

# Demand for Food of Indonesian Households: Evidence from Longitudinal Data



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## Background

Pursuing food security is one of the most important Indonesian government's agendas. Indonesian government has been successful in maintaining aggregate food production and supply, yet this achievement has not been transferred to household level. The government has formulated several models of food security and established Food Security Council to mitigate the food insecurity (Rusastra et al. 2008). In addition, food security program has been provided since 1998. Nevertheless, poverty and food insecurity remain. The failure might have to do with the inadequate information on household food expenditure patterns which vary across income groups and regions. Designing remedial policy measures, without the comprehensive understanding of the household demand behavior, proved ineffective. Hence, it is vital to gain a thorough knowledge of the factors underlying the consumption pattern behavior for future food policy direction.

## Objectives

It is important for public policy to know how consumers change their expenditure on goods in response to the changes of prices and income. Hence, the objectives of this study are:

- to improve knowledge and understand the heterogeneous pattern of food consumption behavior in Indonesia
- to examine the food expenditure patterns across income groups and regional differences.

## Data and Method

- Three waves of Indonesian Family Life Survey Data (IFLS) 1997, 2000 and 2007.
- Eight food groups: staple, vegetables and fruit, meat and fish, oil, dairy products, adult goods, snack and dried food, and other food (aggregated from 38 food items' expenditure).

Table 1. Selected Household Characteristics

| Variables                                   | Pooled | Poorest | Richest | Rural | Urban |
|---|--------|---------|---------|-------|-------|
| Household size                              | 4.37   | 5.38    | 3.49    | 4.22  | 4.56  |
| Education of HH Head (years of schooling)   | 6.34   | 3.73    | 10.12   | 4.86  | 8.04  |
| Age of Household Head                       | 51.12  | 51.38   | 51.33   | 51.09 | 51.15 |
| Proportion of Male Headed                   | 0.80   | 0.83    | 0.77    | 0.81  | 0.79  |
| Proportion of Farm Household                | 0.40   | 0.56    | 0.20    | 0.62  | 0.15  |
| Income per capita (in '000 rupiah, monthly) | 295    | 70      | 1050    | 226   | 377   |
| N   | 16966  | 1676    | 1676    | 9180  | 7786  |

This study employs the Quadratic Almost Ideal Demand Systems (Banks et al. 1997) with demographic effects added in the model.

$$w_i = \alpha_i + \Sigma \gamma_i \ln p_j + \beta_i \ln(m/P(p)) + \lambda_i/b(p) [\ln(m/P(p))]^2 + \Sigma \delta_{ij} D_{jt} + u_{it}$$

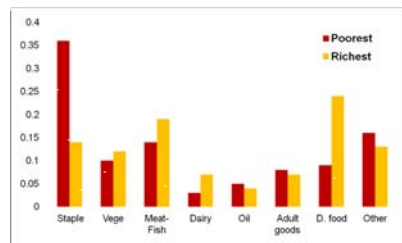
where,  $w_i$  is food budget share of eight commodities,  $p$  is a set of prices,  $m$  is the total expenditure and  $D$  is a set of household characteristics including household size, urban/rural, gender of household head, and level of education of household head.

- Table 1 shows huge gap characteristics of poorest and richest households.
- Poorest households tend to have larger household size, low income per capita (less than 50 cents per day), and not complete primary school.

## Results

- The poorest households' dominant expenditure is staple food and the households are less likely to consume dairy product.
- The richest group also spend some of their budget on adult goods, yet their share of expenditure for better diet such as vegetables, meat and fish and dairy products are much larger than share of adult goods expenditure.
- Expenditure of snack and dried food formed the dominant food expenditures for the richest households.

Figure 1. Food Budget Shares



- Most food groups are found to be elastic except for staple food, oils and other goods which are found to be inelastic and thus necessities for the 'all samples'.
- Dairy products have the highest expenditure elasticity followed by meat and fish.
- Expenditure elasticity for staple food is elastic for the poorest group.
- Expenditure elasticity for adult goods of the poorest households is the highest.

Figure 2. Effect of HH Head Education on Food Expenditures

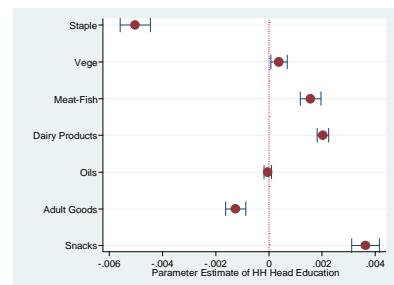


Table 2. Expenditure Elasticities

|                  | All Samples     | Poorest         | Middle          | Richest         | Urban           | Rural           |
|------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Staple           | 0.7564 (0.0083) | 1.0152 (0.0424) | 0.8798 (0.0201) | 0.8623 (0.0356) | 0.7866 (0.0135) | 0.7566 (0.0104) |
| Vege and Fruit   | 1.0532 (0.0094) | 0.9967 (0.0639) | 0.9754 (0.0259) | 0.8380 (0.0288) | 1.0362 (0.0164) | 1.0659 (0.0130) |
| Meat and Fish    | 1.1475 (0.0079) | 1.0358 (0.0549) | 1.1318 (0.0227) | 1.0494 (0.0228) | 1.0876 (0.0142) | 1.1771 (0.0109) |
| Dairy            | 1.3025 (0.0140) | 1.2800 (0.1240) | 1.3793 (0.0453) | 1.1246 (0.0377) | 1.2017 (0.0779) | 1.4078 (0.0208) |
| Oils             | 0.8879 (0.0115) | 0.7960 (0.0712) | 0.7484 (0.0296) | 1.0744 (0.0511) | 0.9292 (0.0220) | 0.8625 (0.0151) |
| Adult Goods      | 1.0667 (0.0159) | 1.3568 (0.1327) | 1.2806 (0.0442) | 0.9849 (0.0560) | 1.0378 (0.1326) | 1.1030 (0.0205) |
| Snack-Dried Food | 1.1586 (0.0125) | 0.9091 (0.1021) | 1.0203 (0.0373) | 1.0876 (0.0311) | 1.1163 (0.0151) | 1.1097 (0.0177) |
| Other            | 0.9131 (0.0070) | 0.9138 (0.0465) | 0.8963 (0.0189) | 1.0143 (0.0241) | 0.9160 (0.0118) | 0.9065 (0.0094) |

Standard errors in parentheses

Table 3. Marshallian Price Elasticities

|                  | All Samples      | Poorest          | Middle           | Richest          | Urban            | Rural            |
|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Staple           | -0.7706 (0.0324) | -0.9473 (0.1081) | -0.7457 (0.0440) | -0.8080 (0.1460) | -0.6827 (0.0642) | -0.8380 (0.0391) |
| Vege and Fruit   | -0.9580 (0.0160) | -1.0703 (0.0654) | -0.9848 (0.0266) | -0.7772 (0.0488) | -0.8483 (0.0228) | -1.0297 (0.0231) |
| Meat and Fish    | -1.0032 (0.0331) | -1.1402 (0.1510) | -0.9741 (0.0553) | -1.1228 (0.0979) | -0.9202 (0.0496) | -1.0532 (0.0454) |
| Dairy            | -0.9771 (0.0367) | -1.2391 (0.1786) | -0.8917 (0.0660) | -1.0179 (0.0986) | -0.9419 (0.0542) | -0.9961 (0.0535) |
| Oils             | -0.7367 (0.0292) | -0.7757 (0.0981) | -0.7380 (0.0421) | -0.6215 (0.1221) | -0.7981 (0.0454) | -0.6891 (0.0390) |
| Adult Goods      | -0.9451 (0.0438) | -1.2450 (0.1868) | -0.9617 (0.0696) | -1.1954 (0.1439) | -0.7940 (0.1268) | -1.0255 (0.0526) |
| Snack-Dried Food | -0.9374 (0.0181) | -0.7680 (0.0954) | -0.9321 (0.0313) | -0.9453 (0.0419) | -0.9649 (0.0411) | -0.9043 (0.0287) |
| Other            | -0.9495 (0.0230) | -0.7258 (0.0874) | -0.9146 (0.0356) | -0.8961 (0.0740) | -0.9037 (0.0357) | -0.9676 (0.0305) |

Standard errors in parentheses

- The magnitude of price elasticities between the poorest and the richest households do not vary significantly.
- The poorest and the richest households are price elastic on meat and fish, dairy products and adult goods.

- Male-headed household has a negative and significant impact on the consumption of vegetables, meat and fish, dairy products and snack and dried food but it has a positive and significant impact on adult goods expenditures.
- The education of household head has positive and significant influence on vegetables, meat and fish, dairy products, snack and dried and other food but affects staple and adult goods expenditures negatively.

## Conclusions

- All food groups have positive expenditure elasticities but the differing magnitude of those elasticities reflects various food categories.
- Poorest households demonstrate the highest expenditure elasticity on adult goods.
- This finding explains the failure of government intervention in the case of food security program meaning that poorest households spend their extra resource to more 'entertaining' goods.
- On the other hand, there is a potential to raise poor households' nutritional status since they are also expenditure elastic on meat and fish and dairy products.
- As expenditure elasticities for all food commodities surpass the own price elasticities, policies which lead to income generation might be more effective compared to policies that affect price.
- In a developing country with wide income disparity and rural-urban gap like Indonesia, a comprehensive analysis of food demand which account those differences is essential to get a better understanding of household demand behavior and to reshape the food policy direction.

## References

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