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The linkages between health and agriculture sectors through regional expenditure review

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ABSTRACT

Objective: To analyze government allocations in the health and agriculture sector expenditure and find out their linkages based on the output of each sector.
Method: The research was conducted in Bima Regency, Indonesia, by employing descriptive statistical analysis to describe linkages between the health and agriculture sectors.
Results: The health sector (including education and infrastructure) is a priority sector in the allocation of regional expenditure with a greater proportion compared to the agriculture sector. However, the allocation of expenditure in the health sector seems to have implications for the improvement of health status, which ultimately affects the production of leading commodities in the agriculture sector as indicated by increased production from year to year.
Conclusion: There was a linkage between the performance of health and agriculture sectors as an implication of the allocation of health and agriculture sector expenditure, which was carried out proportionally by the Bima government. In addition, the agriculture sector will strengthen the health sector in terms of nutrition and environmental health. This implies that linkages between agriculture and health sectors are necessary to accelerate development in the country.

Introduction

Q2 Agricultural poses a considerable challenge to health sector[1], in which agricultural productivity affects health sector[2], and vice versa. Health indices can explain risks in agriculture[3], the potential of diversified agroecological systems to deliver healthy outcomes: making the link between agriculture, food systems & health.[3] Currently, the relationship between the health sector and production activities in the agriculture sector is increasingly becoming a concern, especially for policymakers and practitioners. They stated that the health sector has a close relationship with the agriculture sector with the assumption that the agriculture sector is a sector producing food, fiber, and medicine and provide livelihoods to millions of farmers which has implications for the ability of farmers to fulfill other living needs, including contributing to their health. Conversely, the improvement and provision of facilities and infrastructure in the health sector can influence activities in the agriculture sector because of the increased capacity of people to work and will indirectly increase the income of farmers as managers in the agriculture sector. Agriculture-related health problem has its own specific problem; the agricultural worker is vulnerable to suffer from various diseases from acute to cronic.[4] Public health services (including drinking water and sanitation)[5] can help poverty alleviation in agriculture sector though indirectly.[6]

In reality, there is a two-way relationship between the health and the agriculture sectors, which creates opportunities for the two sectors to work together and to help solve each other's problems. Agriculture systems can be developed to provide health benefits, and the health sector can take steps to help overcome agriculture problems.[7] Although this approach will involve several trade-offs, greater coordination can ultimately benefit both sectors.[3] Agriculture is a sector that has a great influence on the process of food security and community nutrition, which if the government does not balance the development in all sectors with the development of the agriculture sector itself, it will have a negative impact on its citizens. One of which is the economy or income of citizens will decrease, and thus if the economy of the citizens decreases, the fulfillment of the nutrition will not be fulfilled and will be a big problem for a country. Nutritional status is an outcome of food security, which is a reflection of a person's quality of life. The relationship between the level of food security with the nutritional status of the community shows that the level of food security of the rural community is relatively resilient, but in fact, the nutritional status of the community is still low as a result of the low understanding of the community regarding food and nutrition issues, especially housewives, therefore they cannot yet utilize what is owned optimally.

In the new global economy, access to public health services has become a central issue. Health care access should be based on affordability, physical accessibility, acceptability, and adequacy of supply.[4] The linkages between development in the health sector

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Table 1
Contribution of the economic sector to the formation of Bima's GRDP (%): 2000 constant prices.

Economy Sector	2006	2007	2008	2009	2010	2011*)
Agriculture	52.32	51.53	52.05	51.31	49.75	49.36
Mining & Quarrying	3.00	3.00	2.84	2.84	2.90	2.91
Processing Industry	2.79	2.77	2.72	2.63	2.58	2.51
Electricity, Gas dan Clean Water	0.20	0.20	0.20	0.19	0.20	0.20
Buildings	6.11	6.26	5.96	6.17	6.42	6.60
Trade, Hotels and Restaurants	15.11	15.51	15.37	15.75	16.34	16.56
Transportation & Communication	7.03	7.22	7.14	7.07	7.16	7.22
Finance, Rentals & Company Services	2.68	2.66	2.61	2.67	2.78	2.87
Services	10.75	10.85	11.10	11.36	11.87	11.77
Total	100	100	100	100	100	100

Source: Bima Regency Statistics Agency in 2012
Note :*) Temporary figures

and agriculture sector are certainly a necessity when the government as a policymaker is able to allocate its budget for the development of the two sectors. The government needs to prioritize budget allocations, in this case, regional expenditure for sectors that are able to encourage improvement in people's welfare (reducing poverty and unemployment). Furthermore, the government needs to increase the allocation of capital expenditure and reduce the cost of bureaucracy (personnel expenditure). This is because the tendency for the budget to increase but does not significantly increase welfare.[8] This is in line with facts that an increase in government expenditure for the health sector and the agriculture sector has a positive effect on economic growth, and employment in both sectors is included a reduction in poverty levels in rural and urban areas.

Regional expenditure is basically a function of regional revenue. Expenditure is a dependent variable in which the amount will depend on the sources of regional funding, both from own income and from central government transfers. Thus, in its measurement, if there is a negative relationship between the income variable with the expenditure variable, there is a fiscal illusion. Regional expenditure, according to regional government expenditure, has a role in bringing together community demand by providing facilities and infrastructure that are not fulfilled by the private sector.[8] The relationship between the health sector and the agriculture sector as stated that the benefits gained from each other become an interesting study that determines the relationship between the two sectors through analysis of regional expenditure allocation and sector expenditure.[7] The purpose of this study is to analyze government allocations in the health and agriculture sector expenditures and determine their linkages based on the output or performance of each sector.

Method

This research was carried out in Bima Regency, West Nusa Tenggara Province, Indonesia, from 2006-2012. This regency is in the WTP (Fair Without Exception) category, which means that the regional financial management was professionally conducted. Primary and secondary data were collected using questionnaires, observations, discussions, and in the form of documents or reports. Secondary data were obtained from several data sources, including; Regional Medium-Term Development Plan (RPJMD), Local Government Strategic Plan, and Regional Implementing Work Units (SKPD) such as Revenue Service, Financial and Asset Management (DPPKA), Public Works, Transportation, Education, Health Sector, Family Planning, Village Community Empowerment Agency, and Budget Implementation Documents (DPA) after the Changes in the Financial Budget (PAK) of SKPD in the 2011 budget year.

Data were analyzed regarding the outputs and outcomes of activities. The data were compared with the activities contained in the Government Agency Performance Accountability Report (LAKIP) of related SKPD, Regulation on Regional Revenue and Expenditures Budget (APBD) from 2007 to 2011, Regent Decree on the elaboration of the 2007 - 2011 APBD calculations as well as the Accountability and Performance Reports of Government Agencies. In addition, data were analyzed using descriptive statistics.

Results

Growth and contribution of the economic sector

Bima is a regency located in the eastern part of West Nusa Tenggara (NTB) province, which acts as a gateway and liaison with the Eastern Region of Indonesia (KTI). The role of a gateway and liaison with KTI is made possible by the availability of adequate land, sea, and air transportation infrastructure. From 2006-2011, the Bima Regency economy grew positively except in 2010. Figure 1 shows that the regency's economy in 2008 and 2009, exceeded the national average growth.

Table 1 shows that the agriculture sector still dominates the formation of the Bima Regency GRDP despite its declining trend. From 2006-2009, it contributed above 50 percent, while in 2010 and 2011, it decreased slightly below 50 percent.

Regional expenditures and allocation of health and agriculture sector expenditures

In general, the Bima Regency expenditure increased from 2007 to 2012, although there was no change in 2009 and 2010, as shown in Figure 2. The data in Figure 2 is a real number, 2012 data is a budget, not a realization.

The allocation of the health sector to total expenditure is significant, with a yearly average above 50%, as shown in Figure 3.

Furthermore, the health sector is still dominated by employee expenditure, followed by capital as well as goods and services, as shown in Figure 4.

Meanwhile, the proportion of agriculture expenditure is smaller than the health sector, with an average below 40%, as shown in Figure 5.

Figure 6 shows that the agriculture sector's performance continues to increase yearly despite the allocation of a percentage below 40% and smaller than the health sector.

Discussion

Economic sector and GRDP

Agriculture is a significant sector in the Bima Regency economy based on its GRDP contribution. Others with a significant contribution are the trade, hotel and restaurant, service, as well

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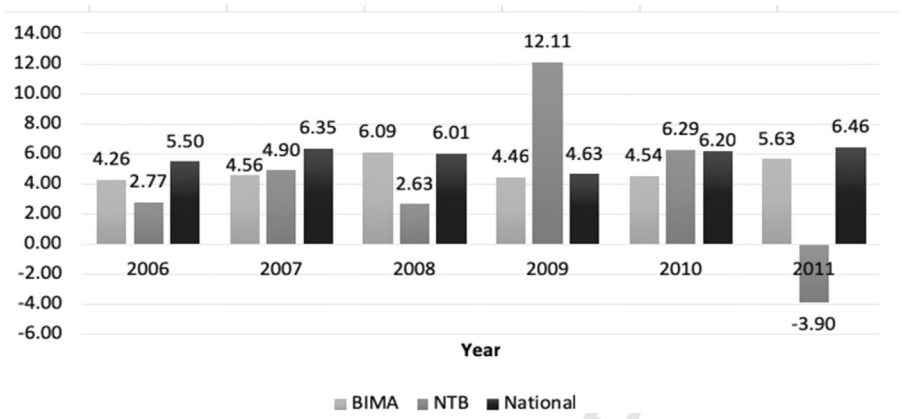

Figure 1. Bima Regency, NTB, and National Economic Growth (%) from 2006-2011 (Source: Central Bureau of Statistics 2007-2012).

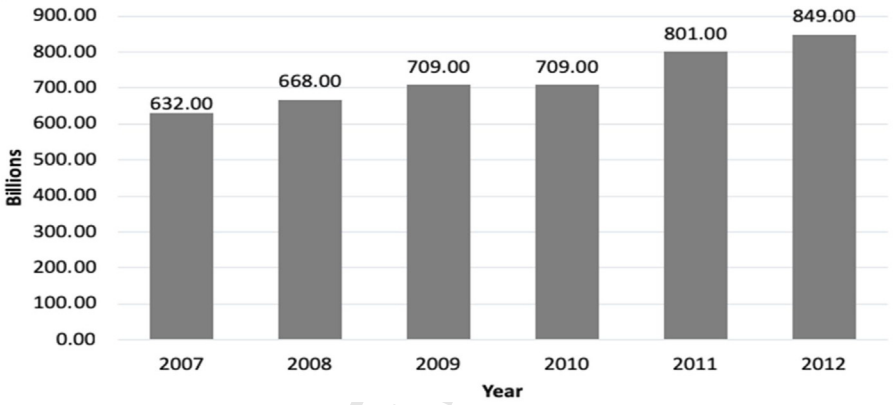

Figure 2. Regional expenditure (Billions) of Bima Regency in 2007 – 2012 (Database of the University of Mataram Population and Development Research Center (P2KP) Processed by the PERA Team from the APBD).

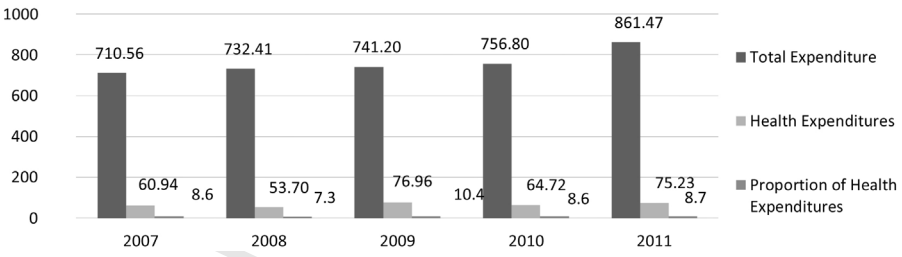

Figure 3. Total, Health expenditure (Billions), and proportion of health expenditures (%).

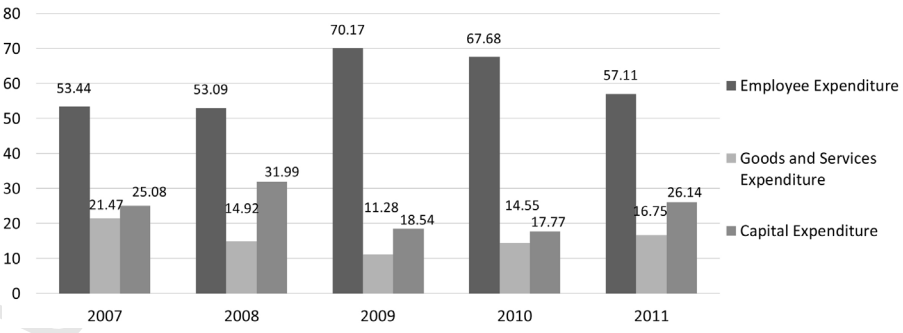

Figure 4. Proportion of health sector expenditures according to economic classification (Billions).

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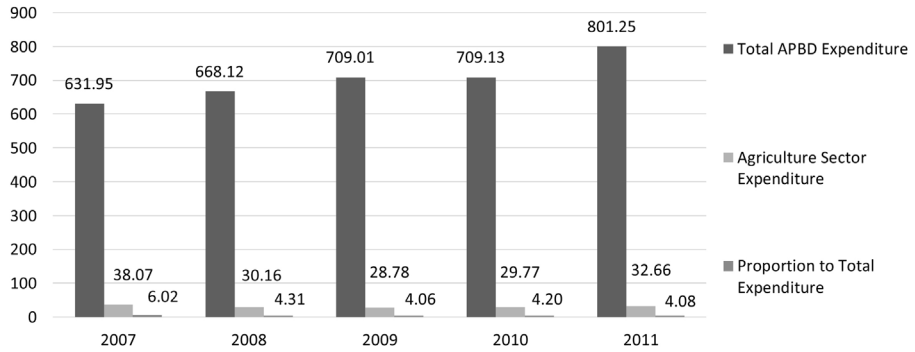

Figure 5. Proportion of agriculture sector expenditures to the total expenditure of Bima Regency APBD (Master table of APBD of Mataram University; Research and Development Policy Center (P2KP) UNHAS, 2012 processed).

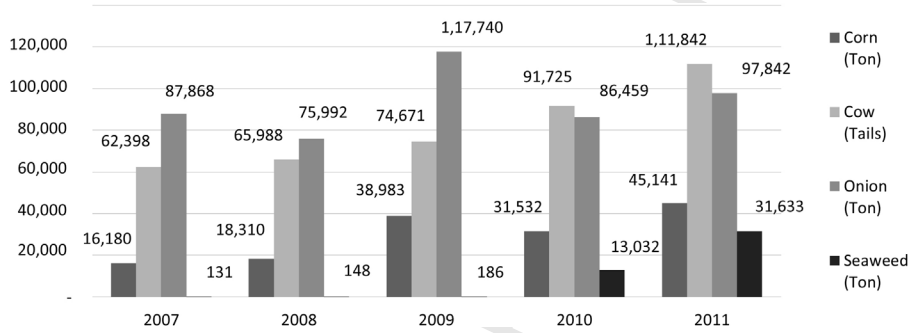

Figure 6. Production of leading commodities in the agriculture sector, Bima Regency (2007-2011).

as transportation and communication sectors. The contribution of these three sectors to the formation of GRDP consistently increased from 2006-2010, as shown in Table 1. Meanwhile, the regional expenditure of the Bima Regency increased by an average of 6 percent from 2007-2011, with the majority used for basic services, as shown in Figure 2. In 2007 and 2012, the total regional expenditure was Rp. 632 billion and Rp. 849 billion, respectively, with 60% allocated to fulfill the needs of basic services education, health, and infrastructure development, while less than 40% was assigned to agriculture.

Bima Government in the 2011-2015 RPJMD, the health and education sectors are top development priorities. In the third mission of the RPJMD, is to improve the quality of human resources and population by enhancing the quality of basic services. This means that the health and education sectors are development priorities, which ultimately create positive impacts on others, including agriculture.

However, the proportion of the health sector to total regional expenditure is still relatively small and fluctuates yearly. The proportion of health to total regional expenditure is still far below the 15% expectation rate of the World Health Organization (WHO). From 2007 to 2011, the health sector was dominated by personnel expenditure, with an average of 60.3%. Furthermore, the proportion of capital to health expenditure averaged 23.91%, while fluctuating between 17.8% and 31.99%. The proportion of goods and services expenditures fluctuated from 11.28% (2009) to 21.47% (2007), with an average of 15.8%. From 2007-2011, the health sector expenditure was directed towards financing public health programs by 11.84%. Other dominant infrastructures that need to be improved include psychiatric, lung, and eye hospitals (29.87%), procurement and repair of facilities supporting public health centers (19.82%), as well as the Health Service and the Regional Public Hospital (RSUD) (5.78%). These three programs use a total budget of 55.47%, while the health service improvement programs for JAMKESMAS, JAMKESDA, and ASKES was 4.91%.

On the other hand, only 0.07% of the budget was allocated to improve the degree of public health and Community Empowerment. It is a fact that access to public health services (PHS) will reduce the reduction in public economic financing.[9] In addition, many contributing factors influence access to PHS, including personal barriers, financial barriers, and organizational barriers.[4] in transforming our world by tackling multiple challenges humankind is facing to ensure well-being, economic prosperity, environmental protection[10] and environmental health awareness.[11]

Regional expenditure: health and agriculture sectors

Although the education and infrastructure of the health sector are prioritized in the allocation of regional expenditure, agriculture remains a strategic sector in the regional development of the Bima Regency. Efforts to develop this industry are strategic for improving the regional economy and the welfare of the majority of the population. Table 1 shows that the agriculture sector contributes an average of 50% to the GRDP and 60% to employment opportunities with a slight yearly downward trend. Although there was a decrease in the growth rate of the agriculture sector in 2010, it is the most significant source of the region's economy.

Table 6 shows the increasing production of 5 leading commodities: corn, beef, seaweed, shallots, and milkfish. This conveys an important message that the agriculture sector cannot be neglected in the economy due to its role in acceleration and expansion of the Indonesian economy, making "inclusive business" in agriculture for the economy,[12] global spread in environmental conservation for health and agriculture. Creating rural livelihood diversification,[13] for sustainable livelihood itself, solution for national food security,[14] and in turn preparing farmers to get in Asian Economic Community.[15] Production of the leading commodities in the Bima Regency increased from 2007-2011.

The harvested corn area significantly increased, from 6,623 ha in 2007 to 11,224 ha in 2011, with a rise in shallots from 7,019 ha in

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2007 to 7,682 ha in 2013. In the same period, the average increase in corn, shallots, milkfish, and salt production was 36, 2, 17, and 126 percent per year, respectively. Similarly, the cattle population increased with an average of 16 percent per year, with a rapid rise in seaweed from 131 tons in 2007 to 31,633 tons in 2011. This implies that linkages between agriculture and health sectors are necessary to accelerate development.

Despite contributing significantly to the GRDP and regional employment opportunities, the agriculture sector received a small proportion of expenditure and declined from 2007-2011. During this period, the expenditure covered several SKPDs, such as food crop agriculture, fisheries, and marine affairs, plantations, and animal husbandry. In nominal values, regional expenditure for the agriculture sector decreased from Rp. 38.07 billion in 2007 to Rp. 32.66 billion in 2011. Furthermore, the proportion also decreased from 6.02% in 2007 to 4.08% in 2011. This is smaller compared to the health sector, which is dominated by an employee. From 2007-2011, the proportion of direct expenditure to the total agriculture sector ranged between 62.05% and 57.73%.

This reminds the government that the health sector is also important. It is a fact that mainly research trapping into health disparities issues such as the urban-area needs to be addressed.[16] Therefore, an Environmental Protection Agency (EPA) recommends full rights and protection.[16] This is not without a clear reason. Health and economy are two goals of sustainable development (SDGs) that are closely related to each other. The SDGs have 17 goals and 169 targets that are expected to be achieved by 2030. Health is the third target, while the economy is the eighth target.[17] The same thing should happen in the agriculture sector.

The sector assigns to avoid poverty and hunger. From 2007-2011, expenditure on food crops and the horticulture sub-sector was dominated by the extension agent empowerment program (25%), to increase production (23%), welfare of farmers (17%), and performance reporting system (16%). Meanwhile, the expenditure on agribusiness development programs and yield marketing increased added value and business competitiveness by 1%, respectively. In the same period, livestock, maritime and fishery sub-sector was dominated by programs for increasing livestock production (22%), office administration (21%), development of fisheries infrastructure and resources (17%), and others (24%). Meanwhile, expenditure on processing center development and marketing were allocated 0.1%, respectively. In addition, the agriculture sector will strengthen the health sector in terms of nutrition and environmental health.

Conclusion

Initially, government efforts to allocate expenditure in the health and agriculture sectors were optimally conducted. However, later production performance in each sector has failed to increase based on allocated expenditure. The health sector is prioritized to receive a sizable expenditure allocation with the expectation that its success has the ability to encourage the development of other sectors such as agriculture indirectly.

The health sector's development through greater health expenditure allocation is beneficial for agriculture and other sectors due to increased production and productivity. It is also in accordance with the third mission of the Bima Regency RPJMD, which stated that an increase in the quality of human resources and population through quality health services, indirectly leads to a rise in the production and productivity of agriculture sector. In addition, the agriculture sector will strengthen the health sector in terms of nutrition and environmental health. This implies that linkages between agriculture and health sectors are necessary to accelerate development in the country.

Conflict of interest

The authors declare no conflict of interest.

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