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FOOD DEMAND SENSITIVITY DURING THE COVID-19 PANDEMIC IN INDONESIA

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Abstract. The COVID-19 pandemic that hit Indonesia caused a decline in agricultural production, rising food prices, restrictions on export-import activities, and a decrease in food and non-food consumption. The purpose of this study was to determine the demand for staple food during the pandemic era, to examine household budget allocations and to determine price elasticity and income elasticity. This study uses expenditure data for consumption of the Indonesian population based on the results of the March 2020 Susenas. Data analysis uses the AIDS model. The results of the analysis show that rice is the main staple food with a share of expenditure of 52% in urban areas and 57% in rural areas, followed by chicken meat, eggs, cooking oil, sugar and milk, respectively. Comparison of consumption between before and during the pandemic era shows an increase in consumption for all commodities other than milk and sugar in urban areas, while in rural areas consumption decreases for rice, milk and sugar. The share of staple food expenditure is significantly influenced by prices and income in urban areas, while in rural areas prices and incomes have no significant effect. Both in urban and rural areas, the highest income elasticity is for chicken meat and eggs, while rice, cooking oil and sugar are considered inferior goods. The pandemic era is the right moment for the government to promote local food to accelerate food diversification programs.

Keywords: AIDS; elasticity of demand; staple food; COVID-19 pandemic.

INTRODUCTION

The COVID-19 pandemic that has hit since the end of 2019 has at least caused Indonesia to experience: 1) A 5% decline in agricultural production due to an increase in the price of production facilities and the uneven distribution of production products; 2) The emergence of panic buying encourages the need for food to increase because people want to stockpile food which results in an increase in food prices; 3) Realization of imports decreased because imports were not smooth and producing countries limited exports (Hadiutomo, 2020). In addition, BPS noted that the pandemic had caused an increase in the number of poor people, namely the number of poor people increased from 9.22% in September 2019 to 9.78% in March 2020. Whereas poverty has a direct effect on household purchasing power which can be seen from the share of household expenditure to buy food. The poor have a high share of food expenditure and are below the poverty line (Purwaningsih, Hardiyati, Zulhamdani, Laksani, & Rianto, 2021). BPS also noted that during the pandemic the number of the labor force that was not absorbed in the labor market (TPT) was twice as large in urban areas as in rural areas, namely 8.98% and 4.17% as a result of the closure of various workplaces (Béné, 2020). Concludes that the COVID-19 pandemic has caused a trade off between health and the economy (Noorbhai, 2020), which can be seen in a slump on the aggregate demand side, paralyzed people's purchasing power due to loss of income sources and stagnation in the global food supply chain due to lock down policies and limited direct access. to food. Meanwhile, on the other hand, there is a phenomenon of wasted food because farmers can no longer access markets and other places to distribute their products due to the pandemic (Hughes & Haworth, 2013).

Maslow's law states that food is the most basic need for humans (Wijayati & Suryana, 2019). Each region has different consumption and expenditure patterns for certain food commodities (Sambodo & Novandra, 2019). Food is defined as all ingredients that are eaten in daily life to meet the needs of maintenance, growth, work and to replace damaged body tissues (Bigliardi & Galati, 2013), including during the pandemic era, people still need food. as a source of energy and to sustain life. BPS conducted a comparison of spending on food between March and September 2020, the results showed a decline in spending on food, namely the average monthly per capita expenditure for food of Rp. 613,025.00 in March 2020 decreased to Rp. 588,773.00 in September 2020. Furthermore, BPS revealed that the decline in the average consumption expenditure was greater for people living in rural areas, namely 5.77%, while in urban areas there was a decline of 3.51% (Statistik, 2020).

The food commodities to be studied in this study are based on two considerations, namely the type of staple food for the population in Indonesia and the availability of data on staple food consumption during the COVID-19 pandemic. So that the staple foods to be studied include 6 commodities, namely rice, sugar, cooking oil,

purebred/village chicken meat, broiler/village chicken eggs and milk. The problem formulation of this research is 1). How is the demand for staple food in the era of the COVID-19 pandemic in Indonesia?; 2). Is there a difference between the distribution of household food expenditure share in rural areas and urban areas during the Covid19 pandemic era in Indonesia?; 3). How do changes in prices and income affect staple food in the era of the COVID-19 pandemic in Indonesia?

METHODS

Research Design

This research is a quantitative study using secondary data, namely expenditure data for population consumption per province in Indonesia based on the results of the Susenas in March 2020 sourced from BPS. The data used are in the form of food commodity prices, food quantities and total expenditures for food commodities where data analysis activities are distinguished based on regional origin, namely urban and rural areas.

Data Analysis

The first problem was answered using a descriptive method by calculating the amount of consumption of 6 basic food commodities during the COVID-19 pandemic era, then compared with the consumption of 6 staple food commodities before the COVID-19 pandemic. The second and third problems are answered with an econometric approach using the AIDS (Almost Ideal Demand System) model with the SUR approach. The AIDS model used is:

$$sh_b = \propto_1 + \gamma_1 lnp_b + \gamma_2 lnp_{da} + \gamma_3 lnp_t + \gamma_4 lnp_s + \gamma_5 lnp_{mg} + \gamma_6 lnp_{gp} + \beta_1 ln\left(\frac{x}{p^*}\right)$$

$$sh_{da} = \propto_2 + \gamma_7 lnp_b + \gamma_8 lnp_{da} + \gamma_9 lnp_t + \gamma_{10} lnp_s + \gamma_{11} lnp_{mg} + \gamma_{12} lnp_{gp} + \beta_2 ln\left(\frac{x}{p^*}\right)$$

$$sh_t = \propto_3 + \gamma_{13} lnp_b + \gamma_{14} lnp_{da} + \gamma_{15} lnp_t + \gamma_{16} lnp_s + \gamma_{17} lnp_{mg} + \gamma_{18} lnp_{gp} + \beta_3 ln\left(\frac{x}{p^*}\right)$$

$$sh_s = \propto_4 + \gamma_{19} lnp_b + \gamma_{20} lnp_{da} + \gamma_{21} lnp_t + \gamma_{23} lnp_s + \gamma_{24} lnp_{mg} + \gamma_{25} lnp_{gp} + \beta_4 ln\left(\frac{x}{p^*}\right)$$

$$sh_{mg} = \propto_5 + \gamma_{26} lnp_b + \gamma_{27} lnp_{da} + \gamma_{28} lnp_t + \gamma_{29} lnp_s + \gamma_{30} lnp_{mg} + \gamma_{31} lnp_{gp} + \beta_5 ln\left(\frac{x}{p^*}\right)$$

$$sh_{gp} = \propto_6 + \gamma_{32} lnp_b + \gamma_{33} lnp_{da} + \gamma_{34} lnp_t + \gamma_{35} lnp_s + \gamma_{36} lnp_{mg} + \gamma_{37} lnp_{gp} + \beta_6 ln\left(\frac{x}{p^*}\right)$$

Description:

〖sh〗_b : share of rice type food to total food expenditure

〖sh〗_da : share of chicken meat to total food expenditure

〖sh〗_t : hare of food, egg type, total food expenditure

〖sh〗_s : share of dairy foods to total food expenditure

〖sh〗_mg : share of cooking oil type of food to total food expenditure

〖sh〗_gp : share of granulated sugar to total food expenditure

lnp : natural log of the estimated price of the type of food

x : total expenditure of food commodities

p^* : stone price index lnp=∑ 〖w_(i) ln 〖p_i 〗 〗

α,・,β : alpha, gamma, beta (regression parameters)

Furthermore, the estimation of the AIDS model uses several restrictions, namely adding up, homogeneity and symmetry in order to meet the nature of the demand. After the model is formed, it can be further analyzed to obtain the elasticity value by reducing the demand function and then tested for significance with the one-tailed t test.

RESULTS AND DISCUSSION

Description of Demand for Staple Food in the Era of the COVID-19 Pandemic

Humans always have a budget allocation for food consumption, especially staple food. This staple food is a source of energy for daily activities, including during the COVID-19 pandemic.

Table 1. Consumption of staple foods by area of residence in March 2020

Variable	Unit	Mean	Sd	Min	Max	Mean	Sd	Min	Max
		Urban Area				Rural Area			
Quantity purchased									
Rice	Kg	6,12	0,84	4,71	8,04	7.20	1.00	4.12	8.97
Chicken meat	Kg	0,59	0,24	0,14	1,00	0.43	0.19	0.07	0.77
Egg	Item	9.48	2.13	4.59	12.53	7.75	2.18	.14	10.81
Milk	397 gr	0.29	0.11	0.09	0.59	0.29	0.13	0.07	0.51
Cooking oil	Liter	0.99	0.54	0.69	1.24	1.01	0.16	0.62	1.31
Sugar	Ons	5.41	1.01	2.71	7.07	6.75	1.65	2.46	10.05
Price per unit									
Rice	Kg	10337.85	1162.31	8122.00	12356.00	10459.48	1579.31	8368.00	15353.00
Chicken meat	Kg	34378.62	5527.28	25403.00	49447.00	37832.58	7849.97	28355.00	56150.00
Egg	item	1665.50	295.66	1364.00	2437.00	1823.58	442.40	1418.00	3370.00
Milk	397 gr	10410.26	928.08	8425.00	12564.00	10900.39	1207.57	9475.00	15698.00
Cooking oil	Liter	12809.50	1667.24	10611.00	18375.00	13238.36	2528.95	10314.00	24796.00
Sugar	On	1458.3	131.21	1241.0	1741.0	1538.3	236.80	1299.0	2637.0

	s	2		0	0	6		0	0
Amount of expenditure									
Rice	Kg	62807.89	8299.46	48091.39	86832.00	74393.99	9621.34	52205.30	96696.60
Chicken meat	Kg	19899.82	7919.05	6108.06	33600.17	15545.23	7157.20	3633.98	29990.72
Egg	Item	15458.71	3088.94	8663.22	20181.06	13562.60	3422.70	8028.05	21944.30
Milk	397 gr	3074.81	1185.07	866.97	5794.98	3248.47	1549.61	721.00	6593.16
Cooking oil	Liter	12712.13	2385.99	8856.93	21315.00	13233.90	2903.24	9280.16	24300.08
Sugar	Ons	7891.46	1669.46	4062.29	10977.12	10428.03	3025.68	3579.30	16112.07
Expenditure share									
Rice		0.52	0.06	0.42	0.65	0.57	0.07	0.41	0.71
Chicken meat		0.16	0.05	0.05	0.24	0.12	0.04	0.03	0.19
Egg		0.13	0.02	0.08	0.16	0.10	0.02	0.07	0.14
Milk		0.03	0.01	0.01	0.05	0.02	0.01	0.01	0.04
Cooking oil		0.10	0.01	0.07	0.14	0.10	0.02	0.07	0.16
Sugar		0.06	0.01	0.03	0.09	0.08	0.02	0.03	0.11

Table 1. provides information on the staple food commodity consumed by the Indonesian population the most, namely rice. It can be seen from the share of expenditure on rice that exceeds half of the total expenditure, which is 52% in urban areas and 57% in rural areas. Where the highest consumption of rice is in East Nusa Tengga Province which reaches 8.75 kg/capita/month while the lowest is in Papua Province with a large consumption of 4.67 kg/capita/month. Chicken meat is the second commodity that gets a large portion of the budget even though the amount of consumption is small, namely 0.59 kg/month/capita in urban areas and 0.43 kg/month/capita in rural areas. The Province of the Bangka Belitung Islands is the area with the highest consumption of chicken meat, reaching 0.89 kg/capita/month, while the lowest is in North Maluku Province, which is 0.09 kg/capita/month. Furthermore, the commodities with the largest share of expenditure were eggs, cooking oil, granulated sugar and milk, for both urban and rural areas.

Table 2. Consumption of staple food per capita a month before the pandemic and during the pandemic era based on regional origin

Staple Food Commodities	Unit	Urban area		Desc	Rural area		Desc
		Before the pandemic	In the pandemic era		Before the pandemic	In the pandemic era	
Rice	Kg	5.89	5.91	0.02	7.15	7.14	-0.01
Chicken meat	Kg	0.62	0.65	0.03	0.42	0.44	0.02
Egg	Item	10.17	10.26	0.09	7.89	8.24	0.36
Milk	397 gr	0.33	0.31	-0.02	0.29	0.29	-0.002
Cooking oil	Liter	0.98	1.00	0.02	0.98	1.01	0.03
Sugar	Ons	4.82	4.73	-0.09	6.26	6.19	-0.07

Before the pandemic used Susenas data for March 2019, while in the pandemic era using Susenas data for March 2020. Source: BPS (2019, 2020).

Based on Table 2., staple food consumption in urban areas has increased for rice commodities, namely by 0.02 kg/capita/month, chicken meat commodities by 0.03 kg/capita/month, egg commodities by 0.09 eggs/capita/month and cooking oil commodities by 0.02 liters/capita/month. The highest increase was for the animal protein commodity group, namely eggs and chicken meat. This is in line with the results of research conducted (Atmadja et al., 2020) which found that most Indonesians are optimistic that the COVID-19 pandemic can be controlled by consuming high protein foods to increase body immunity. Meanwhile, two other commodities experienced a decline, namely milk commodities by 0.02 397gr/capita/month and sugar by 0.09 ounces/capita/month. Furthermore, in rural areas the increase in consumption occurred in commodities such as chicken meat, eggs and cooking oil. Interestingly, both in urban and rural areas, there was a decrease in consumption for the same two commodities, namely milk and sugar, and the highest increase occurred in the same two commodities, namely eggs and chicken meat.

AIDS Model Restriction Test Results Staple Food Demand

Consumers have rationality in determining the choice of goods and services to be consumed. This rationality causes demand to have three important properties, namely adding-up, homogeneity and symmetry. The nature of adding-up means that the consumer's budget is the same as the consumer's expenditure because the consumer will spend all the budget he has. The nature of homogeneity means that prices and incomes increase at a constant level, so it has no effect on the amount of goods or services consumed because the demand

function is homogeneous at the zero level (Devi, Warasniasih, Masdiantini, & Musmini, 2020). The nature of symmetry means that when real income is constant, the substitution effect of commodity x on commodity y will be the same as the substitution effect of commodity y on commodity x. Restriction tests need to be carried out so that the model fits the essential nature of the request.

Table 3. Restriction test results of staple food demand models in urban areas

Food Group	Intercept	Price						Lexpd	Lnp
		Lpb	lpda	lpt	lps	lpmg	lpgp		
shb	3.21367	-0.36161	0.36117	0.03938	0.00683	-0.04766	0.00190	-0.70828	-0.07894
shda	-3.06180	0.36117	-0.05109	-0.12039	-0.07600	-0.11018	-0.00351	0.79898	1.30397
sht	-0.35506	0.03938	-0.12039	0.02453	0.01888	0.05003	-0.01243	0.14908	0.29486
shs	-0.09082	0.00683	-0.07600	0.01888	0.15159	0.02495	-0.12626	0.02522	0.08701
shmg	0.40659	-0.04766	-0.11018	0.05004	0.02495	0.05768	0.02517	-0.07509	-0.24134
shgp	0.88742	0.00190	-0.00351	-0.01243	-0.12626	0.02517	0.11513	-0.19645	-0.36555

Based on table 3. the restriction conditions have been met. This can be known by adding up the intercept parameters from each food group, the result of which is equal to 1, which means that the adding-up restriction is met. Furthermore, the sum of the parameter coefficients fromeach equation is equal to 0 which indicates the homogeneity restriction is met, namely lpb=lpda=lpt=lps=lpmg=lpgp. Finally, the estimated coefficient between the equations is the same which indicates that the symmetry restriction has been met. So it can be concluded that the AIDS model used to estimate the demand for staple food in urban areas is feasible to use.

Table 4. Restriction test results of basic food demand models in rural areas

Food Group	Intercept	Price						Lexpd	Lnp
		Lpb	lpda	lpt	lps	lpmg	lpgp		
shb	2.80948	-0.01988	0.17964	0.08629	-0.09256	-0.08897	-0.06452	-0.42556	0.04708
shda	-1.47174	0.17964	-0.09040	-0.05760	-0.07012	0.00128	0.03720	0.42912	0.80563
sht	-0.23463	0.08629	-0.05760	-0.06212	0.03765	0.03141	-0.03562	0.05384	0.00086
shs	-0.41996	-0.09256	-0.07012	0.03765	0.17544	0.03858	-0.08899	0.08492	0.02912
shmg	0.27407	-0.08897	0.00128	0.03141	0.03858	-0.07007	0.08776	-0.07270	-0.38071
shgp	0.04278	-0.06452	0.03720	-0.03562	-0.08899	0.08776	0.06418	-0.07193	-0.50197

Table 4. provides information that the restriction requirements have been met in the AIDS model for basic food demand in rural areas. This can be known by the value of the sum of the intercept parameters between equations equal to 1. The sum of the parameter coefficients between equations is equal to 0 and the estimated coefficients between equations have the same value. The restriction test that has been carried out makes the AIDS model in accordance with the theory of consumer demand. So it deserves to be used and analyzed further.

Determinants of Staple Food Demand in the COVID-19 Pandemic Era

Estimation of demand for staple food uses the AIDS model with the SUR approach. The dependent variable is the expenditure of each staple food commodity, while the independent variable is the relative price of each staple food commodity which is interconnected with one another.

Table 5. Determinants of demand for staple food in the era of the COVID-19 pandemic

Variabel	Rice	Chicken meat	Egg	Milk	Cooking oil	Sugar

Urban area						
Constant	3.2137***	-3.0618***	-0.3551	-0.09082	0.40659*	0.88742***
P Rice	-0.3616**	0.36117***	0.03938	0.00683	-0.04766	0.00190
P Chicken meat	0.36117***	-0.05109	-0.12039**	-0.07600**	-0.11018**	-0.00351
P Egg	0.03938	-0.12039**	0.02453	0.01888	0.05004	-0.01243
P Milk	0.00683	-0.07600**	0.01888	0.15159***	0.02495	-0.12626***
P Cooking oil	-0.04766	-0.11018**	0.05004	0.02495	0.05768	0.02517
P Sugar	0.00190	-0.00351	-0.01243	-0.12626***	0.02517	0.11513
R-Square	0.54155	0.71359	0.30650	0.32159	0.55324	0.49978
Rural area						
Constant	2.80948***	-1.47174***	-0.23463	-0.41996**	0.27407	0.042780
P Rice	-0.01988	0.17964	0.08629	-0.09256	-0.08897	-0.06452
P Chicken meat	0.17964	-0.09040	-0.05760	-0.07012*	0.00128	0.03720
P Egg	0.08629	-0.05760	-0.06212	0.03765	0.03141	-0.03562
P Milk	-0.09256	-0.07012*	0.03765	0.17544***	0.03858	-0.08899
P Cooking oil	-0.08897	0.00128	0.03141	0.03858	-0.07007	0.08776
P Sugar	-0.06452	0.03720	-0.03562	-0.08899	0.08776	0.06418
R-Square	0.46755	0.57243	0.38244	0.44224	0.66215	0.60807

significant at 1% significance level, **) significant at 5% significance level, *) significant at 10% significance level.

Based on table 5. the estimation results of staple food demand show that in urban areas the R-square value ranges from 0.3065 to 0.7136. This means that the variation in the proportion of expenditure (budget share) of the studied food groups can be explained by the model around 30-71 percent while the rest is explained by other factors outside the model. In urban areas, the share of rice expenditure is significantly influenced by the variables of rice prices and chicken meat prices. The share of chicken meat expenditure is significantly influenced by the variables of rice prices, egg prices, milk prices and cooking oil prices. An interesting thing can be seen from the share of expenditure for chicken meat which is influenced by almost all the variables studied except the price of chicken meat and sugar.

Based on the R-Square value in rural areas in table 5, it means that the variation in the proportion of expenditure from the food groups studied can be explained by the model around 38-66 percent while the rest is explained by other factors outside the model. The low value of R-Square is caused by the use of cross section data, because this data has a wide range of

observations and a high level of diversity. So that if the R-Square value is low, it is not a problem (Wijayati & Suryana, 2019); (Nasution, Krisnamurthi, & Rachmina, 2020). Details of the large variation of independent variables from share of expenditure in rural areas are 46.75 percent for rice commodities, 57.24 percent for chicken meat commodities, 38.24 percent for eggs, 44.22 percent for dairy commodities, 66.22 percent for cooking oil commodities and 60.81 percent for sugar commodities. Based on the coefficient value of the model estimation results in rural areas, almost all variables do not show an influence in determining the share of staple food expenditures during the COVID-19 pandemic. This can happen based on the findings of research conducted (Lestari, Hartati, & Nopianti, 2016) that rural communities have their own way to meet their basic needs including involving all family members in cultivating agricultural land and to get additional income, diversifying agricultural land to meet their needs. daily, the use of the yard to meet the needs of vegetables and fruit, saving on family expenses made by the wife.

Self Price Elasticity, Cross Price and Income Elasticity

Knowing the elasticity value of a commodity provides information about how big the response to changes in consumption of the commodity is if there is a change in price or change in income.

Table 6. Self-price elasticity, cross-price elasticity and income elasticity of staple food in urban areas

Commodity	Own price elasticity	Cross price elasticity						Income elasticity
		Rice	Chicken meat	Egg	Milk	Cooking oil	Sugar	
Rice	-0.3616		0.3612	0.0394	0.0068	-0.0477	0.0019	-0.7083
Chicken meat	-0.0511	0.3612		-0.1204	-0.0759	-0.1102	-0.0035	0.7989
Egg	0.0245	0.0394	-0.1204		0.0188	0.0500	-0.0124	0.1491
Milk	0.1516	0.0068	-0.0759	0.0188		0.0249	-0.1263	0.0252
Cooking oil	0.0577	-0.0477	-0.1102	0.0500	0.0249		0.0252	-0.0751
Sugar	0.1151	0.001	-0.0035	-	-	0.0252		-0.1965

	9	0.0124	0.1263

Based on table 4.6 in urban areas, the elasticity value for rice is -0.3616, this value can be classified as an inelastic commodity. This means that if there is an increase in the price of rice by one percent, it will cause a decrease in demand by 0.3616 percent, cateris paribus. Furthermore, if there is an increase in the price of chicken meat by one percent, it causes a decrease in demand by 0.0511 percent, cateris paribus. When the egg commodity price increases by one percent, it causes an increase in the number of requests by 0.0245, where the prices of other food commodities are constant. Meanwhile, for dairy commodities, demand increased by 0.1516 percent when there was a one percent increase in price. Likewise, for cooking oil and granulated sugar, there was an increase in demand by 0.0577 percent and 0.1151 percent, respectively, when there was a one percent price increase, cateris paribus. We can conclude that from the six staple food commodities, all of them have their own elasticity value of less than one, which means they are inelastic. The interesting thing is that there is an increase in demand for eggs, milk, cooking oil and granulated sugar when there is an increase in prices. This can be caused by the COVID-19 pandemic, which causes the community's food supply pattern to tend to be healthy and balanced (Lestari et al., 2016).

Based on table 4.6 the value of income elasticity for commodities of rice, cooking oil and sugar is negative, which means that the three commodities are classified as inferior goods, namely goods that are less desirable when there is an increase in income. The income elasticity of rice is the lowest compared to other commodities. This strengthens the notion that the number of high-income groups in Indonesia is increasing. Where the findings of research conducted (Kusnadi & Tinaprilla, 2011) the elasticity of rice income based on Susenas data from 1970 to 2003 in Indonesia shows the opposite result. The high elasticity of rice income indicates that rice consumption has not been fulfilled so that if there is an increase in income, most of it is used to increase rice consumption.

Besides rice, cooking oil also experienced a decline in demand. If it is related to the condition of the COVID-19 pandemic, this can happen because people tend to change their consumption patterns towards healthy food. This is appropriate if it is associated with the value of income elasticity for the largest chicken meat commodity, namely an increase in demand for chicken meat by 0.7989 percent when there is an increase in income of one percent. Likewise for egg commodities, there is an increase in demand by 0.1491 percent if there is an increase in income. Based on the value of income elasticity, chicken meat, eggs and milk are included in the category of necessities for urban areas during the COVID-19 pandemic era. Furthermore, rice has a substitution relationship with the other five commodities, namely chicken meat, eggs, milk and sugar. Meanwhile, chicken meat

has a complementary relationship to all commodities other than rice. The interesting thing is that the sugar commodity has a complementary relationship to all the commodities studied other than the rice commodity.

Table 7. Self-price elasticity, cross-price elasticity and income elasticity of staple food in rural areas

Commodity	Own price elasticity	Cross price elasticity						Income elasticity
		Rice	Chicken meat	Egg	Milk	Cooking oil	Sugar	
Rice	-0.0199		0.1796	0.0863	-0.0926	-0.0889	-0.0645	-0.4256
Chicken meat	-0.0904	0.1796		-0.0576	-0.0701	0.0013	0.0372	0.4291
Egg	-0.0621	0.0863	-0.0576		0.0376	0.0314	-0.0356	0.0538
Milk	0.1754	-0.0926	-0.0701	0.0376		0.0386	-0.0889	0.0849
Cooking oil	-0.0701	-0.0889	0.0013	0.0314	0.0386		0.0878	-0.0727
Sugar	0.0642	-0.0645	0.0372	-0.0356	-0.0889	0.0878		-0.0719

Table 7. provides information on the value of price elasticity itself for almost all commodities with a negative sign, meaning that when a price change of one percent causes a decrease in demand for that commodity. This is consistent with the law of demand. The commodity of rice experienced a decrease in demand by 0.0199 percent when the price increased by one percent, cateris paribus. Likewise for eggs, there was a decrease in demand by 0.0621 percent when there was a one percent increase in price. The biggest decline occurred in chicken meat, which was 0.0904 percent when there was a one percent price increase, cateris paribus. An interesting thing happened to milk and sugar commodities, where there was an increase in demand despite an increase in prices. The COVID-19 pandemic has caused rural communities to prioritize a complete and balanced diet. It can be concluded that the six commodities have an elasticity value of less than one so that the six commodities

are inelastic.

Based on table 7. the value of income elasticity for chicken meat, eggs and milk commodities in rural areas is between zero to one, which means these commodities are included in the category of necessities. The interesting thing is that the income elasticity for commodities of rice, cooking oil and sugar is less than zero, meaning that they are classified as inferior goods. The value of cross price elasticity in rural areas shows that rice commodities have a complementary relationship with milk, cooking oil and sugar, while chicken meat and eggs have a substitution relationship.

Policy Implication

During the COVID-19 pandemic, the income elasticity of rice commodities was negative both in urban and rural areas, although the share of expenditure remained the largest. This indicates that rice is still the main food but people are starting to substitute it with other commodities. This fact is the right moment for the government to promote various types of local food in terms of nutrition and nutrition, because diverse foods are needed to get balanced nutrition so that the body's immunity is maintained during the pandemic. So that efforts to accelerate food diversification carried out by the government so far can be realized immediately.

The interesting thing was that both in urban and rural areas during the pandemic, chicken meat had the highest income elasticity value. When there is an increase in income in the community, the demand for chicken meat increases because the need for animal protein sources increases as an effort to maintain body stamina during the pandemic. This fact becomes important for the government to prepare the poultry industry to face difficult conditions like this. Based on data from the Basic Needs Market Monitoring System (Zaks & Kucharik, 2011) there was a fairly high fluctuation in the price of chicken meat in the domestic market during the period September 2019 to September 2020, namely the average coefficient of diversity reached 8.99%, which means it is necessary to evaluate policies for this industry. , so it can be better at ensuring price stability during the pandemic.

CONCLUSIONS

Based on the quantitative analysis that has been carried out, it can be concluded that: 1) Comparison of staple food consumption data between March 2019 and March 2020 shows an increase in consumption for the six commodities studied, except for milk and sugar, which experienced a decline in urban areas. Meanwhile, in rural areas, there are three commodities that experienced a decline in consumption, namely rice, milk and sugar. During the pandemic, the largest share of expenditure for rice commodities, both in urban and rural areas, was 52% and 57%, followed by chicken meat, eggs, cooking oil, granulated sugar and milk, respectively. 2) Restriction test shows that the AIDS model used fulfills the nature of the

demand for adding-up, homogeneity and symmetry so that it deserves further analysis. The R-square value shows the variation of the independent variables of share of expenditure in urban areas 54.16% for rice, 71.36% for chicken meat, 30.65% for eggs, 32.16% for milk, 55.32% for cooking oil and 49.97% for sugar. The share of rice is significantly influenced by the price of rice and the price of chicken meat, the share of chicken meat is significantly influenced by almost all other commodity prices besides the price of sugar. The R-square value in rural areas shows that the variation of the independent variables from the share of rice expenditure is 46.75%, chicken meat is 57.24%, eggs is 38.24%, milk is 44.22%, cooking oil is 66.26% and sugar is 60.81%. 3) The price elasticity of both urban and rural areas during the pandemic indicates that the six commodities studied are inelastic. Income elasticity shows that rice, cooking oil and sugar are inferior goods, while chicken meat and eggs have the highest income elasticity values. This can be due to the fact that the pandemic has encouraged healthy food consumption patterns and contains lots of animal protein to maintain the body's immunity.

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