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The Livestock Sector Role on The Economy of Central Java

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Abstract

The purpose of this study is to find out how big the role of the livestock sector on the economy of Central Java Province by looking at the contribution of output, demand structure, power of dispersion, sensitivity of dispersion, output multiplier, and income multiplier. The analytical method used in this study is the Input-Output analysis of Central Java Province 2013 Input-Output Table Classification of 88 Sectors. The results of the study show that the contribution of output produced by the livestock sector still low compared to the overall output produced in Central Java. The demand structure of livestock sector mostly distributed to other sectors for further production process while output of the poultry sector distributed for direct consumption. Power of dispersion analysis of the livestock sector shows the highest value among the primary sectors while the sensitivity of dispersion of livestock sector is still relatively low. Similarly, the multiplier output of livestock sector is the highest among other primary sectors, but the income multiplier of the livestock sector is still relatively low. Through input-output analysis, it can be seen the linkages between economic sectors in more detail and the impacts arising from changes that occur in one sector to other sectors. This study concludes that the livestock sector is a potential sector to be developed because it has a high value of the power of dispersion index and multiplier output so the livestocks sector expected to encourage the growth of other sectors and the economy of Central Java Province as a whole.

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INTRODUCTION

Regional economic development is a process of regional development that involves local governments and the private sector working together to manage the resources available in the are to encourage economic growth and employment creation in the area (Arsyad, 2010). The success of economic development carried out by a region can be seen from the growth of the Gross Regional Domestic Product (GRDP) of the region, the reduction of inequality among residents, regions, and sectors (Suryani, 2013). One of the sectors with the greatest contribution to the regional economy is the agricultural sector. The agricultural sector is a provider of food resources, industrial raw materials, increasing foreign exchange, and source of income for rural communities (Jhingan, 2010). Central Java Province is one of the regions that still rely on the agricultural sector to support the economy of most people.

Table 1. GRDP of Central Java Province at 2010 Constant Market Price by Industry (Million Rupiah)

Industry	2016	2017	2018
Agricultur, Forestry, and Fisheries	116,331,116.45	118,450,171.80	121,556,541.24
Food Crops	40,717,120.33	40,338,689.87	40,171,161.35
Horticultural Crops	28,406,239.80	28,888,205.72	30,187,502.70
Plantation Crops	11,688,434.69	11,874,493.66	12,188,219.07
Livestock	21,202,537.74	22,489,922.56	23,828,930.19
Agricultural Services and Hunting	2,426,164.34	2,482,922.56	2,515,466.95
Forestry and Logging	3,823,956.28	4,050,296.81	4,108,281.90
Fishery	8,066,663.27	8,353,130.32	8,556,979.08
GRDP	849,099,354.69	893,750,296.17	941,164,118.17

Source: Central Bureau of Statistics of Central Java Province

The agricultural sector itself consists of several sub-sectors including food crops, horticultural plants, plantation plants, livestock, agriculture and hunting services, foresty and logging wood, and fishery. Among the several sub-sectors, there are three sectors with the largest contribution in the agricultural sector, that is food crops, horticultural crops, and livestock. Besides, the three sectors grow relatively fast each year compared to other sectors in the agricultural sector. The large contribution and rapid growth of the three sectors are not accompannied by positive influence on other sectors in the agricultural sector. The inequality that occurs in the agricultural sector shows that the sector with a large contribution will always grow rapidly while the sector with a relatively small contribution grows slowly and cannot keep up with the growth of these large sectors. This certainly has an unfavorable impact on the process of economic development. The sectors with the biggest contribution to the agriculture sector were the food crops, horticulture, and livestock sectors. The three sectors contribution has continued to increase each year, but the food crops and horticulture sectors have decreased in contribution over the past three years while the livestock sector has continued to increase.With relatively large contribution and increasing every year, the livestock sector is expected to have positive impact on other economic sectors to grow faster.

Table 2. Contribution of Food Crops, Horticultural Crops, and Livestock on GRDP of Central Java Province 2016-2018 (%)

Industry	2016	2017	2018
Food Crops	4.79	4.51	4.26
Horticultural Crops	3.34	3.23	3.20
Livestock	2.49	2.51	2.53

Source: Central Bureau of Statistics of Central Java Province

The livestock sector with contributions that continue to increase every year is expected

to have an impact on the growth of other sectors, but in reality the potential of the livestock sector has not been utilized to the fullest. It can be seen that the livestock population in Central Java still below the carrying capacity of livestock. In 2017 livestock population in Central Java was 3,330,188 with carrying capacity 4,985,664. With a population that is still below the ideal population, the output produced by the livestock sector is not optimal and still has a great potential to incrase in the future. By using the 2013 Central Java Province Input-Output Table analysis, it can be seen which sectors are the leading sectors can encourage the growth of other economic sectors so that the economy will grow as a whole.

RESEARCH METHODS

This research is a type of research that uses a quantitative approach. Quantitative method is a science approach to make a managerial economics decision. The quantitative approach processes the data that has been collected into useful information for decision makers (Kuncoro, 2011). Quantitative approaches consists of formulating problems, constructing models, collecting data, finding solutions, analyzing results, and implementing results.

The data used in this study are secondary, which is data that has been collected by data collection agencies and then published to data users (Kuncoro, 2011). The data used in this study are Input-Output Table of Central Java Province 2013, GRDP of Central Java Province, Statistics of Animal Husbandry and Animal Health 2018, Statistics of Animal Husbandry of Central Java Province. The data used in the study are obtained from The Central Bureau of Statistics of Central Java Province, Directorate General of Animal Husbandry and Animal Health of The Ministry of Agriculture, Department of Animal Husbandry and Animal Health of Central Java Province.

This research uses Input-Output analysis to answer the problem in this study. Analysis Input-Output is a method that systematically measures the relationship of various economics sectors in complex economics system (Daryanto and Hafizrianda, 2010). According to Nazara (1997) in Suryani (2013), the system of Input-Output analysis compiled based on the assumption of behavioral economics that is a simplification of the framework for measuring the flow of inputs and outputs of the various sectors in a certain region. This systems follow the flow of goods and services from one sector to another sectors.

To see how big a sector's role in the economy is not only seen through its contribution to the GRDP but also through the production of that sector's output. This analysis is used to see the contribution of a sector's output to the overall output. Outputs are valued at producer prices without elements of trade margins and transportation costs. In the 2013 Central Java Province Input-Output table, the total output produced by each economic sector is given a code (600) and is usually seen as a percent (%).

Output produced by an economic sector are used to meet intermediate demand or for further production processes and final demand or for direct consumption by the public. The contribution of intermediate demand is obtained by comparing the number of intermediate demand with the total demand for the sector. The intermediate demand in the Central Java Province Input-Output table is shown by the contents along the lines in the intermediate transaction that show the allocation of outputs of one sector in meeting the input needs of other sectors for further production needs.

While the contribution of a sector's final demand can be obtained by comparing the number of final demand with the total sector demand. In this study, the final demand consists of household consumption expenditure components (301), government consumption expenditure (302), fixed capital formation (303), stock changes (304), and exports (305).

Through buying and selling transactions that occur between sectors can be identified forward and backward linkages of the sector. Forward linkages occur when a sector's output is used by other sectors for the production process and backward linkages occur when a sector uses inputs that come from the output of another sector. To find out the forward linkages of a

sector can be measured by the sensitivity of dispersion while the backward linkage is measured through the power of dispersion.

The forward linkage of an economic sector can be measured through the sensitivity of dispersion index of the economic sector. Sensitivity of dispersion is the impact that occurs in an economic sector due to changes in final demand in each economic sector in the region. While The backward linkage of an economic sector can be measured through the power of dispersion index. Power of dispersion is the impact that occurs due to changes in the final demand that occurs in a sector on output in the aggregate. Power of dispersion measures how much a sector's ability to drive the growth of other sectors through the use of output produced by these sectors as input to the sector concerned. A sector can be said to have a high power of dispersion if the index value of the sector is more than one (> 1). Conversely, a sector can be said to have a low power of dispersion if the value of the index is less than one (<1).

The linkages between economic sectors that interact with each other through buying and selling transactions will ultimately lead to a multiplier effect. An increase in the final demand of an economic sector that has broad linkages both backward and forward linkages can create a multiplier effect in the economy. There are two multiplier effects used in this study, namely the output multiplier and income multiplier.

Output multiplier is the overall output created in the economy caused by changes in the amount of final demand for an economic sector. The output multiplier can be obtained from the sum of each column of the inverse leontief matrix. Whereas, The income multiplier is a change that occurs in household income as a result of changes in the amount of final demand for an economic sector.

RESULTS AND DISCUSSION

The contribution of a sector to the economy is not only seen through the contribution of the sector to the GRDP, but the contribution of a sector can also be seen through how much the contribution of the sector in providing output.

Table 3. Contribution Ouput of Economic Sector in Central Java Province

Industry	Code	Ranking	Output (Million Rupiah)	Contribution to Total Output (%)
Trade	71	1	162,389,251.71	12.93
Oil Refinery Industry	56	2	127,019,690.83	10.11
Government and Defence	83	3	84,187,532.46	6.70
Livestock	22	68	1,314,2215.42	0.105
Poultry	23	13	27,972,937.02	2.228

Source: Central Java Province Input-Output Table 2013, processed.

The analysis of the contribution of output aims to provide an overview of which sectors can make a large contribution to the economy of Central Java Province. The output produced by the livestock sector is Rp. 1,314,215.42 Million for the livestock sector or equal to 0.105% of total output and Rp. 27,972,937.02 Million for the poultry sector or 2,228% of total output. Output produced by the livestock sector is still low and ranks only 68 for the livestock sector and rank 13 for the poultry sector. The results of this study indicate conformity with previous research by Dault (2002) entitled Analisis Kontribusi Sektor Perikanan Pada Struktur Perekonomian Jawa Tengah which concluded that the livestock sector has a relatively low output contribution of 1.66%. The low output produced by the livestock sector is caused by the number of animals that have not reached the ideal number. In 2017, the number of livestock in Central Java was 3,330,188 Animal Units, whereas for the ideal number of 4,985,664, the livestock population in Central Java still needed to be increased by 1,655,476 ST. With the

addition of cattle, it is expected to have an impact on increasing the output of the livestock sector.

Besides the number of animals that are still below the ideal number as mentioned above, the traditional pattern of breeding is also the cause of the inadequate production of livestock sector output. Most of the people of Central Java still make the livestock sector as a side business and have not become a main business so that the maintenance pattern becomes inefficient. The community is expected to change livestock raising patterns to become more modern by applying good farming practices so that the output produced by the livestock sector will be of better quality, safer, and suitable for consumption. That way, the maintenance process will be more efficient and have an impact on increasing the output of the livestock sector.

Increasing production output of the livestock sector not only focuses on increasing the number of livestock and applying modern maintenance processes, but also must pay attention to the upstream and downstream sectors that are directly or indirectly related to the livestock sector. The provision of quality feed (Good Feeding Practice) such as forages and concentrates, good breeds (Good Breeding Practice), vaccines, and quality livestock medicine will have an impact on livestock productivity in Central Java. So that the development of sectors that produce inputs for the livestock sector will have an impact on increasing livestock production in Central Java. In addition to the upstream sector, the development of output-based sectors of the livestock sector will also have an impact on increasing output generated by the livestock sector. The development of the processing industry based on the output of the livestock sector will cause the demand for the output of the livestock sector to increase, so that the production of livestock products also increases.

Output produced by an economic sector is used to fulfill the intermediate demand where the sector's output is used as raw material for production purpose and the final demand where the sector's output is used for direct consumption by community

Table 4. Demand Structure of Livestock Sector

Industry	Code	Intermediate Demand	Final Demand	Total Demand
Livestock	22	970,235.33	343,980.09	1,314,215.42
Poultry	23	2,743,547.93	25,229,389.09	27,972,937.02

Source: Central Java Province Input-Output Table 2013, processed.

Based on the analysis of intermediate and final demand structure analysis, most of the output produced by the livestock sector are distributed to other economic sectors for further production processes. 73.83% of the sector's output is used to meet intermediate demand.

Table 5.Intermediate Demand of Livestock Sector (Million Rupiah)

Industry	Code	Intermediate Demand	%
Paddy	1	411,643.97	42.43
Food Processing and Preservation Industry	32	155,370.23	16.01
Corn	2	85,185.97	8.78
Fruits	8	71,962.99	7.42
Vegetables	6	41,202.76	4.25
Intermediate Demand of Livestick Sector		970,235.33	

Source: Central Java Province Input-Output Table 2013, processed.

Total intermediate demand the livestock sectors is Rp. 970,235.33 Million, most widely used by the paddy sector is 42.43%
which shows that the paddy sector uses the most output from the livestock sector as input in theproduction process. It can be concluded that the paddy sector is a sector that has a large influence on changes in output produced by the livestock sector. When there is a change in the amount of input used by the rice sector originating from the livestock sector will have a major effect on the output of the livestock sector and its results because most of the output produced by this sector is used for input in the rice sector.

The low output of the livestock sector that are directly consumed by the community such as beef, meat, goats, and milk are caused by relatively high prices so that the output produced by this sector is more distributed to other sectors for reprocessing. In addition, the characteristics of perishable livestock products are also one of the reasons why most of the output produced by this sector must undergo further processing.

Table 6. Intermediate Demand of Poultry Sector (Million Rupiah)

Industry	Code	Intermediate Demand	%
Hospitality Services	73	1,911,618.16	69.68
Poultry	23	174,534.58	6.36
Restaurant Services	72	155,953.64	5.68
Bread and Pastry Industry	36	103,565.89	3.77
Fruits	8	86,915.20	3.17
Intermediate Demand of Poultry Sector		2,743,547.93	

Source: Central Java Province Input-Output Table 2013, processed.

While the output produced by the poultry sector are more widely distributed for direct consumption by the community. 90.20% of the sector's output is used to meet final demand. The total of intermediate demand of this sector is Rp. 2,743,547.93 Million as shown in table 6, the most widely used as input by the hospitality services sector is 69.68%. Followed by the poultry sector itself which amounted to 6.36%, this shows that most of the output produced by the poultry sector are still widely used as input to the sector itself. Just like the livestock sector, changes in the use of output coming from the poultry sector by the hospitality service sector and the poultry sector itself will have a major effect on the output production of the poultry sector. Or it can be said that the development of the poultry sector are very dependent on the hospitality service sector and the sector itself. This indicates that the processing industry based on output of the poultry sector have not yet developed so that the output produced is more distributed for direct consumption. Although it possesses perishable characteristics, because the price of chicken meat, duck meat, and eggs is relatively cheaper so it is more sought after by the community as a daily source of protein.

This is consistent with the general equilibrium theory proposed by Leon Walras, explaining that each economic sector is interconnected through buying and selling transactions. The output of one sector is sold to other sectors and to meet the final demand. The livestock sector as one of the primary sectors plays a role in providing raw materials such as meat, milk, eggs, bones, blood, fertilizer, skin, and fur to the manufacturing sector, especially industries based on the output of the livestock sector. The greater the production of industrial sector will have an impact on increasing output produced by the livestock sector. In addition, inputs used by the livestock sector also come from other economic sectors such as animal feed, seeds, vaccines, drugs, and livestock machinery produced by other sectors. Interaction between sectors of the economy through buying and selling will bring the economy towards a general equilibrium.

Through buying and selling transactions that occur between economic sectors, it can be seen the relationship of one sector to another sector. The linkages of an economic sector can be divided into forward and backward linkages. To measure the forward and backward linkages of an

economic sector, an analysis of the sensitivity of dispersion and power of dispersion can be used.

Sensitivity of dispersion shows the ability of one sector to stimulate the production of other sectors that use the output of this sector as input.

Table 7. Sensitifity of Dispersion Index

Industry	Code	Ranking	Sensitifity of Dispersion Index
Trade	71	1	4.6942
Oil Refinery Industry	56	2	3.9770
Road Transport Services	75	3	1.9719
Livestock	22	46	0.8262
Poultry	23	38	0.8479

Source: Central Java Province Input-Output Table 2013, processed.

The sensitivity of dispersion of a sector is a measure to see the forward linkages produced by an economic sector. The sensitivity of dispersion index looks at the ability of one sector to stimulate the production of other sectors that use the output of this sector as input. The index value of the sensitivity of dispersion of the livestock sector is still low or less than one (<1). This result is supported by previous research conducted by Septiadi (2017) entitled *Analisis Daya Penyebaran dan Derajat Kepekaan Sektor Ekonomi di Jawa Tengah* which concluded that the livestock sector has an power of dispersion index above average (> 1) while the sensitivity of dispersion index of the livestock sector is less of one (<1). The sensitivity of dispersion index value which is still relatively low is caused because most of the output produced by the livestock sector is directly consumed and not to be reprocessed by other sectors so that the livestock sector has a short forward linkage. This short linkage is caused by the output-based industry of the livestock sector which is still underdeveloped so that the output of the livestock sector is more widely distributed to meet direct consumption by the community. Because the output produced by the livestock sector is not absorbed much by the processing industry and is consumed more directly by the community causing a short link in the future of the livestock sector.

Power of dispersion is a measurement used to see the backward linkages of an economic sector. Through this analysis, can be seen which sectors can drive the growth of other sectors by using the input produced by those sectors.

Table 8. Power of Dispersion Index

Industry	Code	Ranking	Power of Dispersion Index
Rice Milling Industry	34	1	1.4145
Bread and Pastry Industry	36	2	1.4102
Food Spices and Flavoring Industry	39	3	1.3881
Livestock	22	37	1.0241
Poultry	23	26	1.1406

Source: Central Java Province Input-Output Table 2013, processed.

The livestock sector has the highest power of dispersion index among other primary sectors. This is supported by Rafiqah's study (2018) entitled *Daya Penyebaran dan Derajat Kepekaan Sektor Pertanian dalam Pembangunan Ekonomi di Provinsi Jawa Tengah* which concluded that the livestock sector has a power of dispersion index above the overall index average and is the highest in the agricultural sector. The high value of power of dispersion index shows that the livestock sector can drive the growth of overall output production because the livestock sector has a close backward linkage with many sectors. Increased output production from the livestock sector will result in inputs from other sectors will also increase.

The livestock sector have a power of dispersion index value of 1.0241, this value is

above the average (> 1) of other economic sectors so that an increase in final demand in this sector will have an impact on increasing output in other economic sectors that provide input to the livestock sector.

Table 9. Intermediate Input Structure of Livestock Sector (Miliion Rupiahs)

Industry	Code	Intermediate Input	Percentage (%)
Animal Food Industry	40	144,181.52	37.34
Trade	71	78,184.53	20.25
Paddy	1	31,817.82	8.24
Road Transport Services	75	20,075.48	5.20
Oil and Fat Industry	33	12,768.65	3.31
Total Intermediate Input of Livestock Sector		386,179.41	

Source: Central Java Province Input-Output Table 2013, processed.

Table 9 shows the five sectors with the largest contribution in providing inputs to the livestock sector, so that when there is an increase in final demand in this sector will have the greatest impact on these five sectors because these sectors provide the most input compared to other economic sectors. The sector which plays the role of providing the most inputs to the livestock sector is the animal feed industry. Followed by the trade sector, paddy, road transport services, and the oil and fat industry. The output of these sectors will increase as a result of an increase in livestock sector output caused by changes in final demand. The development of sectors that provide input to the livestock sector will lead to an increase in output of the livestock sector output, therefore an increase in the quality of feed produced by the animal feed industry such as concentrates that are in accordance with the Indonesian National Standard (SNI) and the availability of forage feed that is continuous, so that the improvement in the quality of output produced by the other four sectors will have a positive impact namely an increase in the output of the livestock sector both in quantity and quality.

Table 10. Intermediate Input Structure of Poultry Sector (Miliion Rupiahs)

Industry	Code	Intermediate Input	Percentage (%)
Animal Food Industry	40	6,689,205.37	64.83
Trade	71	2,061,069.11	19.98
Road Transport Services	75	429,474.60	4.16
Pharmaceutical Industry and Traditional Herbal Medicine	54	291,055.58	2.82
Poultry	23	174,534.58	1.69
Total Intermediate Input of Poultry Sector		10,317,321.50	

Source: Central Java Province Input-Output Table 2013, processed.

The poultry sector has a power of dispersion index value of 1.1406, this value is the largest among other primary sectors. With a high power of dispersion index value indicates that the poultry sector has the higest backward linkages with other economic sectors and changes in the final demand of this sector can cause the greatest increase in output for sectors that provide input to the poultry sector. There are five sectors with the largest contribution to providing inputs for the poultry sector with the biggest contribution is the animal food industry sector in the form of animal feed. Followed by the trade sector in the form of trade margins, road transport services in the form of transportation costs, the pharmaceutical industry and herbal medicine in the form of drugs and vaccines, and the poultry sector itself in the form of seeds. Almost the same

as the livestock sector, but the poultry sector use a lot of inputs generated by the sector itself. It can be concluded that the development of the poultry sector is still strongly influenced by the sector itself, in addition to this it also illustrates that support from economic sectors is still low. Although it has broad backward links, the links with these sectors can be said to be low and are still dominated by certain sectors.

To determine the priority sectors in Central Java, can be seen from power of dispersion index and sensitivity of dispersion index. The criteria for determining priority sectors can be seen in the table below.

Table 11. Criteria of Priority Sector

Power of Dispersion Index	Sensitivity of Dispersion Index	Priority
High (>1)	High (>1)	I (Leading Sector)
High (>1)	Low (<1)	II (Potential Sector)
Low (<1)	High (>1)	III (Developing Sector)
Low (<1)	Low (<1)	IV (Underdeveloped Sector)

Source: Widodo (2006)

The livestock sector with a power of dispersion index value more than one (> 1) and a sensitivity of dispersion index value of less than one (<1) can be categorized as a potential sector to be developed. Among the sectors included in other primary sectors, only the livestock sector is included in priority II or potential sectors while other sectors are included in priority III and priority IV. This shows that the livestock sector must be developed in order to encourage the growth of other sectors in the agricultural sector so that imbalances that occur in the agricultural sector can be overcome. The determination of priority sectors in Central Java Province is in accordance with the theory of unbalanced development strategy proposed by Hirschman and Streeten, which explains that investment must be carried out in sectors that are leading sectors or potential sectors in the area so that the development process will proceed more quickly and can encourage growth other sectors. Investments made in leading sectors or potential sectors will have a positive impact on other economic sectors and will slowly bring the economy toward balance. By determining which sectors are the leading sectors and potential sectors that have the most backward and forward linkages will have an impact on other economic sectors.

Through the interrelationships generated by each economic sector, the changes that occur in one sector will have an impact on other economic sectors that are directly or indirectly related. chain impacts that arise are usually called the multiplier effect. In the production process, the livestock sector requires inputs from other sectors so that an increase in final demand in the livestock sector will cause an increase in demand for inputs such as feed, an increase in demand for feed will cause an increase in demand for rice and corn and so on. The effect arising from a series of increased demand for sectors related to the agriculture sector is called the multiplier effect. So that the development of the livestock sector will create a chain effect and will ultimately cause the economy to grow as a whole.

Table 12. Output Multiplier

Industry	Code	Ranking	Output Multiplier
Rice Milling Industry	34	1	2.00262
Bread and Pastry Industry	36	2	1.99655
Food Spices and Flavoring Industry	39	3	1.96528
Livestock	22	37	1.44993
Poultry	23	26	1.61480

Source: Central Java Province Input-Output Table 2013, processed.

Output multiplier is the overall output produced by the economy as a result of a change

in one unit of money in the final demand of an economic sector. The livestock sector has the highest output multiplier value among other primary sectors. This is supported by research conducted by Oktavia (2016) entitled *Peran Sektor Pertanian dalam Pembangunan Ekonomi di Provinsi Jawa Timur (Pendekatan Input-Output)* which concluded that livestock commodities have the highest output multiplier value among other economic sectors. The output multiplier produced by the livestock sector is the highest among the other primary sectors. The livestock sector has an output multiplier of 1.44993.

Table 13. Output Multiplier of Livestock Sector

Industry	Code	Changing in Output
Livestock	22	1.00289
Animal Food Industry	40	0.11132
Trade	71	0.08331
Corn	2	0.03489
Paddy	1	0.03250

Source: Central Java Province Input-Output Table 2013, processed.

The livestock sector has an output multiplier of 1.44993. This shows changes in output that occur in the entire economy due to changes in the final demand of livestock sector. To find out changes in output that occur in each sector of the economy can be seen through each column in the reverse matrix leontief. By looking at changes in output that occur due to changes in the final demand of the livestock sector, it can be seen which sectors are most sensitive to these changes. Although the value of the power of dispersion index has explained which sectors contribute greatly to the supply of this sector's input, how much is the change in the output of these sectors due to changes in the final demand of the livestock sector is not yet known. Through this multiplier output analysis it can be seen which sectors are most affected due to changes in the final demand of a sector. Table 13 shows the five economic sectors with the largest changes in output due to changes in the final demand of the livestock sector. The first sector with the highest additional output is the livestock sector itself, amounting to 1.00289, which means that due to an increase in the final demand of the livestock sector and the results of one unit of money will create additional output in the livestock sector itself amounting to 1,00289 units of money. Followed by the animal food industry sector by 0.11132, the trade sector by 0.08331, the corn sector by 0.03489, and finally the paddy sector by 0.03250. These sectors are the sectors with the greatest changes in output due to changes in the final demand of the livestock sector when compared to other economic sectors. The development of the livestock sector will have the greatest impact on these sectors which causes the demand for raw materials or inputs from these sectors to increase and ultimately will encourage these sectors to participate in growth as the livestock sector grows itself.

Whereas the poultry sector has an output multiplier of 1.61480. The high value of multiplier output from the poultry sector is inseparable from the influence of the power of dispersion index of the poultry sector as well.

Table 14. Output Multiplier of Poultry Sector

Industry	Code	Changing in Output
Poultry	23	1.00649
Animal Food Industry	40	0.24268
Trade	71	0.11518
Corn	2	0.06105
Road Transport Services	75	0.02803

Source: Central Java Province Input-Output Table 2013, processed.

The poultry sector has a higher multiplier output value than the livestock sector equal to 1.61480. This value is a change in overall output, for changes in output that occur in each sector of the economy is not much different from the livestock sector. For the sector with the largest change in output caused by changes in the final demand for the poultry sector is the poultry sector itself by 1,00649, it means that due to changes in the final demand for the poultry sector of one unit of money will result changes in output in the poultry sector itself by 1,00649 money units. Followed by the animal food industry sector by

0.24268, the trade sector by 0.11518, the corn sector by 0.06105, and the last is the road transport service sector by 0.02803. These sectors are the sectors most affected due to changes in the final demand of the poultry sector, so that the growth of these sectors will grow in tandem with the poultry sector.

Tarigan (2002) states that the multiplier effect occurs when an economic sector experiences an increase in demand from outside the region due to inter-sectoral linkages, resulting in other sectors also increasing production so that in the end the outupt production will increase several times compared to an increase in demand from one of these economic sectors. In the production process, the livestock sector requires inputs from other sectors so that an increase in final demand in the livestock sector will lead to increased demand for inputs such as feed, increased demand for feed will lead to increased demand for paddy and corn and so on. The effect arising from a series of increased demand for sectors related to the livestock sector is referred to as a clustering effect or here referred to as output multiplier. So that the development of the livestock sector will cause the economy to grow as a whole. In addition to resulting in an increase in the output production in the livestock sector and other related sectors, the chain effect caused by an increase in the final demand of the livestock sector will cause an increase in demand for labor. The increase in overall production volume will cause greater production activities and require more labor. Considering that there are still many people who depend on the livestock sector as a livelihood, especially in rural areas, an increase in the final demand in this sector will cause an increase in the demand for labor, which in remuneration received by workers will also increase.

Increasing the amount of remuneration in this case is wages, resulting in community income will increase or often referred to as income multipliers.The income multiplier shows changed in the amount of money received by households caused by a change in the final demand of an economic sector by one unit. The livestock sector with the highest output multiplier value in the primary sector has not been able to encourage increased household income. Domanski and Gwosdz (2010) suggested that the multiplier effect in the economic field can be seen through an increase in GRDP, community income, and job creation.

Table 15. Income Multiplier

Industry	Code	Ranking	Income Multiplier
Government and Defence	83	1	0.59480
Private Education Services	84	2	0.50952
Rubber	12	3	0.40818
Livestock	22	35	0.22528
Poultry	23	6	0.32304

Source: Central Java Province Input-Output Table 2013, processed.

The increase in output production caused by an increase in the final demand for the livestock sector led to an increase in household income by 0.22528 for the livestock sector and 0.32304 for the poultry sector. The increase in household income that occurred was not so large which showed an increase in output from the livestock sector was not followed by demand for labor in the sector and other related sectors, so that an increase in output in this sector did not have a major impact on increasing household income. This is slightly different from the research conducted by Putra Putra, Dody Yuli (2011) entitled *Peran Sektor Perikanan dalam Perekonomian dan Penyerapan Tenaga Kerja di Indonesia: Analisis Input-Output* which concluded that the livestock sector and its results have a multiplier income value of 0.28141 and is the largest among other primary sectors. This is caused by differences in research locations and different sector aggregations.

CONCLUSION

Based on the results of the study showed that the contribution output of livestock sector is still relatively small compared to total output

produced in Central Java. This is because the livestock population is under the ideal amount of population. For the structure of intermediate demand and final demand of the livestock sector shows different results, for the output of livestock sector mostly distributed for further production process. While most of the output of poultry sector distributed to fulfill final consumption of society. Analysis of power of dispersion of livestock and poultry sectors have the highest value among the other primary sectors. Whereas the sensitivity of dispersion of livestock and poultry sectors are below the average (<1). With the highest power of dispersion index, livestock and poultry sectors can be categorized as potential sectors in the primary sector to be developed.

The analysis of multiplier effect of livestock sector, this sector has the hoghest value of output multiplier but relatively low in income multiplier. This results show the livestock sector is able to drive overall output production greater than other sectorsin the primary sector. Even so, the value of the income multiplier generated by the livestock sector is still relatively low which indicates that the increase in output of the livestock sector do not give any major effect on increasing the workforce, which in turn to household income. From the results above, can be concluded that the livestock sector has a positive impact to encourage the growth of other sector and economic growth. The livestock sector is the most potential sector to be developed to overcome the imbalances that occur in the agricultural sector and encourage the growth of other sectors.

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