

STRATEGIC FOOD DEMAND FOR NON-POOR HOUSEHOLDS IN INDONESIA

by Ana Arifatus Sa'diyah, Herdiana Anggrasari, Nikmatul Khoiriyah,
Aldon Mhp Sinaga

Submission date: 21-Sep-2023 10:29AM (UTC+0700)

Submission ID: 2172243036

File name: Strategic_Food_Demand_For_Non_Poor_House.pdf (815.98K)

Word count: 4856

Character count: 25907

STRATEGIC FOOD DEMAND FOR NON-POOR HOUSEHOLDS IN INDONESIA

Ana Arifatus Sa'diyah⁽¹⁾, Herdiana Anggrasari⁽²⁾, Nikmatul Khoiriyah⁽³⁾, Aldon MHP Sinaga⁽⁴⁾

⁽¹⁾Departement of Agribusiness, Faculty of Agriculture, University of Tribhuwana Tungga Dewi, Indonesia

⁽²⁾Departement of Agribusiness, Faculty of Agriculture, University of Tribhuwana Tungga Dewi, Indonesia

⁽³⁾Departement of Agribusiness, Faculty of Agriculture, University of Islam Malang, Indonesia

⁽⁴⁾Departement of Agribusiness, Faculty of Agriculture, University of Tribhuwana Tungga Dewi, Indonesia

⁽¹⁾ ana.arifatus@unitri.ac.id

INTRODUCTION

The poverty rate has an important role in development. Poverty rates are useful for: (a) formulating national development policies and plans, including poverty reduction strategies; (b) determining geographic location-based targets, individuals and households that are targeted by development programs; (c) determine the allocation of poverty reduction programs; (d) monitor and evaluate development programs, including the achievement of the Medium Term Development Plan / Long Term National Development Plan (RPJMN / RPJPN) and SDGs; (e) measuring the performance of the central and local governments (Adji, A., et al, 2020). Poverty reduction programs are a priority for Indonesia's development. This is in line with the first commitment of the Sustainable Development Goals (SDGs), namely reducing poverty and hunger. The availability of an accurate poverty rate in each region and at the national level is an absolute prerequisite for formulating poverty reduction policies.

Poverty is a parasite in the economy of a region, so if it is allowed to drag on, it will have very serious social and political consequences. Therefore, a strategy is needed to eradicate or minimize it. Assegaf (2015) argues that poverty reduction needs to be done using multiple perspectives, because poverty is a multidimensional problem. The world's concern for the problem of poverty is shown by the declaration of poverty alleviation in one of the main targets and targets of the concept of sustainable development. Sustainable Development Goals (SDGs) which will adorn the face of world development from 2015 to 2030 (Hoelman et al., 2015). As a commitment to poverty alleviation, various programs have been pursued by the Government, both central and regional, including the provision of basic needs such as Raskin, health and education services, expansion of job opportunities, agricultural development, provision of revolving credit systems, infrastructure development and assistance. sanitation extension and other programs (Suryahadi et al., 2010). However, the facts show that the reduced poverty rate is not comparable to the budget that has been disbursed by the government. Ministry of finance data shows that in the last 6 years the poverty alleviation budget has increased quite significantly, from 74.3 trillion rupiah (2011) to 212.2 trillion rupiah (2016) or 186 percent. However, ironically, the poor population was reduced by only 7% during that period or on average only was able to reduce poverty by around 1.17% per year (BPS, 2016). This condition shows that to lift someone out of poverty requires a fairly high budget.

This phenomenon shows that poverty alleviation is very difficult to do. As an alternative, research on food demand for non-poor households is needed. This research is needed in order to maintain the consumption ability of non-poor households. The results of further research can be used as a policy recommendation to maintain non-poor households in their condition. Several non-poor household studies were conducted by (Berges & Casellas, 2002). In his research, he analyzed the food demand system for poor and non-poor households in Argentina using the Linear Expenditure System (LES) model. Niimi (2005) using the Linear Approximation Almost Ideal Demand System (LA-AIDS) model researching food consumption patterns in Vietnam found that non-poor households have a more diverse choice of food commodities than poor households. Pangaribowo (2010) using the Quadratic Almost Ideal Demand System (QUAIDS) found that the food consumption patterns of non-poor households prioritized consumption of meat, snacks and processed food commodities. Widarjono & Rucbha (2016) conducted a study on household food demand in Indonesia using the Quadratic Almost Ideal Demand System (QUAIDS) instrument and found that low-income households were more responsive to price changes than high-income households. Rice, which is a staple food, is less responsive to price changes in low-income households but has become very responsive as household income increases. In addition, meat is inelastic for poor households and becomes elastic for high-income households. The research aims to analyze the factors that influence the share of strategic food expenditure, and analyze the effect of changes in prices and household income on strategic food demand.

METHODHOLOGY

The area study and data collection

This study used secondary data obtained from Susenas (Survei Sosial Ekonomi Nasional) data in 2016. The total sample size used of 259.178 households. This data is a sample of households collected by Susenas from thirty-four provinces in Indonesia, so that it can be considered as a generalization of the condition of all households in Indonesia. The research was limited to 6 strategic foods namely rice, corn, beef, shallot, chili, and sugar. These 6 food commodities are part of Indonesia's seven strategic foods excepts soybeans. Soybeans are not included in the commodity studied because of the unavailability of data.

Analytical technique

Analysis of strategic food demand for non poor households in Indonesia is done by using the Linear Approximation-Almost Ideal Demand System (LA-AIDS) model. Model LA-AIDS diturunkan dari model AIDS. The AIDS model flexibility, acceptability, and wider application has been reported in earlier studies (Green & Alston, 1990; Akinbode, 2015; Wadud, 2006). According to Deaton and Muellbauer 1980 the AIDS model is specified as:

$$w_i = \alpha_0 + \sum_j \gamma_{ij} \log p_j + \beta_i \log \left(\frac{X}{P} \right) + e_i \quad (1)$$

where X is total expenditure on the group of goods being analyzed, P is the price index for the group, PI is the price of the jth good within the group, w, is the share of total expenditure allocated to the ith good (i.e. $w_i = P_i Q_i / X$), and the price index (P) is defined as

$$\ln P = \alpha_0 + \sum_i \alpha_j \ln p_j + \frac{1}{2} \sum_j \sum_i \gamma_{ij} \ln p_i \ln p_j \quad (2)$$

The LA-AIDS model is a linear demand model derived from Marshallian demand but in the proportion of expenditure or budget share, the LA-AIDS model is a flexible and easily applied in demand model for household expenditure data (Deaton & Muellbauer, 1980; Sacli & Ozer, 2017; Sengul & Tuncer, 2005; (Shiba et al., 2017). The LA-AIDS model is estimated using Seemingly Unrelated Regression (SUR). SUR is an estimation in a multivariate regression system that explains the value of each equation model not correlated (unrelated). So that each equation model can be analyzed simultaneously without causing correlation among the models. The use of the SUR method has been widely carried out, including (Hayat et al., 2016).

The LA-AIDS model was then developed by entering a variable number of household members, this was also done by Mwenjeri et al., (2016) and Weliwita & Epaarachchi (2003).

$$w_i \alpha_i + \sum_j \gamma_{ij} \log p_j + \beta_i \log(x/p^*) + \lambda_i \log ART_j + e_i \quad (3)$$

The use of the LA / AIDS model in research according to the variables under study is further described as follows:

$$\omega_1 = \alpha_{11} + \gamma_{11} \ln P_1 + \gamma_{12} \ln P_2 + \gamma_{13} \ln P_3 + \gamma_{14} \ln P_4 + \gamma_{15} \ln P_5 + \gamma_{16} \ln P_6 + \beta_1 \ln \left(\frac{X}{P}\right) + \delta_1 \ln ART + \sigma_1 \ln IMR \quad (4)$$

$$\omega_2 = \alpha_{21} + \gamma_{21} \ln P_1 + \gamma_{22} \ln P_2 + \gamma_{23} \ln P_3 + \gamma_{24} \ln P_4 + \gamma_{25} \ln P_5 + \gamma_{26} \ln P_6 + \beta_2 \ln \left(\frac{X}{P}\right) + \delta_2 \ln ART + \sigma_2 \ln IMR \quad (5)$$

$$\omega_3 = \alpha_{31} + \gamma_{31} \ln P_1 + \gamma_{32} \ln P_2 + \gamma_{33} \ln P_3 + \gamma_{34} \ln P_4 + \gamma_{35} \ln P_5 + \gamma_{36} \ln P_6 + \beta_3 \ln \left(\frac{X}{P}\right) + \delta_3 \ln ART + \sigma_3 \ln IMR \quad (6)$$

$$\omega_4 = \alpha_{41} + \gamma_{41} \ln P_1 + \gamma_{42} \ln P_2 + \gamma_{43} \ln P_3 + \gamma_{44} \ln P_4 + \gamma_{45} \ln P_5 + \gamma_{46} \ln P_6 + \beta_4 \ln \left(\frac{X}{P}\right) + \delta_4 \ln ART + \sigma_4 \ln IMR \quad (7)$$

$$\omega_5 = \alpha_{51} + \gamma_{51} \ln P_1 + \gamma_{52} \ln P_2 + \gamma_{53} \ln P_3 + \gamma_{54} \ln P_4 + \gamma_{55} \ln P_5 + \gamma_{56} \ln P_6 + \beta_5 \ln \left(\frac{X}{P}\right) + \delta_5 \ln ART + \sigma_5 \ln IMR \quad (8)$$

$$\omega_6 = \alpha_{61} + \gamma_{61} \ln P_1 + \gamma_{62} \ln P_2 + \gamma_{63} \ln P_3 + \gamma_{64} \ln P_4 + \gamma_{65} \ln P_5 + \gamma_{66} \ln P_6 + \beta_6 \ln \left(\frac{X}{P}\right) + \delta_6 \ln ART + \sigma_6 \ln IMR \quad (9)$$

Where:

w_{1-6} :proportion of food expenditure

$P_1 - P_6$:Prices of rice, corn, beef, shallots, chilies, sugar

X :Total expenditure on consuming food (Rp)

p^* : Stone price index, where $\ln p^* = \sum w_i \cdot \ln p_i$

e_i : error term

- α, d : intercept parameter
- β : expenditure parameters
- γ : price parameters
- ART : number of household members (people)
- Expd : household expenditure (Rp / month)
- i, j : 1 (rice), 2 (corn), 3 (beef), 4 (shallot), 5 (chili), 6 (sugar)
- IMR_i : Inverse Mill Ratio, correction variable of the estimated price of commodity group i

Furthermore, the formula for the proportion of expenditure (budget share) of each household for the commodity- i (w_i) group is:

$$w_i = \frac{\sum_{j=1}^n e_j}{\sum_{i=1}^n e_i} \quad (10)$$

Household consumption data from Susenas is household consumption for one week. The short consumption time of consumption time that is one week, causes some households not to consume. This condition causes some zero value data so that if analyzed in OLS it will produce a biased value. To avoid the problem of bias in the analysis, Sacli & Ozer (2017) using predictive values from the probit model that results in Inverse Mill Ratio (IMR). The IMR is the ratio of the estimated value of the standard normal density function to the estimated value of the normal standard cumulative distribution function. The IMR value is obtained from the following equation:

$$IMR_{ih} = \frac{\phi(x, \beta)}{\theta(x, \beta)} \text{ for } y_{ih} = 1 \quad (11)$$

$$IMR_{ih} = \frac{\phi(x, \beta)}{\theta(x, \beta)} \text{ for } y_{ih} = 0 \quad (12)$$

The value of x is the value of the social demographic factor, value β is log of commodity prices. y_{ih} is a dummy variable, valuable $y_{ih} = 1$ if the household consumes commodities and is valuable $y_{ih} = 0$ if the household does not consume the commodity.

Sengul & Tuncer (2005) using Heckman's two step estimation by including the IMR in the observations. So the LA-AIDS equation is obtained as follows.

$$w_i = \alpha_i + \sum_j \gamma_{ij} \log p_j + \beta_i \log(x/p^*) + \beta_i \log ART_j + IMR_j + \mu_i \quad (13)$$

Where w_i is the share of food expenditure to i ; p_j is the price of the commodity to j ; x is total food expenditure; IMR is the value of Inverse Mills. Ratio; α, d, β, γ are the estimation parameters, and μ is the error term. p^* is the stone price index ($\ln p^* = \sum w_i \ln p_i$). Whereas i, j for 1 (rice), 2 (corn), 3 (beef), 4 (shallot), 5 (chili), 6 (sugar). In order for the LA-AIDS model to be consistent with demand theory, the use of the AIDS model in a demand system must go through demand retention testing consisting of adding up, homogeneity, and symmetry.

1. Adding up

Adding up in the demand model explains that the total expenditure or the total expenditure share is one, or $\sum_i a_i = 1, \sum_i a_{ij} = 0, \sum_i b_i = 0$. In this demand system, adding up restrictions is not tested because indirectly these restrictions will be fulfilled

when expenditure variables, expenditure shares and the price index are accumulated in the AIDS model.

2. Homogeneity

Homogeneity in the demand model explains that changes in price and income do not proportionally affect the quantity of demand, or $\sum_{ij} c_{ij} = 0$. So that the hypothesis used is:

$H_0 =$ If value $\sum_{ij} c_{ij}$ equals zero ($\sum_{ij} c_{ij} = 0$) or the average amount of change in the quantity of each commodity for price changes is zero.

$H_a =$ If value $\sum_{ij} c_{ij}$ does not equal zero ($\sum_{ij} c_{ij} \neq 0$) or the average number of changes in the quantity of each commodity for price changes is not equal to zero.

3. Symmetry

Symmetry in the demand model illustrates that the cross price coefficients are the same, so that consumers are consistent with their choices. The following are the hypotheses used in testing the symmetry restrictions:

$H_0 =$ If value c_{ij} equals value c_{ji} ($c_{ij} = c_{ji}$) or price crossovers between commodities of symmetry

$H_a =$ If value c_{ij} does not equal value c_{ji} ($c_{ij} \neq c_{ji}$) or cross prices between commodities are not symmetrical

Adding up: $\sum_i a_i = 1, \sum_i a_{ij} = 0, \sum_i b_i = 0,$

Homogeneity: $\sum_j c_{ij} = 0,$

Symmetry: $c_{ij} = c_{ji}.$

The results of LA-AIDS analysis can then be used to determine the effect of changes in prices and income on changes in demand. This analysis is called demand elasticity analysis. Demand elasticity can be analyzed by using the Marshallian and Hicksian demand function approaches. (Ackah and Appleton, 2007a) suggests that elasticity can be calculated using the following formula:

1. Marshallian/ uncompensated elasticity, where there is an income effect obtained from total expenditure that:

Marshallian price elasticity/ Uncompensated price elasticity:

$$\epsilon_{ii}^M = -1 + \frac{Y_i}{w_i} - \beta_i \quad (14)$$

Marshallian price elasticity/ uncompensated cross price elasticity:

$$\epsilon_{ij}^M = \frac{Y_{ij}}{w_i} - \beta_i \frac{w_j}{w_i} \quad (15)$$

2. Hicksian/ compensated elasticity only has an expenditure price effect, so the elasticity value is known by:

Hicksian price elasticity/ Compensated price elasticity:

$$\epsilon_{ii}^H = -1 + \frac{Y_i}{w_i} + w_i \quad (16)$$

Hicksian price elasticity/ Compensated price elasticity:

$$\epsilon_{ij}^H = \frac{Y_{ij}}{w_i} + w_j \quad (17)$$

3. Expenditure elasticity:

$$\eta_i = \frac{\partial \log q_i}{\partial \log x} = 1 + \left(\frac{1}{w_i}\right) \left(\frac{\partial w_i}{\partial \log x}\right) = 1 + \left(\frac{\beta_i}{w_i}\right) \quad (18)$$



4. Marginal Expenditure share:

$$m_i = \eta_i \cdot w_i : \quad (19)$$

Where ϵ_{ii}^M is uncompensated price elasticity, ϵ_{ij}^M is uncompensated cross price elasticity, ϵ_{ii}^C is compensated price elasticity, ϵ_{ij}^C is compensated cross price elasticity, η_i is income elasticity, m_i is marginal Expenditure share, w_i is share of expenditure, β_{i-j} is parameter of price commodity, β_{i-j} is expenditure parameter, for the dependent variable commodity, and j for the independent variable commodity.

RESULT AND DISCUSSION

Factors affecting strategic food demand

Price and income affect consumption patterns and household strategic food demand. The finding of LA-AIDS analysis shows the income, price, and socio-demographic factors significantly influence the demand for strategic food. Table 1 shows the estimated results of the parameters of demand for strategic food in Indonesian non poor households. Estimation of this parameter has passed the LA-AIDS restriction test that is adding-up, homogeneity, and symmetry (Dávila, 2010).

Rice prices, corn prices, beef prices, shallot prices, chili prices, and sugar prices have a very significant effect on strategic food demand. The number of household members greatly influences the demand for rice and beef. Total expenditure greatly influences the demand for rice, and chili. The total variable expenditure on rice and corn is negatif, indicating that rice and corn are normal items because the increase in income decreases demand rice and corn

Table 1 shows R^2 value of 0.4823 indicating that 48% of the influence of the independent variables can be explained in the model. The number of household members has a positive effect on demand for rice, corn, and sugar, while with beef, shallot, and chilli is negative. It can be interpreted that the increase in the number of household members one person increases the consumption of strategic food food, rice, corn, and sugar. But unlike beef, shallot, and chilli that the increase in household size decreases beef, shallot, and chilli demand. This phenomenon explains that Indonesian non poor households consume an enormous amount of strategic from the beef, shallot, and chilli group.

The variable number of household members negatively affects beef, shallot, and chilli commodity. This condition is caused by non poor households having a limited income, so the higher the number of family members, the household will reduce consumption of beef, shallot, and chili. The increase in the number of household members causes spending on purchases of food sources of carbohydrate (rice, corn) relatively high, so that the consequences are done by reducing the consumption of beef, shallot, and chili. This is also reinforced by the variable coefficient value of the number of household members that is positive for rice and corn. This means that the higher the number of household members, the share of expenditure on rice and corn also increases. The positive value of this rice commodity is consistent with the results of the study (Akbay et al., 2007 and Tekgüç, 2012) in Turkey, where demand for staple food is greatly influenced by the number of household members. The estimation of the IMR parameters of all equations is statistically significant at

one percent level, this shows that the estimation ignoring the value of zero consumption will produce a biased and inconsistent parameter estimation (Weliwita & Epaarachchi, 2003).

Table 1. Parameter Estimates of Strategic Food for Non Poor Households

| Variable | rice | Corn | beef | Shallot | Chili | Sugar |
|--------------------------------|----------|----------|----------|----------|----------|----------|
| Intercept | 1.4316* | 0.5788* | -1.7488* | 0.6063* | -0.6852* | 0.8173* |
| Rice prices | 0.1007* | 0.0178* | -0.0820* | -0.0084* | -0.0263* | -0.0017* |
| Corn prices | 0.0178* | 0.02497 | -0.03723 | -0.00070 | -0.00465 | -0.00014 |
| Beef prices | -0.0820* | -0.0372* | 0.1059* | 0.0036* | 0.0104* | -0.0007* |
| Shallot prices | -0.008* | -0.0007* | 0.0036* | 0.0053* | -0.0004* | 0.0006* |
| Chili prices | -0.0264* | -0.0047* | 0.0104* | -0.0004* | 0.0205* | 0.0004* |
| Sugar prices | -0.0017* | -0.0001* | -0.0007* | 0.0006* | 0.0004* | 0.0016* |
| total expenditure | -0.0701* | -0.0186* | 0.0453* | 0.0076* | 0.0313* | 0.0045* |
| the number of Household Member | 0.1878* | 0.0078* | -0.1728* | -0.0035* | -0.0229* | 0.0035* |
| Inverse Mill's Ratio | 0.6637* | -0.2140* | 0.5424* | -0.7311* | 0.6463* | -0.9072* |
| Stone index | -0.0518* | 0.0003* | 0.0980* | -0.0119* | -0.0206* | -0.0138* |
| R ² | 0.4823 | | | | | |

Note: *indicate significant at the 1% significance level, respectively

Source: research findings

Income Elasticities and Marginal Expenditure Share

Table 2 displays the income elasticity and Marginal Expenditure share of strategic food for non poor households. Rice, corn, and sugar are staple foods because the value of expenditure elasticity is greater than zero and less than one ($0 < \eta < 1$). Beef, shallot, and chilli are luxury items because the value of expenditure elasticity is more than one ($\eta > 1$).

Another interesting finding is the value of income elasticity for corn commodities is very low for non poor households (0.1429). This means that the increase in household income has almost no effect on corn consumption. This condition is due to corn commodity in Indonesia is no longer a staple food commodity. Corn commodity is a strategic commodity that functions as input for animal feed.

Table 2. Income Elasticities and Marginal Expenditure share

| Food Group | Income | Marginal Expenditure Share |
|------------|--------|----------------------------|
| Rice | 0.8435 | 0.5792 |
| Corn | 0.1429 | 0.0022 |
| Beef | 3.8407 | 0.1294 |
| Shallot | 1.0315 | 0.0707 |
| Chilli | 1.2377 | 0.1317 |
| Sugar | 0.9750 | 0.0868 |

Sources: research findings

Beef has the highest income elasticity value 3.8407 for non poor households. Beef is the commodity that responsive to changes in income. A one percent increase in non poor household income will increase beef consumption by 3.8407 percent. The income elasticity value for beef is greater than one, indicating that beef is a luxury item for non poor households. These findings support the findings of (Anindita et al., 2020), which examined The demand for beef in Indonesian urban.

The elasticity value of the income of the six strategic food groups is positive. This shows that the six strategic foods are normal goods, so that an increase in income will increase the consumption. The results of this study are the same as some research results from other countries. Example (Abdulai & Aubert, 2004) by using cross-section data on 6 food groups, the value of income elasticity is positive. other than that (Eshor & Ojogho, 2011) conducting research in Nigeria, the results of the analysis showed that an increase in income would increase spending on food. So are (Mwenjeri et al., 2016) who conducted research in Kenya, that increasing household income will increase consumption.

The value of income elasticity for rice, corn, and sugar in non poor households is positively smaller than one. This illustrates that rice, corn, and sugar are inelastic commodities. The increase in income in non poor households will increase consumption of rice and corn, with a lower proportion than the increase in income. This supports the results of the study (Kumar et al., 2011) that income elasticity for basic food is positive and less than one. Table 2 illustrates the Marginal Expenditure share of strategic food for non poor households is used to see the effect of changes in income on household expenditure for strategic food in the long run. Share of marginal expenditure is calculated based on opinion (Ma et al., 2003), The marginal expenditure share is a multiplication of expenditure elasticity and budget share for each strategic food category. The results of the calculation of marginal expenditure share show that non poor households will allocate their income more proportionally to rice, beef, and chilli.

Uncompensated (Marshallian) Own-Price and Cross-Price Elasticity

The elasticity shows how much do the households respond to the price or income changing. Marshallian elasticity describes the percentage change in the number of goods demanded as a result of price changes. Table 3 illustrates uncompensated own and cross-price elasticity. All own price elasticities are negative, ranging from -0.0073 to -1.5943. The most elastic beef in Marshallian. Beef is the highest of Marshallian price elasticity is 1.59%, followed by corn (1.11%), shallot (0.90%), sugar (0.89%), rice (0.21%), and chilli (0.01%). The most responsive price is beef. This means that beef is a luxury item for non poor households. This is in line with the results of the study (Bilgic & Yen, 2013).

Table 3 shows uncompensated cross-price elasticities for non poor households. The uncompensated cross-price elasticity analysis results showed that rice has a complementary relationship with beef and chilies. This is indicated by the value of its elasticity which is negative. Meanwhile, rice also has a substitution relationship with corn, shallots and sugar, because the elasticity value is negative. Another finding is that the compensated cross elasticity values for all rice are positive, meaning that rice has a substitution relationship to all other strategic foods (corn, beef, shallots, chilies, and sugar).

Table 3. Uncompensated Own-price and Cross-price Elasticity of Strategic Food in Indonesian Non Poor Household

| Commodity | Rice | Corn | Beef | Shallot | Chili | Sugar |
|-----------|----------------|----------------|----------------|----------------|----------------|----------------|
| Rice | -0.2074 | 0.1083 | 0.1112 | 0.1166 | 0.1225 | 0.1198 |
| Corn | 31.0275 | -1.1105 | 3.1488 | 4.6344 | 6.2526 | 5.5111 |
| Beef | -2.5789 | -0.6725 | -1.5943 | -0.8226 | -0.9303 | -0.8809 |
| Shallot | 0.0072 | 0.0283 | 0.0278 | -0.9027 | 0.0276 | 0.0260 |
| Chili | -0.1559 | 0.0036 | -0.0007 | -0.0090 | -0.0073 | -0.0139 |
| Sugar | 0.0050 | -0.0119 | -0.0114 | -0.0105 | -0.0096 | -0.8962 |

Sources: research findings

Compensated (Hicksian) Own Price Elasticity and Cross Elasticity

Compensated price elasticity is a better measure of substitution between two goods because it only measures the effect of substitution without calculating the income effect. Compensated own-price elasticities of demand for all food groups are negative and consistent with the priori expectation (Khoiriyah et al., 2020; Anindita et al., 2020; Andreyeva et al., 2010). The absolute amounts of these elasticities for all food groups are lower than unity in non poor households as displays in table 4.

Table 4 shows that the six strategic commodities (rice, corn, beef, shallots, chilies, and sugar) are normal goods for non-poor households. Beef is a luxury item for rural households, urban households, non-poor rural households, and poor households (Sa'diyah et al., 2019), but it is a normal item for non-poor households.

Table 4. Uncompensated Own-price and Cross-price Elasticity of Strategic Food in Indonesia

| Commodity | Rice | Corn | Beef | Shallot | Chili | Sugar |
|-----------|----------------|----------------|----------------|----------------|----------------|----------------|
| Rice | -0.1059 | 0.1215 | 0.1396 | 0.1744 | 0.2123 | 0.1949 |
| Corn | 1.4152 | -0.2559 | 0.7621 | 0.7969 | 0.8348 | 0.8175 |
| Beef | 0.0587 | -0.6124 | -0.6280 | -0.5595 | -0.5216 | -0.5390 |
| Shallot | 0.7156 | 0.0445 | 0.0625 | -0.0288 | 0.1352 | 0.1179 |
| Chili | 0.9571 | 0.2860 | 0.3040 | 0.3388 | -0.6233 | 0.3593 |
| Sugar | 0.7015 | 0.1047 | 0.1227 | 0.1575 | 0.1954 | -0.0122 |

Sources: research findings

The value of own price elasticity for the commodities of rice, corn, beef, shallot, chili, and sugar in non poor households is respectively -0.1059, -0.2559, -0.6280, -0.0288, -0.6233, and -0.0122. It means the increase in the price of rice, corn, beef, shallot, chili, and sugar commodities by one percent will reduce the demand for rice, corn, beef, shallot, chili, and sugar commodities by 0.1059 percent, 0.2559 percent, 0.6280 percent, 0.0288 percent, 0.6233 percent, and 0.0122 percent. In table 4, most of the cross-price elasticity is positive, it means that there is substitute relationship between strategic foods. On the other hand shows that non poor households rice and beef have a substitution relationship with all strategic foods.

CONCLUSION

The strategic share of food expenditure in non poor households is influenced by food prices related, other food prices, total expenditure, the number of household members, the stone index, and the IMR. Beef, shallot, and chilli are luxury items because the value of expenditure elasticity is more than one ($\eta > 1$). Beef is the highest of Marshallian price elasticity is 1.59%, followed by corn (1.11%), shallot (0.90%), sugar (0.89%), rice (0.21%), and chilli (0.01%). The value of Hicksian elasticity for the commodities of rice, corn, beef, shallot, chili, and sugar in non poor households is respectively -0.1059, -0.2559, -0.6280, -0.0288, -0.6233, and -0.0122. The Marshallian and Hicksian cross price analysis shows that rice has a substitution relationship to all other strategic foods (corn, beef, shallots, chilies, and sugar).

REFERENCES

- Abdulai, A., & Aubert, D. (2004). A cross-section analysis of household demand for food and nutrients in Tanzania. *Agricultural Economics*, 31(1), 67–79. <https://doi.org/10.1016/j.agecon.2003.03.001>
- Akbay, C., Boz, I., & Chern, W. S. (2007). Household food consumption in Turkey. *European Review of Agricultural Economics*, 34(2), 209–231. <https://doi.org/10.1093/erae/jbm011>
- Akinbode, S. O. (2015). A linear approximation almost ideal demand system of food among households in South-West Nigeria. *International Journal of Social Economics*, 42(6), 530–542. <https://doi.org/10.1108/IJSE-08-2014-0165>
- Andreyeva, T., Long, M. W., & Brownell, K. D. (2010). The impact of food prices on consumption: A systematic review of research on the price elasticity of demand for food. *American Journal of Public Health*, 100(2), 216–222. <https://doi.org/10.2105/AJPH.2008.151415>
- Anindita, R., Sadiyah, A. A., Khoiriyah, N., & Nendyssa, D. R. (2020). The demand for beef in Indonesian urban. *IOP Conference Series: Earth and Environmental Science*, 411(1). <https://doi.org/10.1088/1755-1315/411/1/012057>
- Assegaf, N. A. (2015). *Konsep Kesejahteraan dan Problematika Kemiskinan Strategi Pengentasan Kemiskinan Melalui Program BLT*. Intrnas Publishing.
- Berges, M. E., & Casellas, K. S. (2002). A Demand System Analysis of Food for Poor and Non Poor Households . The Case of Argentina. *Paper Prepared for Presentation at the Xth EAAE Congress 'Exploring Diversity in the European Agri-Food System, August*, 28–31.
- Bilgic, A., & Yen, S. T. (2013). Household food demand in Turkey: A two-step demand system approach. *Food Policy*, 43, 267–277. <https://doi.org/10.1016/j.foodpol.2013.09.004>
- BPS. (2016). *Perhitungan dan Analisis Kemiskinan Makro Indonesia*.
- Dávila, O. G. (2010). Food security and poverty in Mexico: The impact of higher global food prices. *Food Security*, 2(4), 383–393. <https://doi.org/10.1007/s12571-010-0077-0>
- Deaton, A., & Muellbauer, J. (1980). An Almost Ideal Demand System. *The American*

- Economic Review*, 70(3), 312–326. <http://www.jstor.org/stable/1805222>
http://www.jstor.org/stable/1805222?seq=1&cid=pdf-reference#references_tab_contents
<http://about.jstor.org/terms>
- Erhabor, P. O. I., & Ojogho, O. (2011). Demand Analysis for Rice in Nigeria. *Journal of Food Technology*, 9(2), 66–74. <https://doi.org/10.3923/jftech.2011.66.74>
- Green, R., & Alston, J. M. (1990). Agricultural & Applied Economics Association Elasticities in AIDS Models. *Source: American Journal of Agricultural Economics*, 72(2), 442–445.
- Hayat, N., Hussain, A., & Yousaf, H. (2016). Food Demand in Pakistan: Analysis and Projections. *South Asia Economic Journal*, 17(1), 94–113. <https://doi.org/10.1177/1391561415621826>
- Hoelman, M. B., Parhusip, B. T. P., Eko, S., Bahagijo, S., & Santono, H. (2015). *PANDUAN SDGs Untuk Pemerintah Daerah (Kota dan Kabupaten) dan Pemangku Kepentingan Daerah*. International NGO Forum on Indonesian Development (INFID).
- Khoiriyah, N., Anindita, R., Hanani, N., & Muhaimin, A. W. (2020). Animal food demand in Indonesia: A quadratic almost ideal demand system approach. *Agris On-Line Papers in Economics and Informatics*, 12(2), 85–97. <https://doi.org/10.7160/aol.2020.120208>
- Kumar, P., Kumar, A., Parappurathu, S., & Raju, S. S. (2011). and “Developing a Decision Support System for Agricultural Commodity Market Outlook” (NAIP-subproject at NCAP) Estimation of Demand Elasticity for Food Commodities in India §. *Agricultural Economics Research Review*, 24(June), 1–14.
- Ma, H., Huang, J., Rozelle, S., & Rae, A. N. (2003). *Livestock Product Consumption Patterns in Urban and Rural China*. February. <http://ageconsearch.umn.edu/bitstream/23689/1/wp030001.pdf>
- Mwenjeri, G. W., Mwakubo, S., Kipsat, M. J., & Koome, M. (2016). Analysis of household food demand patterns in Laikipia County , Kenya. *African Journal of ...*, 1(December), 323–330. <https://ageconsearch.umn.edu/record/263439/>
- Niimi, Y. (2005). *An Analysis of Household Responses to Price Shocks in Vietnam: Can Unit Values Substitute for Market Prices?* 1–60. <http://www.sussex.ac.uk/Units/PRU/wps/wp30.pdf>
- Pangaribowo, E. H. (2010). Food Demand Analysis of Indonesian Households: Do They Eat Better or Smoke When They Get Richer? *International Conference on Eurasian Economies 2010, Widodo 2006*, 446–452.
- Sa'diyah, A. A., Anindita, R., Hanani, N., & Muhaimin, A. W. (2019). Strategic Patterns of Households' Food Consumption in Indonesia. *Russian Journal of Agricultural and Socio-Economic Sciences*, 87(3), 79–83. <https://doi.org/10.18551/rjoas.2019-03.10>
- Sacli, Y., & Ozer, O. O. (2017). Analysis of factors affecting red meat and chicken meat consumption in Turkey using an ideal demand system model. *Pakistan Journal of Agricultural Sciences*, 54(4), 933–942. <https://doi.org/10.21162/PAKJAS/17.5849>
- Sengul, S., & Tuncer, İ. (2005). Poverty levels and food demand of the poor in Turkey. *Agribusiness*, 21(3), 289–311. <https://doi.org/10.1002/agr.20049>

- Shiba, M., Rahman, S. M., & Chidmi, B. (2017). Consumer demand for meat in Kenya: An examination of the linear approximate almost ideal demand system. *Southern Agricultural Economics Association (SAEA)*, 1–19.
- Suryahadi, A., Yumna, A., Raya, U. R., & Marbun, D. (2010). Review of Government's Poverty Reduction Strategies, Policies, and Programs in Indonesia. *Research Report, SMERU Research Institute, October*, 1–43. <http://www.smeru.or.id/report/research/povertyreductionreview/povertyreductionreview.pdf>
- Tekgüç, H. (2012). Separability between own food production and consumption in Turkey. *Review of Economics of the Household*, 10(3), 423–439. <https://doi.org/10.1007/s11150-011-9126-5>
- Wadud, M. A. (2006). An almost ideal demand system analysis of meat demand in Bangladesh Using the Almost Ideal Demand System. *Bulgarian Journal of Agricultural Science*, 19(1), 32–39.
- Weliwita, A., & Epaarachchi, R. (2003). *Forward Contracts : A Market Based Forward Contracts : A Market Based Alternative to Government Intervention in Agriculture Marketing in Sri Lanka* (Issue 5).
- Widarjono, A., & Rucbha, S. M. (2016). Household Food Demand in Indonesia : *Journal of Indonesian Economy and Business*, 31(2), 163–177.

ISBN 978-623-93920-9-3



STRATEGIC FOOD DEMAND FOR NON-POOR HOUSEHOLDS IN INDONESIA

ORIGINALITY REPORT

19%

SIMILARITY INDEX

16%

INTERNET SOURCES

12%

PUBLICATIONS

6%

STUDENT PAPERS

PRIMARY SOURCES

| | | |
|----|---|----|
| 1 | rjoas.com Internet Source | 2% |
| 2 | agecon2.tamu.edu Internet Source | 2% |
| 3 | 1library.net Internet Source | 1% |
| 4 | eprints.archivescience.com Internet Source | 1% |
| 5 | Submitted to Wawasan Open University Student Paper | 1% |
| 6 | Submitted to Universitas Islam Malang Student Paper | 1% |
| 7 | journals.sagepub.com Internet Source | 1% |
| 8 | nbn-resolving.org Internet Source | 1% |
| 9 | afjrd.org Internet Source | 1% |
| 10 | www.bircu-journal.com Internet Source | |

1 %

11

www.fccollege.edu.pk

Internet Source

1 %

12

Submitted to STIE Perbanas Surabaya

Student Paper

<1 %

13

ir-library.egerton.ac.ke

Internet Source

<1 %

14

repository.unisma.ac.id

Internet Source

<1 %

15

journal.unnes.ac.id

Internet Source

<1 %

16

Submitted to Texas Woman's University

Student Paper

<1 %

17

Submitted to University of Economics Ho Chi Minh

Student Paper

<1 %

18

Dynamics of Poverty in Rural Bangladesh, 2013.

Publication

<1 %

19

cache.oxy.edu

Internet Source

<1 %

20

jurnal.polbangtanmalang.ac.id

Internet Source

<1 %

21

Submitted to Universitas Jember

Student Paper

<1 %

| | | |
|----|--|------|
| 22 | China Agricultural Economic Review, Volume 8, Issue 2 (2016) Publication | <1 % |
| 23 | University of Tennessee, Knoxville Publication | <1 % |
| 24 | coek.info Internet Source | <1 % |
| 25 | www.research-collection.ethz.ch Internet Source | <1 % |
| 26 | researcharchive.lincoln.ac.nz Internet Source | <1 % |
| 27 | www.journalrepository.org Internet Source | <1 % |
| 28 | Adesola Adebola Ikudayisi. "Food Demand and Its Differential Effects on Household Food Access in Nigeria", Studies in Microeconomics, 2023 Publication | <1 % |
| 29 | Boysen, Ole. "Food Demand Characteristics in Uganda: Estimation and Policy Relevance", South African Journal of Economics, 2015. Publication | <1 % |
| 30 | Faharuddin Faharuddin, M. Yamin, Andy Mulyana, Y. Yunita. "Impact of food price increases on poverty in Indonesia: empirical evidence from cross-sectional data", Journal | <1 % |

of Asian Business and Economic Studies,
2022

Publication

31

P WAGGONER. "Anticipating the frequency distribution of precipitation if climate change alters its mean", *Agricultural and Forest Meteorology*, 1989

Publication

<1 %

32

Sakiru Oladele Akinbode. "A linear approximation almost ideal demand system of food among households in South-West Nigeria", *International Journal of Social Economics*, 2015

Publication

<1 %

33

Xiaobo Zhang, Timothy D. Mount, Richard N. Boisvert. "The Demand for Food Grain in China: New Insights into a Controversy", *Agricultural and Resource Economics Review*, 2016

Publication

<1 %

34

Xuepin Wu, Yongjun Ma. "The causes of internal habit formation among Chinese urban residents: a multi-layer model perspective", *Economic Research-Ekonomska Istraživanja*, 2023

Publication

<1 %

35

docs.iza.org

Internet Source

<1 %

36

file.pide.org.pk

Internet Source

<1 %

| | | |
|----|---|------|
| 37 | jukuri.luke.fi Internet Source | <1 % |
| 38 | macau.uni-kiel.de Internet Source | <1 % |
| 39 | ndpc.gov.gh Internet Source | <1 % |
| 40 | repository.usd.ac.id Internet Source | <1 % |
| 41 | Isaac Gershon Kodwo Ansah, Emmanuel Marfo, Samuel Arkoh Donkoh. "Food demand characteristics in Ghana: An application of the quadratic almost ideal demand systems", <i>Scientific African</i> , 2020 Publication | <1 % |
| 42 | Ken-ichi Mizobuchi, Hisashi Tanizaki. "On estimation of almost ideal demand system using moving blocks bootstrap and pairs bootstrap methods", <i>Empirical Economics</i> , 2013 Publication | <1 % |
| 43 | Melli Suryanty S. N., Toshinobu Matsuda. "Rural Household Food Consumption in Bengkulu, Indonesia: Estimating a Demand System Based on SUSENAS Microdata", <i>Journal of Agricultural Science</i> , 2022 Publication | <1 % |
| 44 | Pimbucha Rusmevichientong, Harry M. Kaiser. "Are there halo effects of US grain | <1 % |

export promotion?", Applied Economics, 2011

Publication

45

Wisdom Akpalu, Michael Adu Okyere. "Fish Protein Transition in a Coastal Developing Country", Environmental and Resource Economics, 2022

Publication

<1 %

46

kups.ub.uni-koeln.de

Internet Source

<1 %

Exclude quotes Off

Exclude matches Off

Exclude bibliography Off