Demand analysis of chronic poor people in Rural Bangladesh: A Scenario using Almost Ideal Demand System Model

Presented by

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- Consumer demand behavior is a diverse kind of study that sketches the pen picture of livelihood and the way of living of common people.

- This human behavior study is socially significant to study as it is involving with all consumption related activities of the people and thus, has a mutual attachment with household budget data.

Objective

- Our present concern is studying the consumption pattern across chronic poor people through the examination of 510 household budget data.

Identifying Chronic Poor Group

- On an average 1 to 10 years period of time has been considered as the duration of changing dynamism through the economic status. Chronic poor people are referred those whose mean income or expenditure is always below the poverty line

Identifying Chronic Poor Group

- The chronically poor households inherited poverty generation by generation and remain poor for more than 10 years.

Sampling design

At the first stage 8 most vulnerable and least developed districts have been selected. The administrative division has been considered as the criterion of stratification at the first stage.

In order to select the least developed district, a composite index has been computed. Two least developed districts have been, then, selected based on the composite index from each division.

Sampling Design

- At the second stage, from each selected district, 4 villages were selected with "Probability Proportional to Size (PPS)" method. Thus a total of 32 villages have been chosen for the study.

- At the third stage the criterion of stratification being the economic status of households. In each selected village, a complete list of household has been prepared.

Sampling Design

- A total of 550 households have been selected randomly among all the chronically poor households.

- The survey team has administered the data collection process during December 2013 and January 2014 and the study is based on this entire cross-sectional data.

AIDS Model

- For the utility maximizing consumer, the total expenditure x is equal to c (u,p) and this equality can be inverted to give u a function of p and x; these are the AIDS demand function in the budget share form,

$$W_i = \alpha_i + \sum_j \gamma_{ij} \log p_j + \beta_i \log(X / p); \quad i\ j = 1,2,.....n \quad .....(3.7)$$

Where p is price index defined by

$$\log p = \alpha_0 + \sum_k \alpha_k \log p_k + \frac{1}{2} \sum_j \sum_k \gamma_{kj} \log p_k p_j$$

Dependent Variable

- In the present study, budget share for a specific commodity is considered as the dependent variable.

- Budget share can be derived by dividing the total per capita expenditure for a specific item by the total per capita household expenditure.

Independent variables and Food and non food Items

- The predictors of the study are log of per capita total monthly household expenditure, log of household size, dependency ratio, age of household head, sex of household head, year of schooling of household head and occupation levels of the household head.

- The selected food items are cereal, pulse, oil, meat and fish, vegetable, fruit and other food items. The non-food items are:fuel, dress, medicare, education, communication and other non-food items.

Model Selection

- In case of performing AIDS model for chronic poor groups, the set of predictors must be assessed by the statistical method. To find the most parsimonious set of variables, a stepwise regression has been executed for each of the food items.

- The model containing explanatory variables that are significant for most of these items has been considered ultimately for this special groups.

Model Improvement

- Four more Predictors have been chosen in this case to improve the current model those are : ‘household size’, ‘log of dependency ratio’, ‘log of quadratic per capita total expenditure’ and ‘square of age of household age’.

- In one particular group, for all the items, each of the above regressors is tested by running the regression model with and without the regressors and found as insignificant for most of the cases.

Final Demand Model

- *Final Models for chronically poor can be viewed as - :*

$$W_i = \alpha_i' + \beta_i(\log x) + \delta_i(\log z) + \tau_i(DR) + \lambda_i(A) + + \eta_i S + + \sum_{j=1}^{3} \theta_{ij} O_j$$

$x = per \quad capita \quad \exp$

$Z = Household \quad size$

$DR = Dependency \quad Ratio$

$A = Age \quad of\ Household \quad head$

$S = Sex \quad of\ Household \quad \ldots head$

$E = Year \quad of \quad Schooling$

$O = Occupation \quad Dummy$

Validation of the Model

- Multicollinearity: the value of Variance Inflation Factor (VIF) has been computed for all predictors in each model and has been observed less than 10 indicating that the predictors of the model under study are not collinear.

- Heteroscedasticity: Performing the Breusch-Pagan Godfrey (BPG) test a number of models have been found encountered by this problem.

- To get rid of the problem, AIDS model has been divided through the square root of per capita total expenditure that makes the Heteroscedastic models into regression-through-origin models.

Regression Method

- Two kinds of regression method have been considered :
- Present study includes 2 food items: pulse and fruit for which zero expenditure is more than 25 percent. To estimate the corresponding demand 'Tobit regression model' (Tobin, 1958) has been applied.
- For the remaining 5 items the zero expenditure is much lower than 25 percent and OLS (Ordinary Least Square) method for multivariate regression model has been used.

Results

- Budget share of all items are responsive to the expenditure variable significantly in the entire demand models.
- Only cereal and dresses are necessary items for chronic poor people. Except these, all other considered items are far away from their capacity and luxury in economical sense.

Expenditure elasticity

Items	Chronically Poor Household
Cereal	0.8254
Pulse	0.9346
Oil	1.0258
Vegetable	1.0526
Meat and Fish	2.9256
Fruit	1.9230
Other Food	1.5640
Fuel	1.5926
Dress	0.9828
Education	2.9870
Communication	2.8150
Medicare	2.0050
Other Non-food	2.8920

Household size

For chronic poor households,
the sign of coefficient has been found as
Negative: oil, vegetables, meat-fish, and pulse
Positive: Cereal, fuel, dress

Increasing household size can cause significant growing amount of consumption in the upper economic class. As the economic position goes downward, this increasing amount turn to be negative and in severe case it strike even at the most essential level. chronic poor families have to cut down the costs from some necessary items for larger size of household.

Dependency Ratio

- coefficient **of** *Dependency Ratio* has been found significant and positive for cereal and pulse, vegetables and Medicare.

- Again, the value is significantly negative for oil, other food ad dress.

Dependency Ratio

- The chronic poor families can consume more amounts on cereal, pulse and veg for larger dependency ratio.
- Simultaneously the consumed amount of vegetables, oil, and other food has been shrinking.
- Dependency ratio has a severe affect for consumption as for larger dependency these kinds of families have to sacrifice the basic need of the members.

Age of household head

- *Age of household head* is a positive fator for Chronic poor people.

- Consumption has been significantly increased for cereal, oil, fuel and Medicare.
- Consumption decreases for vegetables and communications with the growing age of head.

year of schooling

- Earlier studies said, as the educational achievement rises, the economic position also rises, and then the consumption of necessary items decreases.
- In the same way, for upward achievement in education, consumption of some comparatively luxury items increases.

year of schooling

- Unfortunately, this discussion does not take into account the consumption about chronically poor people. It is just worthless to talk about them in this case.
- The educational background of the household head of chronically poor families is very poor and in most of the cases they are illiterate also and this variable has been found insignificant for the consumption model of chronically poor families.

sex of household head

- *The sex of household head* has been found very significant for chronically poor households.
- OLS parameters of AIDS model for chronically poor households revealed that sex dummy variable of household head is significant for cereal, oil, vegetable, other food items, fuel and dress.
- Again, in case of Tobit parameters of the model shows the result that sex dummy is significant for pulse only.
- For all the cases, the sign is positive.

sex of household head

- Here, almost all the items are extremely vital and only accessible for the chronic poor people. From this upshot it can be realized that in the chronically poor group, the female-headed families have to consume fewer amounts of all these necessary items than the male headed families and the parameters have been found insignificant for the other items as they are beyond the territory of them.
- Thus female-headed chronic poor families are in most deprived position which can be viewed as the interaction effect of both gender and poverty discrimination.

Thank You All