7.91	788.25	7,63	251.49	7.37

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

International Journal of Economics, Business and Innovation Research
https://e-journal.citakonsultindo.or.id/index.php/IJEBIR
E-ISSN : 2964-0865
IJEBIR

8	Financial, Real Estate, and Corporate Services	1,194.07	5,95	874.90	8.47	195.92	5.74
9	Services	1,615.82	8.05	947.59	9.18	752.02	22.04
10	Creative Economy	1,771.54	8.82	800.79	7.75	266.26	7.80
Total		20,076.94	100.00	10,326.86	100.00	3,411.98	100.00

The contribution of the agricultural sector to output is still below the manufacturing industry sector (27.79%) and the construction/building sector (13.51%). Agriculture, livestock, forestry, and fisheries sectors with a contribution of 8.89%, coupled with the trade, hotel and restaurant sector (9.80%); creative economy sector (8.82%); the services sector (8.05%), and the transportation and communication sector (7.91%). Meanwhile, seen from the contribution of the agricultural sector to GDRP (14.04%) came second after the manufacturing sector (19.57%). The contribution to workforce compensation (10.72%) is still below the services sector (22.04%) and the manufacturing industry (17.75%).

The direct forward linkage of a sector to another sector can be obtained from the matrix coefficient value, while indirect forward linkages can be obtained from the inverse matrix. Based on the 63 sectors analyzed, the sub-sector of food crops, horticultural crops, plantations crops, livestocks, agricultural services and hunting, forestry and logging, and fisheries are grouped into the agriculture, livestock, forestry, and fisheries sectors.

Table 2 below showed that the plantation crop sub-sector has the highest coefficient of multiplier values both linkages direct (0.9334) and indirect (2.1917). This shows that the dependence of certain sub-sectors on the plantation crops sub-sector in terms of supplying raw materials for the production process is greater than the other sub-sectors. The value of the direct linkage to the future of the plantation sub-sector is 0.9334, meaning that if there is an increase in one unit of output in this sub-sector, it will increase the output of other sub-sectors that use the output of this sub-sector as its input by 0.9334 units.

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

International Journal of Economics, Business and Innovation Research
https://e-journal.citakonsultindo.or.id/index.php/IJEBIR
E-ISSN : 2964-0865
IJEBIR

Table 2.Forward linkage of agriculture, livestock, forestry, and fisheries in Indonesia

No.	Subsector	Direct	Rank	Indirect	Rank	Total	Rank	Degrees Sensitivity Index
1	Food Crops	0.3978	3	1.8341	2	2.2319	2	1.2128
2	Horticultural Crops	0.1793	6	1.1175	7	1.2968	6	0.7046
3	Plantation Plants	0.9334	1	2.1917	1	3.1251	1	1.6981
4	Livestocks	0.4409	2	1.2807	3	1.7215	3	0.9354
5	Agricultural Services and Hunting	0.1433	7	1.1473	6	1.2906	7	0.7013
6	Forestry and Logging	0.2457	5	1.1511	5	1.3968	5	0.7590
7	Fisheries	0.2754	4	1.2466	4	1.5220	4	0.8270
Average Value		0.3737		1,4241		1.7978		0.9769

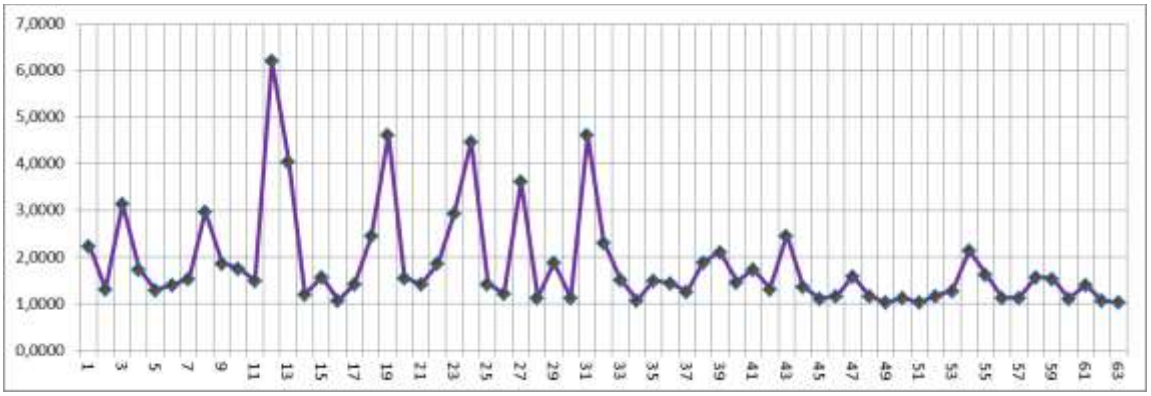
One unit of this sub-sector is used as another sub-sector input of that value then simultaneously the increase in the sub-sector triggers the use of user sub-sector output as the input of other sectors by 2.1917. Commodities of plantation crops and livestock subsectors are the potential to be made as national superior commodities (Suhendra, 2005).

The average value of direct forward linkages is 0.3737. The value of forward linkages is higher than the average, namely the plantation crops sub-sector (0.9334); livestock subsector (0.4409); and the food crops sub-sector (0.3978) showed that the sub-sector has a high direct future relationship. The sub-sectors that have forward linkages are higher than the average (1.4241), namely the plantation crops sub-sector (2.1917) and the food crops sub-sector (1.8341). The multiplier effect of the agriculture,

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

International Journal of Economics, Business and Innovation Research
https://e-journal.citakonsultindo.or.id/index.php/IJEBIR
E-ISSN : 2964-0865
IJEBIR

livestock, forestry, and fisheries sectors (subsector numbers 1 to 7) compared to the effects of other sub-sector multipliers can be seen in Figure 1.



Description of 63 subsectors, see appendix

Figure 1. Forward linkages (multiplier effect) of 63 sub-sector in Indonesia

Based on Figure 1, the multiplier effect of plantation crops sub-sector with the highest multiplier value in agriculture, livestock, forestry, and fisheries amounted to 3.1251 (subsector number 3), when compared to other sub-sectors which are still below the coal and oil and gas refinery subsector (number 12); the food and beverage industry sub-sector (number 13); the chemical, pharmaceutical and traditional medicine subsector (number 19); machinery and equipment industry sub-sector (number 24); electricity and gas procurement sub-sector (number 27); and the wholesale and retail non-car and motorcycle subsector (number 31). According to Winardi (2017), multiplier numbers can be used as a basis for consideration for decision making in economic growth, providing employment, and reducing income disparity.

The value of the technical coefficient and the inverse matrix of backward linkages direct and indirect between the agricultural sector and certain sectors show the interrelationships between these sectors. The greater the coefficient value backward linkages, the greater the dependence in using output produced by certain sectors to be used as input in the production process. Based on the backward linkages, it is known that the sector that has the highest direct backward linkage is the livestock sub-sector with a value of 0.3289. The value of backward linkages in the agriculture, livestock, forestry, and fisheries sectors.

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

International Journal of Economics, Business and Innovation Research
https://e-journal.citakonsultindo.or.id/index.php/IJEBIR
E-ISSN : 2964-0865
IJEBIR

The highest value of direct backward linkage for the livestock subsector is 0.3289, which means an increase in one unit of livestock sub-sector output requires another sector output as an input of 0.3289 units. The output will be used by the secondary sector as an intermediate input in the production process. This will simultaneously trigger an increase in the use of the output of other sectors as input of 1.2895 units. Thus in total, it will have an impact on increasing the use of output across all economic sectors by 1.6185 units.

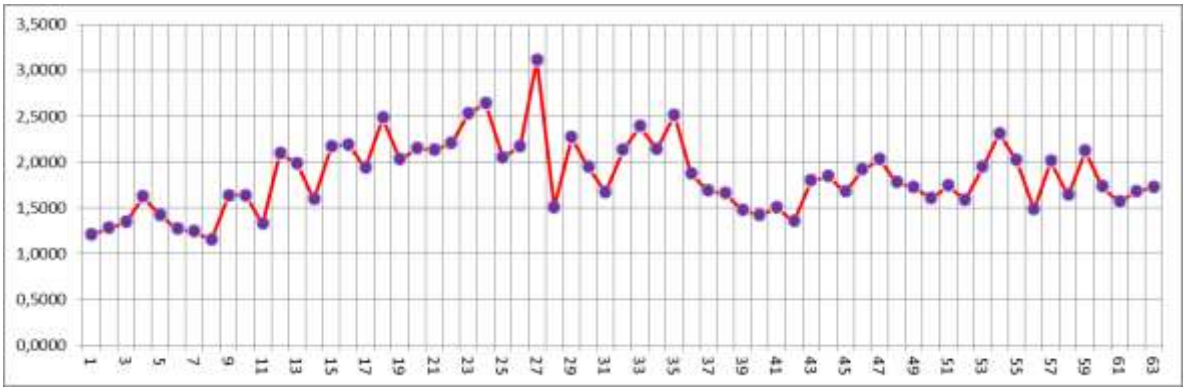
Table 3. Backward linkage of agriculture, livestock, forestry, and fisheries in Indonesia

No.	Subsector	Direct	Rank	Indirect	Rank	Total	Rank	Index Spread Degrees
1	Food Crops	0.1501	6	1.0602	7	1.2103	7	0.6577
2	Horticultural Crops	0.1581	5	1.1218	5	1.2799	4	0.6955
3	Plantation Plants	0.2111	3	1.1299	3	1.3410	3	0.7287
4	Livestocks	0.3289	1	1.2895	1	1.6185	1	0.8794
5	Agricultural Services and Hunting	0.2260	2	1.1939	2	1.4198	2	0.7715
6	Forestry and Logging	0.1419	7	1.1260	4	1.2679	5	0.6889
7	Fisheries	0.1607	4	1.0811	6	1.2418	6	0.6748
Average Value		0.1967		1.1432		1.3399		0.7281

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

International Journal of Economics, Business and Innovation Research
https://e-journal.citakonsultindo.or.id/index.php/IJEBIR
E-ISSN : 2964-0865
IJEBIR

Based on Table 3 showed that the average value of direct backward linkage is 0.1967. The value of direct backward linkages which is higher than the average, namely livestock subsector (0.3289); agriculture and hunting services sub-sector (0.2260); and plantation crops sub-sector (0,2111). The sub-sectors that have indirect backward linkages which is higher than the average (1.1432) are the livestock sub-sector (1.2895) and the agriculture and hunting services sub-sector (1.1939). The backward multiplier effect value of the 63 sub-sectors can be seen in Figure 2.



Description of 63 subsectors, see appendix

Figure 2. Backward linkages (multiplier effect) of 63 sub-sector in Indonesia

Multiplier figures for agriculture, livestock, forestry, and fisheries (sequence numbers 1 to 7) with an average of 1.3399, the value is still below the average of the 63 sub-sectors analyzed. This showed that the dependency of agricultural sector inputs from the output of other sectors is below average. Perwitasari et al. (2013) also revealed that the multiplier effect of output, income, employment in the agricultural sector is below the average multiplier effect of output, income, and labor in other sectors in Indonesia. The livestock subsector is the subsector that has the highest dependency compared to other sub-sectors which are grouped in the agriculture, livestock, forestry, and fisheries sectors. The results of research conducted by Sukanto (2010) and Widyawati (2017) showed that the agricultural sector shows more direct forward links (forward linkages) greater than the direct links (backward linkages).

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

International Journal of Economics, Business and Innovation Research
https://e-journal.citakonsultindo.or.id/index.php/IJEBIR
E-ISSN : 2964-0865
IJEBIR

Impact of Agriculture, Livetsock, Forestry, and Fisheries Sectors on Output, GDRP, and Workforce Compensation

Impact of the multiplier value on agriculture, livestock, forestry, and fisheries sectors is known that the plantation crop sub-sector is the highest contributor with an output of 644.61 billion which was then followed by the food crops sub-sector with an output of 528.75 billion. Palm oil is a major contributor to the plantation crop sub-sector which has a significant impact on the acceleration of community economic development (Syahza, 2011).

Table 4.Impact of agriculture, livestock, forestry, and fisheries sectors on output (Rp Billions)

No	Output (Rp. Billions)	Food Crops	Horticultural Crops	Plantation Crops	Livestock	Services Agriculture and Hunting	Forestry and Logging	Fisheries
1	Household Consumption	362.94	152.93	288.60	195.00	23.47	11.86	247.21
2	LNPRT consumption	6.43	6.59	4.84	1.91	0.38	0.26	2.35
3	Government consumption	17.11	9.12	18 08	7.56	1.38	2.81	8.68
4	Gross Fixed Capital Formation	23.46	43.63	153.49	38.49	10.94	59.91	8.58
5	Changes in inventories	23.22	0.34	18 61	20.13	1.49	3.58	9.29
6	Exports of Goods and Services	86.32	9.66	132.74	28.66	8.54	14.42	30.36
7	Imported Goods	9.28	4.05	28, 26	5.32	1.64	0.80	6.49
	Total	528.75	226.31	644.61	297.08	47.84	93.64	312.96

Based on Table 4, respectively contributions multiplier effect of each sub-sector on the output from the largest to the smallest were plantation crops sub-sector (644.61 billion), food crops sub-sector (528.75 billion), fisheries sub-sector (312.96 billion),

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

International Journal of Economics, Business and Innovation Research
https://e-journal.citakonsultindo.or.id/index.php/IJEBIR
E-ISSN : 2964-0865
IJEBIR

livestock subsector (297.08 billion), horticultural crops sub-sector (226.31 billion), forestry and logging subsector (93.64 billion), and agriculture and hunting services sub-sector (47.84 billion). The value of the output of the plantation crops sub-sector was 644.61 billion, meaning that this value was the amount of output formed due to the final demand for the plantation crops sub-sector. Based on its structure, household consumption was the most dominated with a value of 362.94 billion.

The plantation sub-sector multiplier also showed the same results for the impact on GDRP with a contribution of 518.96 billion. Key commodities from the plantation subsector are oil palm, rubber, and sugar cane (Dwiastuti et al., 2008). Multipliers from the agriculture and hunting services sub-sector also showed the same symptoms for the impact on GDRP of 37.69 billion.

Table 5.Impact of agriculture, livestock, forestry, and fisheries of GDRP (Rp. Billion)

No.	GDRP (Rp. Billion)	Food Crops	Horticultural Crops	Plantation Crops	Livestock	Services Agriculture and Hunting	Forestry and Logging	Fisheries
1	Household Consumption	312.27	133.14	232.34	130.56	18.49	10.17	207.86
2	Consumption of LNPRT	5.53	5.73	3.89	1.28	0.30	0.22	1.98
3	Government Consumption	14.72	7.94	14.56	5.06	1.08	2.41	7.30
4	Formation of Gross Fixed Capital	20.19	37.98	123.57	25.77	8.62	51.40	7.21
5	Changes in Inventory	19.97	0.29	14.98	13.48	1.17	3.07	7.81
6	Exports of Goods and Services	74.27	8.41	106.86	19.19	6.73	12.37	25.53
7	Imports of Goods	7.98	3.53	22.75	3.57	1.29	0.68	5.45
	Total	454.93	197.04	518.96	198.91	37.69	80.33	263.14

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

International Journal of Economics, Business and Innovation Research
https://e-journal.citakonsultindo.or.id/index.php/IJEBIR
E-ISSN : 2964-0865
IJEBIR

Impacts of the agricultural sector on the GDRP of the plantation crops subsector in a row from the largest namely: consumption households (232.34 billion), gross fixed capital formation (123.57 billion), exports of goods and services (106.86 billion), imports of goods (22.75 billion), government consumption (14.56 billion), and LNPRT consumption (3.89 billion). Household consumption and government consumption partially each show a significant influence on economic growth in Indonesia (Afiftah et al., 2017). The same pattern was also obtained for the results of the analysis of the impact of the agriculture, livestock, forestry, and fisheries sectors on workforce compensation where the plantation subsector contributed the most with a value of 169.63 billion.

Table 6.Impact of agriculture, livestock, forestry, and fisheries of the workforce compensation (Rp. Billion)

No	Workforce Compensation (Rp. Billion)	Food Crops	Horticultural Crops	Plantation Crops	Livestock	Services Agriculture and Hunting	Forestry and Logging	Fisheries
1	Household Consumption	61.12	22.79	75.95	47.60	4.84	2.33	40.05
2	Consumption of LNPRT	1.08	0.98	1.27	0.47	0.08	0.05	0.38
3	Government Consumption	2.88	1.36	4.76	1.85	0.28	0.55	1.41
4	Formation of Gross Fixed Capital	3.95	6.50	40.39	9.40	2.26	11.79	1.39
5	Changes in Inventory	3.91	0.05	4.90	4.91	0.31	0.70	1.50
6	Exports of Goods and Services	14.54	1.44	34.93	7.00	1.76	2.84	4.92
7	Imported Goods	1.56	0.60	7.44	1.30	0.34	0.16	1.05
	Total	89.04	33.72	169.63	72.52	9.87	18.42	50.70

Results showed that the order of impact of each sub-sector on labor compensation from the largest to the smallest, namely plantation crops sub-sector (169.63 billion), food crops sub-sector (89.04 billion), livestock sub-sector (72.52 billion), fisheries sub-sector

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

(50.70 billion), horticultural crops sub-sector (33.72 billion), forestry and logging subsector (18.42 billion), and agriculture and hunting services sub-sector (9.87 billion). Labor force survey in August 2013, recorded the number of farmer workers reaching 34.36%, trading 21.42%, processing industry 13.43%, and other occupations 30.79% (Kusumaningrum, 2019). Furthermore, Syafaat and Mardianto (2002) revealed that the source of growth in national output lies in the agricultural sector.

CONCLUSIONS

Total demand among the agriculture, livestock, forestry, and fisheries sectors ranks second largest after the manufacturing industry. But in terms of final demand, the agricultural sector is still below the average of other sectors. However, when viewed from total demand, the agriculture, livestock, forestry, and fisheries sectors relatively contributed significantly. Judging from the output structure, GDRP, and workforce compensation it is noted that the contribution of the agriculture, livestock, forestry, and fisheries sectors respectively was 8.89% for output; 14.04% for GDRP, and 10.72% for workforce compensation.

The plantation crops sub-sector has the forward linkages highest both direct (0.9334) and indirect (2.1917) with a multiplier effect of 3.1251. The sub-sectors that have the highest direct backward linkages are the livestock sub-sector with the direct value (0.3289, indirect (1.2895), and multiplier effect (1.6185). The plantation crops sub-sector has the highest contribution to the output, GDRP, and workforce compensation for agriculture, livestock, forestry, and fisheries, of which all sub-sectors, household consumption is the most dominant contributor and LNPRT consumption is the minimum contributor.

ACKNOWLEDGEMENT

The authors would like thanks to Prof. Hermanto Siregar for providing guidance in writing this article.

REFEREENCES:

Afiftah, AT, Julipriyanto, W., and Destianingsih, R., (2017), Analysis of the Effects of Government Consumption Expenditures and Household Consumption Expenditures on Economic Growth in Indonesia 1988-2017, Directory of the Journal of Economic, 1 (2): 11-22.

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

Arifin, B., (2004), Indonesian Agricultural Economic Analysis, Kompas Book Publishers, Jakarta.

BEKRAF, (2017), Input Table for Updating Creative Economy 2014, Jakarta (Indonesia): Creative Economy Agency.

BPS, (2015), Indonesia Input Output Tables 2010, Jakarta (Indonesia): Statistics Indonesia.

Daryanto, A. and Hafizrianda, Y, (2010), Analysis of Input Output and Social Accounting Matrix for Regional Economic Development, Bogor: IPB Press.

Domanski, B. and Gwosdz, K, (2010), Multiplier Effect in Local and Regional Development, Quaestiones Geographicae 29 (2), Adam Mickiewicz, University Press, Poznan 2010, pp. 27-37.

Dornbusch, R., Fischer, S., and Startz, R., (2008), Macroeconomics, Issue 10. Translation: Roy Indra Mirazudin. McGraw-Hill Companies. The USA.

Dwiastuti, R., Hanani, N. and Wibisono, R., (2008), Determination of a Key Sector in Indonesian Agricultural Development: National Input Output Approach 2005, Agrise, 7 (1): 1-14.

Jamieson W, Goodwin, H. and Edmunds. C., (2004), Contribution of Tourism to Poverty Alleviation Pro-Poor Tourism and The Challenge of Measuring Impacts. Transport Policy and Tourism Section, UN ESCAP Transport and Tourism Division.

Kusumaningrum, S.I., (2019), Utilization of the Agricultural Sector as a Support for Indonesia's Economic Growth, Transaction Journal. 11 (1): 80-89.

Manacika, I.K., (2010), Impact of Tourism on Agricultural Sector Output Demand in Bali Province, Thesis, Denpasar: Postgraduate Program at Udayana University.

Munajat, (2009), Eradicating Agricultural Development as a Rooted Solution in Overcoming Poverty. Agrobis.

Niara, A. and Zulfa, A., (2019), The Effects of the Contribution of Agriculture and Industry to Poverty in North Aceh District, Unimal Regional Economic Journal. 2 (01): 28-36.

Oktavia, HF, Hanani, N, and Suhartini, (2016), The Role of the Agriculture Sector in Economic Development in East Java Province (Approach Input-Output), Habitat Journal. 27 (2): 72-84.

Perwitasari, H., Irham, and Jamhari, (2013), Analysis of Agricultural Sector Output Output in Indonesia, Agro Economy. 24 (1): 1-23.

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

Siregar, H., (2016), Input-Output Model for Regional Economic Analysis, Presented at Bank Indonesia Activity on August 24, 2016. It can be accessed at https://www.bi.go.id/en/institute/kivitas/Flagship/Contents/.

Suhendra, E.S., (2005), The Role of the Agriculture Sector in Economic Growth in Indonesia with the Input-Output Approach, Proceedings of the 2005 PESAT National Seminar Gunadarma University. Jakarta: 83-92.

Sukanto, D., (2010), Analysis of the Role of the Agriculture Sector on the Economy of Central Java (Approach to Input-Output Analysis), Journal of Economics and Business. 1 (2): 13-25.

Syafa'at N. and Mardianto, S., (2002), Identification of National Output Growth Sources: Approach to Input-Output Analysis, Agro Economic Journal. 20 (1): 1-24.

Syahza, A., (2011), Accelerating the Rural Economy Through the Development of Oil Palm Plantations, Journal of Development Economics. 12 (2): 297-310.

Wilaga, A.H. Sarma, M., Falatehan, A.F., (2017), Role Analysis of Food Crop Sub-sectors to West Java Economic Development, Journal of Regional and Rural Development Planning. 1 (3): 231-242.

Widyawati, R.F., (2017), Analysis of the Interrelation of the Agricultural Sector and Its Impact on the Indonesian Economy (Input Output Analysis), Economia Journal 13 (1): 14-27.

Winardi, (2017), Impact of Industrial Plantation Development on Output, Labor Absorption, Income Distribution and Household Poverty in West Java Province, Dissertation, Bogor Agricultural Institute.

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.