3-2015

Impact of Household and Demographic Characteristics on Poverty in Bangladesh: A Logistic Regression Analysis

Nusrat Farah
Eastern Illinois University

Impact of Household and Demographic Characteristics on Poverty in Bangladesh: A Logistic Regression Analysis

Nusrat Farah
Eastern Illinois University

Abstract

Poverty is multi-dimensional in nature and depends on interactions of various socio-economic factors. Several demographic and health factors can shape up the economic status of a household, and theory suggests that the ability of a household to earn a given level of income can depend on the characteristics internal to the household. While most studies done on poverty measurements rely on the income, expenditure and consumption data, this study has used data from Bangladesh Demographic and Health Surveys (DHS). The main objective of this paper is to identify the factors that have relative effect on poverty of the household. The principal component analysis was used to create an asset index which gave the Social Economic Status (SES) of each household. The variables were tested as a univariate model to see the effect on SES. Finally, a logistic regression was estimated based on this data with the SES (that is poor and non-poor) as the dependent variable and a set of demographic variables as the explanatory variables. The results presented in this paper suggest that the DHS data can be used to determine the correlates of poverty. The results also suggest that demographic and household data can describe poverty. The probability of a household being poor depends on the ownership of assets and other household data. A closer look was then taken to identify whether the results were driven by rural or urban property. The further analyses suggest that rural poverty is significantly affected by the demographic and household characteristics. The results were mostly driven by rural poverty rather than urban poverty. The paper has some policy values, as it suggests that rural people more suffer from the plight of poverty than do the urban people. Hence, the government needs to focus on improving the standard of living in rural areas of Bangladesh.

Keywords: Principal components analysis, Logistic regression, Demographic and Household Characteristics

Introduction

Poverty being multi-dimensional in nature is the outcome of various interactive socioeconomic factors. The incidence of poverty is purposive by multiple interactive factors operating at both micro and macro levels. The measurement and analysis of poverty have traditionally relied on reported income or consumption and expenditure as the preferred indicators of poverty and living standards.

Sahn and Stifel (2003) argued that income is generally the measure of choice in developed countries while the preferred metric in developing countries is an aggregate of a household's consumption expenditure. In the developing countries, expenditure is preferred over income due to the difficulties involved in the measuring income. Similarly, with the expenditure data the limitation is the extensive data collection, which is time-consuming and costly, as stated by Vyas and Kumaranayake (2006). Poverty can also be measured using demographic and household data.

The objective of this paper is to develop a poverty line using demographic and household data of Bangladesh. An asset index has been developed using Principal Component Analysis (PCA) following Achia, Wangombe and Khadioli (2010) from asset ownership variables in the Bangladesh Demographic and Health Survey (2011). A poverty line then applied to identify the poor and non-poor households. Finally, a logistic regression analysis has been done to identify the key determinants of poverty in Bangladesh.

Literature Review

The use of demographic and health survey data to the measure of poverty is not unique. Filmer and Pritchett (2001) used Demographic and Healthy Survey data to show that the relationship between wealth and enrollment in school can be estimated without income or expenditure data,

by using household asset variables. PCA provided acceptable and reliable weights for an index of asset to serve as a measure for wealth. In the four countries examined- India, Indonesia, Nepal and Pakistan- this approach produced reasonable results.

Filmer and Pritchett (1998, 1999) and Filmer (2000) explored how education attainment profile differed by wealth and gender in more than 35 countries using the DHS data. Sahn and Stifel (2000) employed demographic and healthy survey data in an analysis of poverty in nine African countries; they used principal component analysis to construct asset index.

Booysen (2002) used demographic and healthy surveys to measure differences in socioeconomic status of South Africa households. The asset index used represented a comparable indicator of poverty in South Africa.

In their study, Geda et al. (2001) used binomial and ordered logit analysis and identified the following variables as the key determinants of poverty: size of household, places of residence (urban or rural), level of schooling and engagement in agricultural activity, both in rural and urban areas.

The study on the determinant of poverty was done by Oyugi et al (2000). In their study they used Probit Model to analysis the Welfare Monitoring survey (1994) data. The predictors (household characteristics) used in the study included holding area, livestock unit, the proportion of household members able to read and write, household size, sector of economic activity (agriculture, manufacturing/industrial sector or wholesale/retail trade), source of water for household use, and off-farm employment. The result showed that almost all the variables used were important determinants of poverty.

Rodriguez and Smith (1994) used a logistic regression model to estimate the effect of different economic and demographic variables on the probability of a household being in poverty in Costa

Rica. The source of the data was from National Household- Income (1986). Their results showed that poverty was higher for the household whose heads had a lower level of education.

An asset-index approach to the measuring of poverty is one alternative to income or consumption and expenditure. This approach, although lacking data on income, consumption and expenditure, collects information on ownership of a range of durable assets, which include: car/track; refrigerator; television; radio; bicycle; telephone and solar power; housing characteristics, which include material of dwelling floor; roof and toilet facilities; and access to basic services, which includes electricity supply and sources of drinking water. This approach was used by Achia, Wangombe and Khadioli (2010) to determine the explanatory variables for poverty using demographic and health survey data of Kenya.

Previous studies on poverty in Bangladesh relied on the expenditure and consumption data and used the poverty line computed from the Bangladesh Integrated Household Survey (BIHS) data using the cost of basic needs method or food energy intake method. While literature on poverty measurement is by now relatively advanced and abundant, there are very few studies dealing with finding the determinant or causes of poverty.

Few papers studied the impact of household characteristics on poverty in the case of Bangladesh, while most of these papers focused on few household and demographic characteristics. Also, a limited number of papers can be attributed to the impact of household and demographic characteristics on poverty in general.

Rahman (2013) examined how household characteristics affect the probability of a household being poor via labor market interactions. The central premise was that the ability of a household to exploit available income-earning opportunities is shaped by characteristics inherent to the household. He concluded that poverty is high in households with young household heads, low-

level education of the household heads, female heads, disability of household members, larger size, a predominance of female members, excessive dependency burden or a high proportion of female workers. However, no study was undertaken to see the impact of demographic characteristics on poverty particularly referring Bangladesh.

Methodology

The Data

The data used to analyze the poverty is taken from the 2011 Demographic and Health Surveys (DHS) for Bangladesh. The survey covered both rural and urban populations. The survey collected information relating to demographic and detailed information on asset ownership, access to public services and housing characteristics. A household was defined as a person or a group of people related or unrelated to each other who live together in the same dwelling unit and share a common source of food.

The survey is based on a two-stage stratified sample of households. In the first stage, 600 Enumeration Areas (EAs) were selected with probability proportional to the EA size, with 207 clusters in urban areas and 393 in rural areas. A complete household listing operation was then carried out in all the selected EAs to provide a sampling frame for the second-stage selection of households.

In the second stage of sampling, a systematic sample of 30 households on average was selected per EA to provide statistically reliable estimates of key demographic and health variables for the country as a whole, for urban and rural areas separately, and for each of the seven divisions. With this design, the survey selected 18,000 residential households to conduct the survey. Finally, 17,142 households were survey and the data was collected, summarized and presented in the household and demographic survey report.

Computation of an Asset Index using Principal Components Analysis

Principal Component Analysis (PCA) has been used to create an asset index based on data from the Bangladesh Demographic Household Survey (2011). The Bangladesh Demographic Household Survey (2011) included information regarding the ownership of durable goods, housing characteristic, access to services, along with basic demographic information concerning household size and composition.

Using PCA, the household variables were recoded into dichotomous variables, distinguishing between a household that owns the particular asset with the household that does not own that particular asset, or for which a particular statement about access to services is true with one that does not own the asset or for which the statement is not true. Hence, all variables take on a value of zero or one. The only variable that is included in the PCA as a continuous variable is the number of household members sharing a room for sleeping purposes.

The PCA is a multivariate statistical technique used to reduce the number of variables without losing too much information in the process. The PCA technique achieves this by creating a fewer number of variables, which explains most of the variation in the original variables.

The new variables that are created are linear combinations of the original variables. The first new variables will account for as much of the variation in the original data as possible.

Given p variables $X_1,..., X_p$ measured in n households, the p principal components $Z_1,..., Zp$ are uncorrelated linear combinations of the original variable, X1,…...,Xp given as:

$$Z_1 = a_{11}X_1 + a_{12}X_2 + \ldots\ldots + a_{1p}X_p$$

$$Z_2 = a_{21}X_1 + a_{22}X_2 + \ldots\ldots + a_{2p}X_p$$

.....

$$Z_p = a_{p1}X_1 + a_{p2}X_2 + \ldots\ldots + a_{pp}X_p$$

This system of equations can be expressed as $\boldsymbol{z}=\boldsymbol{A}\boldsymbol{x}$, where $\boldsymbol{z}=$ (Z_1,...,Zp), $\boldsymbol{x}$=(X_1,..., Xp) and $\boldsymbol{A}$ is the matrix of coefficients.

The coefficient of the first principal component, a_{11} ,..., a_{1p} are chosen in such a way that the variance of Z_1 is maximized subject to the constraint that a^2_{11} +...+a^2_{1p}=1. The variance of this component is equal to λ_1, the largest eigenvalue of $\boldsymbol{A}$.

The second principal component is completely uncorrelated with the first component and has variance equal to λ_2, the largest eigenvalue of $\boldsymbol{A}$. This component explains additional but less variation in the original variable than the first component subject to the same constraint. Further, principal components (up to the maximum of p) are defined in a similar way.

Each principal component is uncorrelated with all the others and the squares of its coefficients sum to one. The principal component analysis involves finding the eigenvalues and eigenvectors of the correlation matrix.

Logistic Regression Model

To identify key determinants of poverty, a dichotomous variable indicating whether the household is poor or not was calculated. That variable was named as Social Economic Status (SES). That is, SES is equal to 1 if the household is poor and 0 otherwise.

On the basis of Pearson's Chi-square statistic, it was determined whether the predictor variables—age of household head, size of household, educational level of the household head, type of residence(rural or urban), ethnicity, religion, sex ratio, dependency ratio, child-woman ratio and proportions of female members in the household were associated with the poverty index, SES. This helped to identify the important predictor variables associated with social status before setting up the final logit model. The main focus is to identify the determinants of poverty using the logit model from the available data.

A logistic regression model was used, given by

$$Logit(p) = ln\frac{p}{1-p} = \beta_0+\beta_1X_1+\beta_2X_2+\ldots\ldots+\beta_{12}X_{12}$$

where X_1 ,…, X_{10} were the predictor variables- type of residence(rural or urban), educational level of the household head, region, size of household, age of household head, sex of household head, land ownership, sex ratio, dependency ratio, child-woman ratio, proportions of female members in the household, household condition (households with able-bodied persons and persons with disabilities), respectively; and p denoted the probability that the household was poor.

The forward selection, backward elimination and stepwise (logistic) regression methods determined automatically which variables to add or drop from the model. The conditional options use a computationally faster version of the likelihood ratio test.

Results

The poverty index

Table 1 show all variables used in the construction of the asset index and the result of the PCAs. Because of standardization, all principal components will have a mean close to 0. The standard deviation is also given for each of the components, and these will be the square root of the eigenvalue.

Interpretation of the principal components is based on finding which variables are most strongly correlated with each component, i.e., which of these numbers are large in magnitude, the farthest from zero in either a positive or negative direction. The correlations between the principal components and the original variables are very important, as it will help to create the asset index, which will be needed to determine the poverty line. The first principal components have been used, as there is zero correlation between the components.

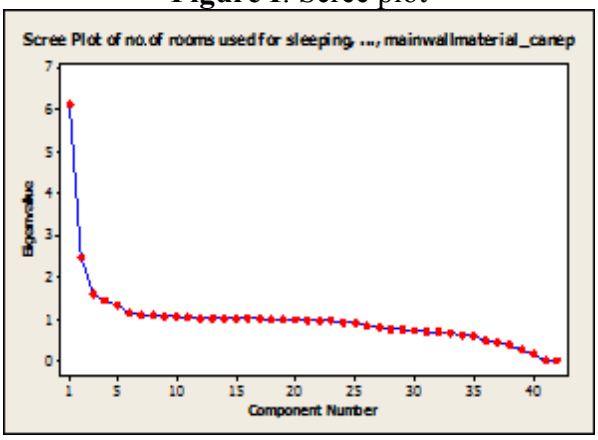
Table I: The Asset Index

Variable	Mean	S.D	Component Score	N	Variable	Mean	S.D	Component Score	N
Sources of drinking water					**Type of roof material**				
Bottled water	0.007	0.02	0.035	17142	Cardboard	0.00	0.01	0.002	17142
Tap water	0.004	0.02	0.027	17142	Cement	0.01	0.32	0.467	17142
Piped into dwelling	0.05	0.23	0.369	17142	Ceramic	0.00	0.04	0.054	17142
Piped to compound	0.03	0.18	0.459	17142	Palm	0.00	0.03	0.006	17142
Protected	0.002	0.04	0.107	17142	Tin	0.83	0.37	-0.435	17142
Public well	0.02	0.15	0.356	17142	Wood plank	0.00	0.01	0.002	17142
Rain water	0.05	0.07	0.169	17142	Thatch	0.03	0.17	0.029	17142
River	0.01	0.12	0.291	17142	Wood	0.00	0.04	0.015	17142
Tanker	0.00	0.01	0.024	17142	Grass	0.01	0.10	0.025	17142
Tube well	0.85	0.35	-0.722	17142	Tiles	0.00	0.01	0.001	17142
Unprotected	0.00	0.05	0.126	17142	Other	0.00	0.02	0.006	17142
Others	0.00	0.02	-0.010	17142	No roof	0.00	0.02	0.006	17142
Sanitation Facility					**Cooking fuel**				
Flush toilet	0.15	0.36	0.245	17142	Agriculture	0.27	0.44	-0.167	17142
Flush latrine	0.01	0.13	0.057	17142	Animal waste	0.08	0.27	-0.051	17142
Bucket	0.00	0.007	-0.001	17142	Biogas	0.00	0.04	0.030	17142
Compost	0.00	0.01	0.003	17142	Charcoal	0.02	0.05	-0.001	17142
Hanging	0.06	0.24	-0.084	17142	Coal	0.01	0.01	0.007	17142
No facilities	0.04	0.19	-0.078	17142	Electricity	0.02	0.05	0.060	17142
Pit latrine	0.59	0.49	-0.201	17142	Kerosene	0.02	0.05	0.044	17142
Ventilated	0.12	0.33	0.110	17142	Lpg	0.01	0.13	0.162	17142
Bush	0.00	0.007	-0.002	17142	Natural gas	0.11	0.31	0.356	17142
					Straw	0.01	0.10	-0.010	17142
					Wood	0.48	0.49	-0.099	17142
					Other	0.00	0.04	-0.014	17142
					No food	0.00	0.01	-0.001	17142
Types of floor material					**Other Durable goods**				
Earth or sand	0.71	0.45	-0.322	17142	Has electricity	0.61	0.48	0.280	17142
Carpet	0.00	0.02	0.018	17142	Has radio	0.08	0.27	0.045	17142
Cement	0.26	0.44	0.296	17142	Has television	0.42	0.49	0.298	17142
Ceramic	0.01	0.12	0.109	17142	Has refrigerator	0.15	0.35	0.284	17142
Palm	0.00	0.01	-0.003	17142	Has bicycle	0.25	0.43	0.036	17142
Parquet	0.00	0.01	0.000	17142	Has motorbike	0.60	0.23	0.137	17142
Wood Planks	0.00	0.03	0.001	17142	Has telephone	0.02	0.15	0.140	17142
Others	0.00	0.01	0.001	17142	Has mobile	0.79	0.40	0.189	17142
Polished	0.00	0.01	-0.005	17142	Owns land	0.45	0.49	0.091	17142
					Has electric fan	0.54	0.50	0.300	17142
					Has water pumps	0.06	0.24	0.166	17142
					Owns homestead	0.93	0.23	0.021	17142
					No. of rooms used for sleeping	2.34	4.64	0.041	17142

The results of PCA indicate that the first principal component explains 18.3% of the variation in the original variables and each subsequent component explains a decreasing proportion of variance.

The scree plot in Figure 1 shows the proportion of variance explained by each principal component and indicates that the first four components would sufficiently explain the original variables.

Figure I: Scree plot



In the construction of the social economic index, only the factor score (that's the eigenvectors) of the first principal component are used.

Cross Tabulations:

This section presents social economic status cross-tabulated by characteristics of the household, like education, household size, religion, region, age of household head, household owns land, sex ratio, child-woman ratio, dependency ratio and proportion of female members in household.

The asset index derived from the BDHS data was employed to calculate an estimate of the headcount poverty index for Bangladesh. The asset index at the 40^{th} percentile is employed as the poverty line.

Table II: Values of Pearson's χ^2 statistics on cross-classifying demographic characteristics with SES

Explanatory Variable	χ^2 value	p-value
Type of place of residence	4564.6259	< 0.0001
Highest educational level	3469.5520	< 0.0001
Religion	11.2236	0.0008
Number of household members	196.766	< 0.0001
Age of household head	241.4687	< 0.0001
Sex of household head	38.5561	< 0.0001
Region	915.3960	< 0.0001
Household owns land	1061.4747	< 0.0001
Sex ratio	18.8026	0.0003
Child-woman ratio	97.3628	< 0.0001
Dependency ratio	52.225	< 0.0001
Proportions of female members in household	1.1177	0.2904

Household condition	162.3445	< 0.0001

The results indicate that there is association between SES and the following predictor variables: type of place of residence; religion; number of household members; highest education level; age of household head; sex of household head; region; land ownership; child-woman ratio; dependency ratio; and household condition.

According to the residence, the result shows that most cases of the very poor are in rural areas. The distribution of households by education and social economic status results show that the groups with the highest poverty cases have no education while those with the higher education have lower cases of poverty. The distribution of households by religion and the SES result show that religion is not significantly associated with poverty.

The household size was classified using three household size categories (1-5, 5-15 and 15+). The result shows that poverty is highest for a household with 9 or more members and lower for households of smaller sizes. As per the age of the household head, the results show that poverty increases with the age of the household head. As per the sex of the household head, it can be seen that most household heads are male. Households with a female head are poorer than the households with a male household head.

According to the region, the result shows that Chittagong has the lowest number of the very poor while Rangpur has the highest number of very poor households. But the number of non-poor households is high in the case of Dhaka. For the land ownership, it is seen that the non-poor household owns land more than the poor households. Most of the poor households do not have any land ownership. The result shows that households having persons with disability are more likely to live in poverty than households of able-bodied persons. This is indicative of relatively high poverty among households having persons with a disability.

The sex ratio is not significant in describing poverty for the households. The dependency ratio also shows that the households with a high dependency ratio are poorer than the household with a low dependency ratio. The proportion of female members also is not describing any influence on poverty. The poverty estimates are not directly comparable, given that different poverty lines, equivalence scale, time and data set are employed in estimating the headcount poverty index. The results are comparable with the Household Budget Survey of Bangladesh (2011).

Logistic Regression Analysis

The final model that was fit to the data was given by:

$$Logit\ (p) = \beta_0+\beta_1X_1+\beta_2X_2+ \beta_3X_3+ \beta_4X_4+ \beta_5X_5+ \beta_6X_6 +\beta_7X_7+\beta_8X_8 +\beta_9X_9+\beta_{10}X_{10}$$

Where,

X_1= residence

X_2= education of household head

X_3=region

X_4=number of household members

X_5=age of household head

X_6=sex of household head

X_7=land ownership

X_8=child-woman ratio

X_9=dependency ratio

X_{10}= Household condition

This logistic regression equation was arrived at using a forward stepwise selection method. Using the data, the logistic regression has been estimated to determine the factors affecting poverty in Bangladesh.

The results of the logistic regression are summarized in Table 3.

Table III: Effects for the best fitted logistic regression

Logistic Regression for SES							
Summary Measures							
Null Deviance	23046.29						
Model Deviance	18702.53						
Improvement	4343.76						
p-Value	< 0.0001						
Regression Coefficients	**Coefficient**	**Standard Error**	**Wald Value**	**p-Value**	**Lower Limit**	**Upper Limit**	**Exp(Coef)**
Constant	-0.98	0.08	-11.93	< 0.0001	-1.14	-0.82	0.38
Education	-0.20	0.01	-18.48	< 0.0001	-0.22	-0.17	0.82
No. of hh members	0.19	0.01	19.14	< 0.0001	0.17	0.21	1.21
Age of household head	0.39	0.06	6.59	< 0.0001	0.27	0.50	1.47
Owns land	1.14	0.04	30.66	< 0.0001	1.07	1.22	3.14
Sex of household head	0.00	0.00	-0.10	0.9223	0.00	0.00	1.00
Region	-0.04	0.01	-3.94	< 0.0001	-0.06	-0.02	0.96
Type of residence	2.01	0.04	46.09	< 0.0001	1.92	2.09	7.43
Dependency ratio	0.12	0.03	3.49	0.0005	0.05	0.18	1.13
Child woman ratio	-0.35	0.03	-10.79	< 0.0001	-0.41	-0.28	0.71
Household Condition	0.38	0.03	7.03	< 0.0001	0.00	0.00	1.00

Discussion

The results show that all the variables significantly explain household socio-economic status except for the sex of household head. Theoretically, we can also explain this fact, as most of the household heads are male so poor households definitely have male heads. This variable is not explanatory for the social economic status.

We can take a further look to identify which variables explain poverty in urban and rural areas. This will help to determine whether the factors affecting poverty in rural and urban areas are the same. If not, then which factors are more explanatory in rural compared to urban?

The results show an interesting pattern. Almost all of the variables are explanatory for rural poverty except the regions, meaning that poverty in rural areas does not significantly depend on which part of the country they live. This is due to the vicious circle of poverty. Those who are poor are not migrating to other regions to earn more and are remaining poor, and those who are migrating to earn better income are not able to come out of poverty.

Table IV: Effects for the best fitted logistic regression of rural and urban SES

Logistic Regression for ses_log_rural								*Logistic Regression for ses_log_urban*							
Summary Measures								*Summary Measures*							
Null Deviance	5664.01							Null Deviance	1835.82						
Model Deviance	5081.66							Model Deviance	1619.21						
Improvement	582.34							Improvement	216.61						
p-Value	< 0.0001							p-Value	< 0.0001						
	Coefficient	Standard	Wald	p-Value	Lower	Upper	Exp(Coef)		Coefficient	Standard	Wald	p-Value	Lower	Upper	Exp(Coef)
Regression Coefficients		Error	Value		Limit	Limit		*Regression Coefficients*		Error	Value		Limit	Limit	
Constant	-2.54	0.28	-9.09	< 0.0001	-3.09	-1.99	0.08	Constant	0.53	0.56	0.96	0.3392	-0.56	1.63	1.71
Owns land usable for agri_rural_1	1.13	0.07	16.60	< 0.0001	1.00	1.26	3.10	Owns land usable for agri_urban_1	0.90	0.15	5.87	< 0.0001	0.60	1.20	2.45
Education_rural_1	-0.19	0.04	-4.78	< 0.0001	-0.27	-0.11	0.83	Education_urban_1	0.19	0.08	2.44	0.0148	0.04	0.35	1.21
Region_rural_1	-0.04	0.03	-1.29	0.1981	-0.09	0.02	0.97	Region_urban_1	0.65	0.06	10.67	< 0.0001	0.53	0.77	1.92
Age of household head_rural	0.01	0.00	4.25	< 0.0001	0.01	0.02	1.01	Age of household head_urban	-0.01	0.01	-1.61	0.1067	-0.02	0.00	0.99
No. of hh members_rural	0.19	0.02	8.76	< 0.0001	0.15	0.23	1.21	No. of hh members_urban	0.06	0.04	1.45	0.1479	-0.02	0.14	1.06
Sex of head_rural_1	0.74	0.11	6.97	< 0.0001	0.53	0.95	2.09	Sex of head_urban_1	0.27	0.23	1.17	0.2431	-0.18	0.72	1.31
Sex ratio_rural	-0.02	0.01	-2.87	0.0041	-0.03	-0.01	0.98	Sex ratio_urban	-0.01	0.01	-0.84	0.3988	-0.03	0.01	0.99
Dependency ratio_rural	0.08	0.07	1.20	0.2314	-0.05	0.21	1.08	Dependency ratio_urban	0.03	0.13	0.26	0.7945	-0.22	0.29	1.03
Proportion of female_rural	5.47	1.41	3.88	0.0001	2.70	8.23	26.47	Proportion of female_urban	3.16	2.69	1.17	0.2408	-2.12	8.43	23.51
Child woman ratio_rural	-0.27	0.06	-4.55	< 0.0001	-0.38	-0.15	0.76	Child woman ratio_urban	-0.44	0.12	-3.78	0.0002	-0.67	-0.21	0.64
Household condition	0.79	0.13	6.22	< 0.0001	0.43	0.98	1.98	Household condition	0.95	0.15	6.27	< 0.0001	0.34	0.86	1.68

The households having able-bodied persons are less poor than the households having persons with disabilities. It is obvious because in rural areas of Bangladesh sometimes able-bodied persons remain unemployed. So, households with disabled persons suffer more from poverty.

The variables sex ratio and proportions of females in households are not significant, which supports the previous conclusion from the chi-square test. The dependency ratio does not also explain poverty in rural areas. This may be the reason most rural people work in the informal agricultural sector and do not have any retiring age. So, in rural areas the dependency ratio is not very high and does not explain poverty.

For urban poverty, none of the variables are significant except land ownership, region and household condition. Owning land is explanatory, as this can be a factor for pulling out a

household from being poor to non-poor. Land can be used for agricultural purposes or for resale. So, owning land is a very important indicator of being a non-poor household. Also, region, which was not significant in rural poverty, is significant in urban poverty, as in urban areas most households depend on the urban industrial sector for their living. Regions with industries have fewer poor households compared to regions with agricultural economy. This is because of job availability and high wages in the industrial sectors compared to the agricultural sector. So, region plays an important role in the case of urban poverty.

It is important to note that households having persons with disabilities suffer the plight of poverty in urban Bangladesh because of lack of opportunities of education and jobs. The logistic regression of rural and urban poverty suggests that most of the results in the initial logistic regression is driven by rural poverty.

Based on these findings, it can be concluded that rural poverty is high in households with young household heads, low-level education of the household heads, female heads, disability of household members, larger household size, excessive dependency burden and a high proportion of female workers.

The implications of the above findings for policy development are monumental, especially for a developing country like Bangladesh. The poverty of female-headed households or households with disability emphasizes the essentiality of bringing these households beneath the umbrella of social protection.

In the long run government will have to come up with measures that can absorb these households in remunerative employment, which is adequate to ensure a simple living. Introducing compulsory education for all, nurturing the idea of small family, promoting healthy habits and

family planning and ensuring civil rights of disabled persons can improve the poverty situation in Bangladesh.

Conclusion

Poverty measured on the basis of asset ownership is increasingly being used in research but there are some limitations on their use. According to Filmer and Pritchett (2001), the asset-based measures are more reflective of the long-run household wealth, failing to capture short-run wealth to the household. Therefore, if we are interested to see an effect that is associated with current resources to the household, then an index based on asset may not be the best measure. Also Falkingham and Namazie (2002) pointed out that the ownership does not capture the quality of the asset (Owning a poor-quality asset will not help to live a better standard of living). But asset-based measures do not account for this fact. Also, some variables may have a different relationship with the asset index across sub-groups; for example, ownership of farm land and live-stocks may be more reflective of wealth in rural areas than urban areas.

The multivariate analysis shows that an increase in educational level has an impact on the probability of a household being non-poor. Achieving higher education can lead a household from being poor to non-poor. The regression result shows that a rural family has a high probability of being poor. The rural/urban variable is statistically significant and this variable can be the reason of a household being poor.

The logistic regression of rural and urban poverty suggests that most of the variation was explained by rural poverty. The other demographic factors that affect the probability of a household being poor are the age of household head, religion, number of household members, sex of household head, land ownership, child-woman ratio and household condition. The sex of household head and dependency ratio when tested as a univariate model was statistically

significant with the social economic status, but it's not significant when included in the multivariate analysis.

The rural urban variability was significant when they were accounted for separately. This can be attributed to the fact that the assets included in the asset index are by their nature urban rather than rural, and therefore are biased against rural areas. Also, formal housing, water and sanitation facilities are urban services, which support the conclusion of having significant results in rural areas. As the country develops, the rural population will get access to these services, which will help the household to be non-poor. This paper shows the key determinants of poverty on the basis of demographic and household data.

This paper focuses on the point that rural areas suffer due to poverty compared to urban areas. The rural standard of living is far less than the urban standard of living in Bangladesh. Hence, the government should come up with policies that can ensure reduction of the plight of the poor people in rural Bangladesh.

Reference

Achia, T.N.O, Wangombe, A. and Khadioli, N. (2010). A Logistic Regression Model to Identify Key Determinants of Poverty Using Demographic and Health Survey Data. *European Journal of Social Sciences,* 13(1), 38-45.

Booyen, R. (2002). Using Demographic and Health Surveys to Measure poverty. An Application to South Africa. *Tydskrif vir studies in ekonomie en ekonometrie : SEE,* 26(3), 53-70.

Falkingham, J., Namazie, C. (2002). Measuring health and poverty: A review of approaches to identifying the poor. *London: Department for International Development Health Systems Resource Centre (DFID HSRC).* [Accessed at: http://r4d.dfid.gov.uk/PDF/Outputs/HOppsIssuesPaperFalkingham.pdf

Filmer, D. (2000).The Structure of Social Disparities in Education: Gender and Wealth. *Annals of World Bank Policy Research,* Working paper 2268.

Filmer, D., Pritchett, L. (1998). Estimating Wealth Effects Without Expenditure Data—Or Tears: With an Application to Educational Enrollments in States of India. *Development Economics Research Group, World Bank,* Washington, DC. Working papers 1994.

Filmer, D. (1999). The Effect of Household Wealth on Educational Attainment: Evidence From 35 Countries. *Population and Development Review*, 25, 85-120.

Filmer, D. and Pritchett, L. (2001). Estimating wealth effects without expenditure Data or Tear: Educational enrolment in India. *Annals of Mathematical Statistics*, 14, 436-440.

Geda, A., De Jong, N., Mwabu, G. & Kimenyi, M., (2001). Determinants of poverty in Kenya: A household level analysis. *Institute of Social Studies (ISS), The Hague*, Working paper.

Kyereme, S., Thorbecke, E. (1991). Factors affecting food poverty in Ghana. *Journal of Development Studies*, 28, 39-52.

Oyugi, L. N. (2000). The determinants of poverty in Kenya. *University of Nairobi, Department of Economics,* Unpublished MA thesis.

Rahman, M.A. (2013). Household characteristics and poverty: A logistic regression analysis. *The Journal of Developing Areas*, 47(1), 303-317.

Rodriguez, A.G., and Smith S. M. (1994). A comparison of determinants of urban, rural and farm poverty in Costa Rica. *World Development Journal*, 22(3), 381-397.

Sahn, D. and Stifel, D (2000). Poverty Comparisons over time and across countries in Africa. *World Development*, 28, 2123-2155.

Sahn, D. and Stifel, D.(2003). Exploring alternative measure of welfare in the absence of expenditure data. *Review of income and wealth*, 49, 463-489.

Snijder and Bosker (1999). Multilevel Analysis: An introduction to basic and advanced multilevel modeling. *Sage publications Ltd.*

Vyas, S. and Kumaranayake, L. (2006). Constructing socio-economic status indices: How to use principal component analysis. *Health Policy and Planning*, 21(6), 459-468.