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Consumption Patterns of Carbohydrate Sources in Food Secure and Insecure Provinces of Indonesia in 2017

Muhamad Ferdian Saputra*[1], Muhammad Firdaus[2], Tanti Novianti[2]

*[1]Master Program in Economic Science, Bogor Agricultural University, Bogor, West Java, Indonesia

[2]Lecturer in Economics Study Program, Faculty of Economics and Management, Bogor Agricultural University, Bogor, West Java, Indonesia

ferdian1001@gmail.com[1]

ABSTRACT

The availability and affordability in obtaining sufficient quantity of food is an important indicator of food security. Food is one of the problem in agricultural sector. Every province in Indonesia mostly still depends on rice consumption. This shows that consumption patterns of carbohydrate sources are still not diverse. One effective strategy to achieve food security is to develop food diversification. This study aimed to analyze consumption patterns and the level of diversification of carbohydrate as food sources and analyze the difference of income and food price in affecting carbohydrate diversification as food sources on food secure and insecure provinces. This study utilized SUSENAS data and analyzed them using index of Berry and Linier Approximation Almost Ideal Demand System (LA AIDS). This study found that the level of income and the level of food diversification in food-secure province is higher than in food-insecure province. In addition, price change in carbohydrate sources has been proven to be more influential on the food demand in food insecure province.

Keywords: AIDS, consumption patterns, food diversification, food-secure province, food-insecure province

I. INTRODUCTION

Allah has informed about food in His word on the Surah Al-Maidah verse 88 which reads:

وَكُلُواْ مِمَّا رَزَقَكُمُ ٱللَّهُ حَلَٰلًا طَيِّبًا ۖ وَٱتَّقُواْ ٱللَّهَ ٱلَّذِيٓ أَنتُم بِهِۦ مُؤۡمِنُونَ

which means: "And eat of what Allah has provided for you [which is] lawful and good. And fear Allah, in whom you are believers". Availability and affordability / access to sufficient food are important indicators in food security. One strategy to achieve food security is to diversify food. At the national level, food problems cannot be resolved if problems at the smallest level (household) are not resolved. Timmer et al. (1983) states that the primary variable used to formulate food policy is the household food consumption patterns.

Ruel (2003) defines that food diversification is the number or type of different foods consumed in a given period. This shows that to obtain healthy food with balanced nutrition, households must consume different foods.

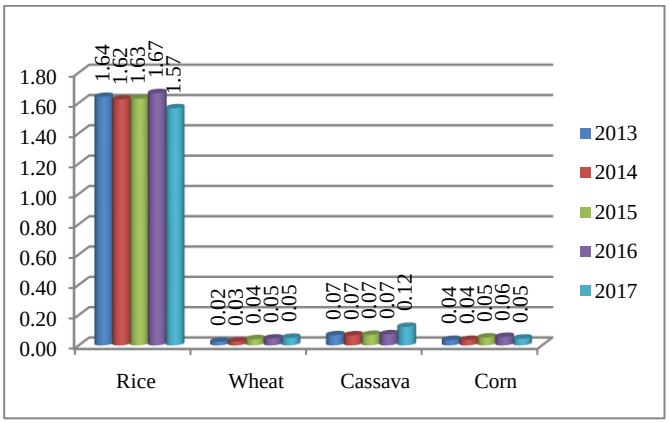
Allah says in Surah Fussilat verse 10 which reads:

وَجَعَلَ فِيهَا رَوَٰسِيَ مِن فَوۡقِهَا وَبَٰرَكَ فِيهَا وَقَدَّرَ فِيهَآ أَقۡوَٰتَهَا فِيٓ أَرۡبَعَةِ أَيَّامٖ سَوَآءٗ لِّلسَّآئِلِينَ

which means: "And He placed on the earth firmly set mountains over its surface, and He blessed it and

determined therein its [creatures'] sustenance in four days without distinction - for [the information] of those who ask.".

Carbohydrate consumption patterns of Indonesian are still not diverse and balanced in nutrition, then consumption patterns of per capita staple food is still dominated by rice at 1.57 kg per week, but it reveals a declining trend in the past five years (BPS 2017). In other hand, consumption patterns for tuber commodities is growing, especially in cassava, raising from 0.07 to 0.12 Kg per capita per week or by 86 percent (Figure 1). This indicates that there is a consumption shift from rice to tuber.



Source: BPS (Publication of Consumption Expenditures) 2017

Figure 1. Weekly average of basic food consumption per capita in Indonesia (Kg), 2013-2017

Dependency on rice consumption is a food problem faced by all provinces in Indonesia. Food price factor also influences food sovereignty. Food price positively determines people's real income for food traders and negatively for buyers, those which will affect the distribution of income and investment, thus contribute to the occurrence of poverty which also influences household access to food (Matz et al. 2015).

Difference of the development condition in each region in Indonesia leads to distinctive patterns of household in diversifying food. The eastern regions of Indonesia are mostly poor of food security (food insecurity) to be compared with provinces in other regions. Based on data from the Food Security and Vulnerability Atlas (FSVA), Food Security Agency in 2018 shows that the Province of East Kalimantan is a Province with good food security, while the Province of East Nusa Tenggara is included in the food insecure province category. This is reinforced by Susenas BPS data in 2017, which reveals that East Kalimantan has average per capita expenditure for monthly consumption above the national figure in the number of 1,443,928 rupiah, while East Nusa Tenggara is the province with the lowest average expenditure at the national level with the number of 681,484 rupiah.

Research on food consumption patterns both at the province and national levels in Indonesia, those were done by Hutasuhut et al. (2002), Fabiosa (2005), Rachman and Ariani (2008), Ariani (2010), Faharuddin et al. (2015), Miranti et al. (2016), Arthatiani et al. (2018), and Suriani et al. (2018). However, previous studies only conducts observation in one province with limited number of selected commodities, or national scale with provincial sample unit, or on the total value of commodity group only. Research with analysis unit of one province cannot be utilized to compare consumption patterns between regions that have different characteristics. National scale research cannot see food diversity between provinces and consumption patterns at the smallest level (household). Research on the total value per commodity group cannot show food diversification between food commodity types.

Research comparing consumption patterns between region is very limited. This study compared the consumption patterns between food-insecure and food-secure areas at the household level. This study also provided an overview of consumption patterns diversity at the household level according to food

commodity types. This information can be useful for formulating food policies to develop household consumption and increase food diversification in food secure and insecure provinces. This information is important for policy makers, because the commodities intervened were only consumed by groups targeted by the policy (Timmer et al. 1983).

Another advantage of this research was the imputation of price for non-consumed commodities by households using the approach of the district and the closest group about average income per capita, so that it reflected more the actual price and commodity that should be consumed by a household. Another assumption was that households within a district and equal group per capita or the closest to both had similar consumption preference.

From the problems described earlier, the objectives of this study were:

1. Analyzing differences in consumption patterns and the level of diversification of carbohydrate sources between food-secure to food-insecure provinces.
2. Analyzing differences in the effect of income and food price on diversification of carbohydrates sources between food-secure to food-insecure provinces.

II. METHODS AND MATERIAL

A. Category and Data Sources

This study used secondary data, namely the raw data of National Consumption Module on March 2017 in Socio-Economic Survey (SUSENAS). The sample units in the study were as many as Susenas samples in 2017 with details of 5,134 households from East Kalimantan, and 10,795 households from East Nusa Tenggara. This research also classified the population according to per capita income into 8 groups according to the classification in the publication of BPS consumption expenditures in 2017 (Table 1), namely:

Table 1 Monthly Group code per capita Income

Group	Monthly per Capita Income (Rupiah)
1	<150,000
2	150,000 - 199,999
3	200,000 - 299,999
4	300,000 - 499,999
5	500,000 - 749,999
6	750,000 - 999,999
7	1,000,000 - 1,499,999
8	≥1,500,000

Sources: BPS (2017)

The limitations in this study were:

1. This journal was part of the author's research, in which limited to presenting the category analysis of carbohydrate-source food. The other sections not discussed in this journal was going to be presented in other journals.
2. Food commodities used in the study were 23 (twenty three) commodities consisting of 11 (eleven) strategic food commodities, namely rice, corn, flour, beef, chicken, rice, chicken eggs, shallots, red chili, soybeans, cooking oil and sugar. While 12 (twelve) other commodities were commodities with high consumption level to be compared to other commodities in the same group, namely cassava, tuna (and other cob variants such as tuna, skipjack, etc.), tofu, tempeh, apples, bananas, Vetsin, instant noodles, white rice with assortment of side dishes, beverages (coffee, tea, milk, chocolate), liquor, and cigarettes.
3. Household income used in this research utlized the household expenditure approach.
4. The commodity price used was the ratio of goods value and goods quantity.
5. Demand analysis using AIDS model from SUSENAS data that had been cleaned.

B. Data Analysis

The analytical method applied in this study was Linear Approximation Almost Ideal Demand System (LA / AIDS) model, which was a modification model developed by Deaton and Muelbauer (1980) by inputing various variables that were theoretically and empirically relevant to affect the demand. The AIDS demand function in the form of a budget share used in this research were:

$$W_i = \alpha_i + \sum_j \gamma_{ij} \log(p_j) + \beta_i \, log \left\{ \frac{x}{p} \right\} + \theta \, \text{art} + \mu \log \exp + \lambda \, \text{dwil} + \delta_i \, \text{imr}_i \quad (1)$$

Explanation:

W_i : Food budget share i
p_j : Food price to-j
x_i : Total food expenditure
p_i : Stone price index
art_i : Number of household members
$\exp_i$: Household expenditure
dwil_i : Dummy village town
imr_i : Inverse mills ratio
α_i : Intercept
$\gamma_{ij}, \beta_i, \theta, \mu, \lambda, \delta_i$: Parameter of the estimated

From Equation 1, it was produced 4 operational equations due to carbohydrate source as food commodity for each province. Example of the equation for rice commodity was as follows:

$$W_{brs} = \alpha_{brs} + \gamma_{brs} \log p_{brs} + \gamma_{ter} \log p_{ter} + \gamma_{jag} \log p_{jag} + \cdots + \gamma_{sing} \log p_{sing} + \beta_{brs} \, log \left\{ \frac{x}{p} \right\} + \theta \text{art} + \mu \log \exp + \lambda \, \text{dwil} + \delta_{brs} \, \text{imr}_{brs} \quad (2)$$

III. RESULTS AND DISCUSSION

A. Consumption Patterns and Food Diversification Level

Based on the processed data from 23 commodities studied, it can be seen that the commodity with the highest food expenditure share in two provinces is rice. The share of rice expenditure in East Nusa Tenggara is 0.45 while in East Kalimantan is 0.24. Suriani and Majid (2018) state that the high proportion of food expenditure is in the rice commodity, and even higher in poor population on Aceh Province. From these data, it can also be seen that the Province of East Nusa Tenggara has lower food security because the share of rice expenditure is still high (Table 2).

Table 2. Average Share of Food Expenditure in NTT and East Kalimantan Province, 2017

Commodity Name	East Nusa Tenggara	Commodity Name	East Kalimantan
Rice	0.4502	Rice	0.2423
Corn	0.0602	Corn	0.0093
Cassava	0.0182	Cassava	0.0091
Wheat	0.0028	Wheat	0.0038

Source: Badan Pusat Statistik (processed)

The difference in household consumption patterns in East Nusa Tenggara and East Kalimantan, with the price assumption faced by all the households were equal with the consumption of rice, broiler chicken and chicken eggs. Another finding is that households in East Nusa Tenggara consume more rice and spend about more or less in the amount of 45.02 percent of their food expenditure, or nearly twice as high as households in East Kalimantan. This difference is due to the characteristics of the area, people living in East Nusa Tenggara are more in rural areas to be compared with East Kalimantan. Similar cases are found in Purwaningsih et al. (2010) and Purwantini and Ariani (2008), expenditure share on grains in rural households is higher than urban households.

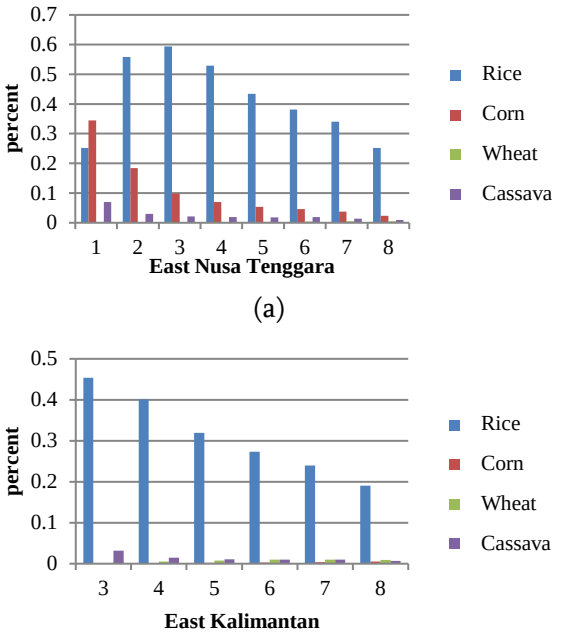


Figure 2. Percentage of average food expenditure per class of per capita income in East Nusa Tenggara (a) and East Kalimantan (b) for consumption of carbohydrate-source commodities

The difference in household consumption patterns is based on change in consumption patterns among groups or categories of expenditure and regions per capita. Research of Thiele and Weiss (2003) also states that household food diversification is influenced by income variation. Figure 1 illustrates the declining consumption of carbohydrate source for rice, corn and cassava along with the development of per capita expenditure in household. However, flour commodity is the only commodity that has increased along with the development of per capita expenditure in household. This raise is greater in East Kalimantan. This also reveals the tendency of upper-class people to imitate the style of consumption in more advanced societies, in which wheat flour is the basic ingredient of foods from abroad such as bread and pizza to be compared with the foods made from rice, corn and cassava.

B. Food Diversification

The rate of food diversification from processed data shows that the average of diversification rate in East Kalimantan is 0.77, which means that about 77 percent of the commodity is consumed by households (Table 3). The rate of food diversification between rural and urban areas of East Kalimantan is almost equal, in which the berry index in urban and rural areas has a difference in the amount of 0.02 unit. East Nusa Tenggara has lower average rate of food diversification, which is equal to 0.67 or 10 percent lower than East Kalimantan. The rate of food diversification between rural and urban areas is also more unequal, where the difference in value is 0.05 higher in urban areas.

Table 3. Average of Food Diversification Rate in East Nusa Tenggara and East Kalimantan in 2017

Region	East Nusa Tenggara	East Kalimantan
Province	0.67	0.77
Rural	0.66	0.76
Urban	0.72	0.78

Sumber: Badan Pusat Statistik (processed)

The lower difference in food diversification rate in the rural is caused by the availability of more food variance in urban areas. This is also affected by trade openness and public facilities in urban areas that are better than in rural areas. Researches of Ogundari (2013), Thiele and Weiss (2003), and Taruvinga et al. (2013) show that rural areas have lower rate of food diversification. The rate of food diversification per group per capita shows a growth trend at each group per capita. In East Kalimantan, the lowest income group has a diversification rate of 0.73 while the highest group is 0.79 (Figure 3).

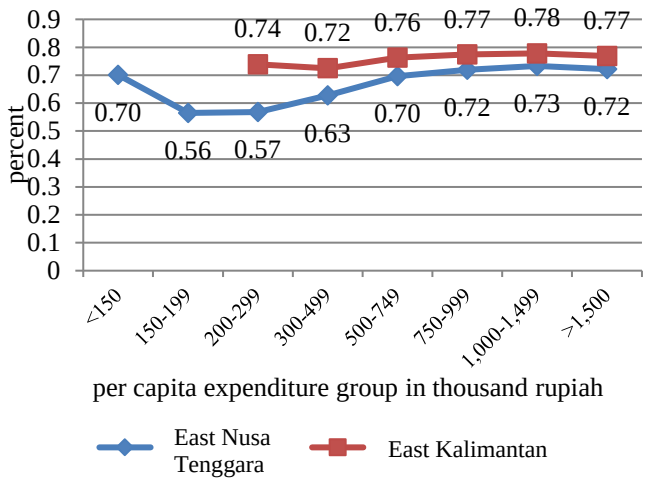


Figure 3. Berry Index Value based on per capita expenditure category

C. Elasticity of Food Income and Expenditure

The elasticity value of food commodity in the demand model is one of the important things in a study of consumption patterns. Elasticity is used to determine the characteristics of food commodity towards change in household income and food price. The value of food expenditure elasticity is utilized to determine the response to demand change caused by the change in total household of food expenditure, while income elasticity is applied to determine the response to food demand change caused by the change in income. Revenue in this study is the sum of total household expenditure value or food expenditure with non-food expenditure. The results of the calculation of food expenditure and income elasticity are shown in Table 4.

Tabel 4. Elasticity Value of Food Expenditure and Income

Commodity	East Nusa Tenggara	
	Food Expenditure	Income
Rice	0.75	0.53
Corn	0.18	0.13
Wheat	4.18	2.98
Cassava	0.41	0.29
Commodity	East Kalimantan	
	Food Expenditure	Income
Rice	0.62	0.38
Corn	3.13	1.90
Wheat	1.87	1.14
Cassava	0.52	0.32

Sumber: Badan Pusat Statistik (processed)

The value of food expenditure elasticity is used to look at food commodities in the category of staff and staple such as rice, corn, and cassava for East Nusa Tenggara. The principal commodity is a commodity that has a food expenditure elasticity value below 1.00. The main commodities for East Kalimantan are rice and cassava with the values of food expenditure elasticity are in the amount of 0.62 and 0.52, respectively. The value of food expenditure for rice commodity in East Nusa Tenggara is in the amount of 0.75, which means that an increase in household food expenditure by 10 percent will develop the demand for rice by 7.5 percent. This shows that the share of rice expenditure as food commodity in East Nusa Tenggara is higher than East Kalimantan.

The value of income elasticity for East Nusa Tenggara has a higher value than East Kalimantan. This reveals that East Nusa Tenggara is more responsive to income change. The main carbohydrate source commodities in the two provinces based on their income elasticity value are equal to the basic commodities based on food expenditure elasticity, namely rice, corn, and cassava in East Nusa Tenggara while East Kalimantan main commodities are rice and cassava with the elasticity below 1.00. This condition is similar to the cases in West Sumatra and Central Java (Widiasih 2009) and West Java (Miranti et al. 2016). Greater value of income elasticity in East Nusa Tenggara also shows household capacity in East Nusa Tenggara to face income change is more vulnerable than East Kalimantan.

D. Self-Price Elasticity

The price elasticities of rice demand in East Nusa Tenggara and East Kalimantan are -0.90 and -0.12, respectively (Table 5), those reveals that the purchasing power of household to rice commodity in East Kalimantan is higher than in East Nusa Tenggara. It can be assumed that the high purchasing power of household shows the high income of the household. The higher the income, the less elastic the rice demand to its price (Mauludyani et al. 2008). The less elastic value of rice price also occurs in West Java, which is equal to -0.718 (Miranti et al. 2016); South Sumatra at -0.698 (Fahar et.al. 2015); Maluku at -0.793 (Pusposari 2012); West Sumatra at -0,621 (Widiasih 2009); and East Indonesia at -0,584 (Saliem 2002). The results of different studies are shown in Suriani and Majid's (2018) study in Aceh Province with the value of rice price elasticity is in the amount of -2.72. This is probably affected by the LA AIDS method applied by Suriani and Majid (2018) does not utilize adding up, homogeneity, and symmetry restriction.

Tabel 5. Elasticity value of self-price and cross price for carbohydrate source commodities

Demand Quantity	Food Price							
	East Nusa Tenggara				East Kalimantan			
	Rice	Corn	Wheat	Cassava	Rice	Corn	Wheat	Cassava
Rice	**-0.90**	0.04	0.86	0.61	**-0.12**	-0.76	-1.25	-1.52
Corn	-0.04	**-1.28**	-0.57	0.77	0.01	**-1.25**	0.07	0.26
Wheat Flour	0.16	0.20	**1.29**	-0.25	-0.15	2.97	**-2.04**	1.05
Cassava	-0.05	0.10	-0.07	**-0.65**	0.03	-1.10	0.04	**-2.63**
Tuna Fish	-0.07	-0.13	0.17	0.51	-0.19	-0.61	-1.42	0.47
Beef	0.26	-1.04	-2.37	-0.18	-0.43	0.90	0.17	-0.05
Purebred Chicken Meat	0.00	0.23	1.41	0.38	-0.06	1.29	-0.80	1.16
Purebred Chicken Egg	-0.01	0.48	1.27	-0.14	0.46	-1.26	-0.52	0.07
Onion	-0.04	0.07	0.05	0.28	-0.02	-0.07	-0.04	0.17
Cayenne	-0.07	0.55	0.72	-0.48	0.09	-0.39	0.54	0.11
Soybean	-0.02	0.12	0.23	-0.68	-0.05	0.14	0.53	-0.32
Tofu	0.09	-0.10	-0.54	0.64	-0.05	-0.11	-0.22	0.14
Tempe	-0.04	0.27	0.12	-0.94	-0.07	1.32	0.30	-0.31
Apple	-0.07	0.21	-0.96	-2.18	0.23	-0.44	0.29	-0.05
Bananas	0.00	-0.14	0.49	0.21	-0.18	-0.67	-0.32	-0.26
Cooking Oil	0.12	-0.53	-1.30	0.24	0.10	-1.83	-0.23	0.15
Granulated Sugar	-0.01	-0.17	0.20	0.40	-0.02	1.02	0.07	-0.38
Vetsin	-0.01	0.11	-0.35	-0.08	-0.05	-0.11	0.13	0.19
Instant Noddle	-0.08	0.20	0.14	0.72	-0.15	0.82	1.10	-0.40
White rice with assortment of side dishes	0.07	0.11	-0.34	0.20	0.18	0.23	-1.01	0.44
Beverages	-0.09	0.15	-1.09	0.33	0.01	-0.70	0.29	0.19

Liquor	-0.02	0.23	-0.09	0.08	0.01	-0.35	0.14	-0.30
Cigarettes	0.06	-0.17	-0.42	0.16	-0.20	-1.65	-0.08	-1.35

Sumber: Badan Pusat Statistik (processed)

E. Cross Price Elasticity

The cross price elasticity shows the relationship between the number of food demanded towards changes on other food prices that are related to that food. In East Nusa Tenggara, the value of cross elasticity of rice towards flour shows a positive relationship. This means that if there is an increase in the rice price, the household will respond by raising the flour demand. However, cross price elasticity towards corn and cassava are negative, those are in the amount of -0.04 and -0.05, which indicates that rice is complementary to the food (Table 5). The equal direction of cross elasticity was also obtained from the study of Mauludyani et al. 2008 with the amount of -0.15 and -0.09. In contrast, the elasticity of rice towards other staple foods like wheat in East Kalimantan is negative in value (-0.15). This can help interpreting that households in East Kalimantan consider flour as rice complementary staple and the rise of rice price will make them convert their consumption into corn and cassava food. In other words, more diversification of staple foods occur in East Kalimantan.

Rice has a complementary relationship with some commodities such as corn, cassava, tuna, chicken eggs, onions, red chili, soybeans, tempeh, apples, granulated sugar, vitamin C, instant noodles, beverages, and liquor in East Nusa Tenggara. This means that these commodities are complementary for rice commodity. The substitution relationship occurs among rice and complementary food like flour, beef, broiler meat, tofu, banana, cooking oil, white rice with assortment of side dishes and cigarettes. This condition occurs allegedly because the people of East Nusa Tenggara like food in the form of fried foods those are usually made of flour, tofu, bananas, and cooking oil. The relationship of rice substitution with cigarettes indicates that the people of East Nusa Tenggara are willing to sacrifice rice consumption for the consumption of cigarettes. This can also be seen from the share of expenditure in this study, which reveals that cigarettes have been the second largest expenditure share after rice.

The results of the study about Rice in East Kalimantan reveal that Rice has a complementary relationship with some commodities like wheat, tuna, beef, chicken meat, shallots, soybeans, tofu, bananas, granulated sugar, and cigarettes. Researchers suspect that the people of East Kalimantan prefer meat and fish to be consumed with rice. The commodities such as corn, cassava, chicken eggs, red chili, apples, cooking oil, white rice with assortment of side dishes, beverages, and liquor have a substitution relationship with rice.

F. Policy Implications

Based on the results of the study, the value of food expenditure elasticity in East Nusa Tenggara for carbohydrate source commodities has lower average value than the self-price elasticity, those are rice, corn, and flour. This reveals that East Nusa Tenggara is more responsive to change in commodity price for carbohydrate source. The government's policy in raising consumption in East Nusa Tenggara especially households with low per capita income can be done by controlling the commodity price of carbohydrate source, specifically by conducting market operation or providing direct assistance in the form of these commodities while the price is increasing.

In contrast, in East Kalimantan, the value of food expenditure elasticity has balanced avarage value to be compared with price elasticity. There are 2

commodities, namely rice and corn those have a higher income elasticity, while wheat and cassava have higher price elasticity. Policy implications in controlling food demand can be done in combination through controlling food price and raising the income. The policy of increasing income can be done by cutting taxes and providing direct cash assistance.

IV. CONCLUSION AND SUGGESTION

A. Conclusion

Based on the results and discussion that has been done, the conclusions are as follows:

1. The consumption patterns in both provinces for commodity carbohydrate source shows a declining trend except for wheat commodity. In line with these consumption patterns, the average level of food diversification in East Kalimantan is higher than East Kalimantan. This is also shown by the higher value of berry index in East Kalimantan to be compared with East Nusa Tenggara.
2. Change in the price of carbohydrate source have been proven to be more influential on food demand in East Nusa Tenggara.

B. Suggestion

Based on the results of the study, the policy implications to develop consumption in Food Secure and Insecure Provinces are:

1. The fluctuation in the price of carbohydrate source in East Nusa Tenggara is very influential on food demand, so that the government's right step is controlling food price, for instance by conducting market operation or direct assistance in the form of carbohydrate food source. Household with low per capita expenditure group, namely group 1 to group 3 with per capita income below 1,000,000 rupiah are the most appropriate group to obtain the assistance program.
2. Fluctuation in price and revenue for carbohydrate-based food in East Kalimantan shows non-significant effect. Policies in controlling food demand in East Kalimantan can be done in combination through controlling food price and increasing income. The policy of income development can be done by cutting taxes and providing direct cash assistance. Households with low per capita expenditure category, which is group 3 with per capita income of 200,000-299,999 rupiah, is the most appropriate group to obtain the assistance program.

V. REFERENCES

[1] Al-Qur'an. 2017. Lajnah Pentashihan Mushaf Al-Qur'an Departemen Agama Republik Indonesia. Jakarta: Kemenag.

[2] Ariani M. 2010. Analisis Konsumsi Pangan Tingkat Masyarakat Mendukung Pencapaian Diversifikasi Pangan. 33(1):20-28 doi:*Jurnal Gizi Indonesia*.

[3] Arthatiani FY, Kusnadi N, Harianto. 2018. Analisis Pola Konsumsi dan Model Permintaan Ikan Menurut Karakteristik Rumah Tangga Di Indonesia. *J. Sosek* KP Vol. 13 No. 1 Juni 2018: 73-86

[4] [BPS] Badan Pusat Statistik. 2017. *Publikasi Pengeluaran untuk Konsumsi Penduduk Indonesia*. Nomor Publikasi 04210.1714

[5] Deaton A, Muellbauer J. 1980. An Almost Ideal Demand System. 70(3):312-326. http://www.jstor.org/stable/1805222.

[6] Fabiosa JF. 2005. Growing Demand for Animal-Protein-Source Products in Indonesia: Trade Implications. *CARD Working Paper*. 05-WP 400.

[7] Faharuddin, Mulyana A, Yamin M, Yunita. 2015. Analisis Pola Konsumsi di Sumatera Selatan:Pendekatan Quadratic Almost Ideal System. 33(2):123-140 doi:*Jurnal Agro Ekonomi*.

[8] Hutasuhut M, Chang HS, Griffith G, O'Donell C, Doran H. 2002. The Demand for Beef in Indonesia: Implications for Australian Agribusiness. *Agribusiness Paper* 4 Vol.10-2002.

[9] Matz JA, Kalkuhl M, Abegaz GA. 2015. The short-term impact of price shocks on food security – Evidence from urban and rural Ethiopia. Food Security. 7(3): 657-679. doi: 10.1007/s12571-015-0467-4.

[10] Mauludyani AVR., Matianto D, Baliwati YF. 2008. Pola Konsumsi Dan Permintaan Pangan Pokok Berdasarkan Analisis Data Susenas 2005. *Jurnal Gizi dan Pangan*. Vol 3 (2):101–117.

[11] Miranti, Syaukat Y, Harianto. 2016. Pola Konsumsi Pangan Rumah Tangga di Provinsi Jawa Barat. Vol.34 No.1:67-80 [doi]. http://dx.doi.org/10.21082/jae.v34n1.2016.67-80.

[12] Nugroho S, Suparyono SW. 2016. Pola Permintaan Daging Tingkat Rumah Tangga di Indonesia: Analisa Data Mikro 2013. *Jurnal Ekonomi dan Pembangunan Indonesia*. 16(1): 47-58.

[13] Ogundari K. 2013. Determinants of food-poverty states and the demand for dietary diversity in Nigeria. 2013 AAAE Fourth International Conference, September 22-25, 2013, Hammamet, Tunisia 161302, African Association of Agricultural Economists (AAAE).

[14] Purwaningsih Y, Hartono S, Masyhuri, Mulyo JH. 2010. Pola pengeluaran pangan rumah tangga menurut tingkat ketahanan pangan di Provinsi Jawa Tengah. *Jurnal Ekonomi Pembangunan*. 11(2):236-253.

[15] Purwantini TB, Ariani M. 2008. Pola pengeluaran dan konsumsi pangan pada rumah tangga petani padi. Dalam: Seminar Nasional Dinamika Pembangunan Pertanian dan Perdesaan: Tantangan dan Peluang bagi Peningkatan Kesejahteraan Pertanian; 2008 Nov 19; Bogor, Indonesia. Bogor (ID): *Pusat Analisis Sosial Ekonomi dan Kebijakan Pertanian*. hlm.1-16.

[16] Pusposari F. 2012. Analisis pola konsumsi pangan masyarakat di Provinsi Maluku [Tesis]. Jakarta (ID): Universitas Indonesia.

[17] Rachman HPS, Ariani M. 2008. Penganekaragaman konsumsi pangan di Indonesia: Permasalahan dan implikasi untuk kebijakan dan program. *Analisis Kebijakan Pertanian*. 6(2): 140-154.

[18] Ruel MT. 2003. Operationalizing dietary diversity: a review of measurement issues and research priorities. *Forum Penelitian Agro Ekonomi*. Volume 25 No. 1, Juli 2007 : 1 - 18.

[19] Saliem HPS. 2002. Analisis permintaan pangan di Kawasan Timur Indonesia. *J. Agro Ekonomi*. 20(2): 64-91.

[20] Suriani, Majid MSA. 2018. Analysis of food demand elasticity of rice for the poor in Aceh, Indonesia: An almost ideal demand system. *DLSU Business & Economics Review (2018) 27(2): 179-189*.

[21] Taruvinga A, Muchenje V, Mushunje A. 2013. Determinants of rural household dietary diversity: The case of Amatole and Nyandeni districts, South Africa. *International Journal of Development and Sustainability*. 2(4):1-15.

[22] Thiele S, Weiss C. 2003. Consumer demand for food diversity: evidence for Germany. Food Policy. 28(2): 99-115. doi:10.1016/S0306-9192(02)00068-4

[23] Timmer CP, Falcon WP, Pearson SR. 1983. *Food Policy Analysis*. London (UK): The World Bank.

[24] Widiasih SCL. 2009. Analisis konsumsi dan kebutuhan untuk konsumsi pangan di Provinsi Sumatera Barat, Jawa Tengah, dan Sulawesi Tenggara tahun 2005-2015 [Tesis]. Bogor (ID): Institut Pertanian Bogor.

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