Assessing the Impact of Socio-Economic Determinants of Rural and Urban Poverty in Bangladesh

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Abstract—Bangladesh is one of the most densely populated countries in the world with an estimated population of 164.4 million living in an area of only 1, 47,570 square kilometers. Since her independence, the country has been pursuing the agenda of poverty reduction as an overriding priority. In doing so, there has been many studies on the nature, causes and remedies of poverty in Bangladesh that were mostly focused either on the context of rural poverty or urban poverty separately. In this backdrop, the main aim of this study is to find out the socio demographic factors determining urban and rural poverty in Bangladesh. This research identified the impacts of the different determinants of poverty by employing a binary logistic regression model. The model is estimated using primary data collected from 120 respondents, among the respondents' 60 respondents are from rural area who live in Bakshimail and Dhurail Unions under Mohonpur sub district and remaining 60 respondents are from urban areas who live in ward numbers 26, 8 and 4 of Rajshahi City Corporation. This study has estimated the social economic status (poor and non- poor) using six explanatory variables: age of household head, gender, household size, education of household head, highest level of education of family member and women empowerment. The findings of binary logistic regression analysis revealed that age of household head, sex of household head, the highest level of education of family members and women empowerment have significant role in alleviating household poverty in Rajshahi district. Finally, this study suggests that government should expand more money to enhance the educational programme and give more priority to women education and empowerment.

Key Words— Poverty, Rural, Urban, logistic Regression, Women empowerment

1 Introduction

Bangladesh is a populous country with 150 million people endowed with limited resources (ADB, 2014). Poverty in this country is considered as a major and persistent problem because a large portion of total population still lives below the poverty line. At present, in our country 31.5 percent people are living under the poverty line which was 40.0 percent in 2005 (HIES, 2010). The main objective of this study is to find out the socio- demographic factors which determine urban and rural poverty in Bangladesh.

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Since independence, Bangladesh government has taken various policies for poverty reduction. The first five year plan was formulated in 1973 just after independence has already focused on poverty reduction. At a glance in Bangladesh, 43.3% of the population live on less than $1 per day (MDG Progress, 2012), 31.5% of the population lives below the national poverty line (2,122 kilocalories) (MDG Progress, 2012) 29.9% of the population live in urban areas (HDR, 2015). But implementing appropriate poverty reduction policies require a good knowledge of the effective level of poverty. Bangladesh is now described as middle income country of the world with per capita income GDP $ 1314 (UNDP, 2014).

Since 1995-96, Bangladesh Bureau of Statistics (BBS) is using the Cost of Basic Needs (CBN) method as the standard method for estimating the incidence of poverty. In this method, two poverty lines are estimated as lower poverty line and upper poverty line. Using the upper poverty line in HIES 2010, HCR of incidence of poverty are estimated at 31.5 percent at the national level, 35.2 percent in rural area and 21.3 percent in urban area. Using the lower poverty line, in HIES 2010, the HCR of incidence of poverty is estimated at 17.6 percent at national level, 21.1 percent in rural area and 7.7 percent in urban area. The percentage of poverty, using upper poverty line, is 29.8 % in Rajshahi division. (HIES, 2010).

In this case, it is important to find out the different demographic and socio-economic factors which determine the urban and rural poverty in Bangladesh. It is important to measure the impact of these variables on poverty. While there are several studies looking into the nature and causes of urban or rural poverty with different variables in Bangladesh, studies based on econometric methodology are rarely found. Thus the serious researchers are mostly engaged in the fancy stuff like measurement of poverty, especially the poverty line. The trend of poverty based on head-count ratio is the key point of discussion. Studies concerned on the correlates of poverty, i.e., the major factors contributing to poverty situation, are neglected in Bangladesh poverty studies (Ahmed, 2004).

In this study focus is given on the impact of the different factors which determine the poverty in Bangladesh. The key point of this study is to find factors determining the urban and rural poverty. This study explores the relationship between poverty and eight socio-demographic variables like age of household head, gender, household size, education of household head, highest level of education of family member and women empowerment in two areas of Rajshahi city and compare the determinants of poverty between areas which show how differently this factors affect the poverty of urban and rural areas of Rajshahi district.

2 Literature Review

A quite number of studies are reviewed on urban poverty, rural poverty, its determinant and the impact of determinants on the poverty. Tandon and Hasan (2005), Ogwumike and Akinnibosun (2013), Geda et al. (2005), Khalid et al. (2005), Pervez and Rizvi (2014), Filmer and Pritchett (2001), Vyas and Kumaranayake (2006), Achia et al. (2010) , Harttgen and Vollmer (2011), Githinji (2011), Cheema and Sial (2014), Mwabu et al. (2002), Edoumiekumo et al.(2014) and Philip and Rayhan (2004) discussed the determinants of poverty and its impact and showed the socio-economic status of the people. However, studies conducted by Khudri and Chowdhury (2013), Rahman (2013), Deaton (2003), Farah (2015), Ahmed (2004) and Azam and Imai (2009) discuss determinants of poverty in Bangladesh and its different impact on poverty. Moreover, Weber et al. (2005), Hoque (2014), Apataet al. (2010), Sen (2003), Parveen and Leonhäuser (2004), Haq et al. (2015), Muyanga (2005), Rahman and Chowdhury (2012), Anríquez and Stamoulis (2007) and Chaudhry et

al.(2009) discussed different aspects on rural poverty all over the world and its impact on poverty.

Khudri and Chowdhury (2013) aimed to evaluate living standards and socio-economic status of Bangladeshi households through constructing an asset index and identify key determinants of poverty in Bangladesh using the data extracted from Bangladesh Demographic and Health Survey (BDHS) in 2007. Rahman (2013) explained that some of the factors shaping economic status of the household may be cited as widowhood, disability, illiteracy, ageing, household size, household status, dependency, low wages of the female workers, household responsibilities etc. The main purpose of this paper is to identify the factors that explain their relative effect on poverty of the household. Farah (2015) mentioned that the main objective of her paper was to identify the factors that had relative effect on poverty of the household. Several demographic and health factors could shape up the economic status of a household and theory suggested that the ability of a household to earn a given level of income could depend on the characteristics internal to the household and 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 the main determinants. Ahmed (2004) mentioned that the main objective of his paper was to explore the relationship between poverty variables and eight socio demographic determinants like location, gender, age, household size, marital status, occupation, land ownership and house ownership. Edoumiekumo et al. (2015) studied that poverty in Nigeria is mainly to be a rural phenomenon with agriculture accounting for the highest incidence over the years. This study focused the South-South Geopolitical Zone. The situation in this zone is not quite different being the hub of the Nigerian monotonic economy. Pervez and Rizvi (2014) showed that poverty is totally out of control in the rural areas of the Pakistan, where people are in a state of deficiency with regards to incomes, clothing, housing, health care and education facilities. Cheema and Sial (2014) estimated the poverty rates, profile and economic determinants of poverty by using the fresh available PSLM data for the year 2010-11. The main determinants of poverty were education, animal for transportation, household size, dependency ratio, family planning, residential building and shops in Pakistan.

3 Data and Methodology

The present study is mainly based on primary data. Rajshahi district and Mohonpur upazila are selected as study area for this research work. Rajshahi district will show the urban area and Mohonpur upazila will show the rural area of Bangladesh. Data are collected randomly from 60 households in urban area and 60 household in rural area, in total of 120 households, from two urban and rural areas in Rajshahi district. Multi-stage random sampling method is followed in sample selection. Rajshahi district consists of 30 wards from which 3 wards are selected randomly. They are 26, 8 and 4 no wards. Mohonpur upazila consists of 6 unions from which 2 unions are selected randomly; Bakshimail and Dhurail union. Finally, 30 households are randomly selected from each union and 20 households are randomly selected from each ward. For analyzing the impact of socioeconomic determinants on household poverty, sample is selected in such a way that it covers all necessary data required for analysis. The survey is conducted during July to August, 2016. The main objectives of this paper is to use the survey data to look at structural determinants of poverty related to socioeconomic characteristics of households.

Household poverty is affected by a number of socio-economic and demographic factors. Following these earlier studies, an empirical and specified model to estimate the impact of socio-economic determinants on household poverty is formulated. In this case, a cause and effect relationship between household poverty and a set of socio-economic and demographic characteristics is considered as follows:

$$P_i = f(X_i) \qquad (1)$$

Where, P_i is household poverty and X_i is a set of socio-economic, demographic and farm factors that affect household poverty. Now, it is necessary to mention that household poverty has been measured through the poverty line in this study that is 4469 Tk. following World Bank (2015). According to the poverty line, the person whose monthly income is below the poverty line is assigned as poor. On the other hand, the person whose income is above the poverty line is assigned as non-poor. In this study, household poverty is a binary variable. Thus, it has two categories such as poor = 0 and non-poor = 1. Since the dependent variable is binary, a Binary Logistic regression model is applied to estimate the impact of the socio-

economic determinants on poverty in this study following (Edoumiekumo et al. 2015; Ogwumike and Akinnibosun 2013; Geda et al. 2005; Khalid et al. 2005; Khudri and Chowdhury 2013; Rahman 2013; Achia et al. 2010; Farah 2015; Haq et al. 2015; Mok et al.2007 and Chaudhry et al. 2009).

Let us suppose that the probability of a household being poor can be written as:

$$P_i = E(Y = 1/ X_i) = \beta_1 + \beta_2 X_i \qquad (2)$$

Where, X_i is a set of explanatory variables and Y=1 means that household is poor. Now, considering the following representation of poverty status of households, the equation (2) can be written as:

$$P_i = E(Y_i = 1/X_i) = \frac{1}{1+e^{-(\beta_1+\beta_2 X_i)}} = \frac{1}{1+e^{-(Z_i)}} \qquad (3)$$

Where, P_i is known as logistic distribution function. In this case, Z ranges from $-\alpha$ to $+\alpha$; P_i ranges between 0 to 1 and P_i is non-linearly related to Z_i (i.e. X_i). This satisfies the conditions of the probability model. In satisfying this requirement, an estimation problem has been created. Because, P_i is not only related non-linearly in X_i but also in β_i. This violates one of the assumptions of classical linear model. In this case, OLS method cannot be applied to estimate the parameters. However, P_i is the probability of a household being poor can be expressed as:

$$P_i = \frac{1}{1+e^{-(Z_i)}} \qquad (4)$$

Then, (1-P_i) is the probability of a household not being poor can be written as:

$$1 - P_i = \frac{1}{1+e^{(Z_i)}} \qquad (5)$$

Therefore, using equation (4) and (5), it can be written as:

$$\frac{p_i}{1-P_i} = \frac{\frac{1}{1+e^{-(Z_i)}}}{\frac{1}{1+e^{(Z_i)}}}$$

$$\text{Or,} \quad \frac{P_i}{1-P_i} = e^{Z_i} \qquad (6)$$

Where, $\frac{P_i}{1-p_i}$ is the odds ratio of a household being poor, i.e. the ratio of the probability of a household being poor to the probability of a household of being non-poor. To find out an appropriate function, naturally it starts with the earlier logistic function. Taking natural log, the logistic function (6) can be written as:

$$L_i = \ln\left[\frac{P_i}{1-P_i}\right] = \beta_1 + \beta_2 X_i \qquad (7)$$

It is found that age, sex, education, household size, women empowerment, usable land, employment status, religion, sex ratio, dependency ratio, child women ratio, household condition and sex of household head affect the household poverty (Khudri and Chowdhury 2013; Farah 2015; and Achia et al. 2010). On the basis of the above mentioned factors, a specified model is formulated as follows:

$$L_i = \ln\left[\frac{P_i}{1-P_i}\right] = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + u_i \quad (8)$$

Where, Li is the log odds ratio of a household being poor; β_0……β_6 are parameters to be estimated; X_1, X_2……X_6 are the explanatory variables that affect household poverty and u_i is the stochastic disturbance term. The regression equation (8) shows a linear relationship in which dependent variable is a function of six explanatory variables and the equation is estimated by Binary Logistic regression model. The explanatory variables used in the regression equation (8) are described.

4 Results and Discussion

For the investigation of socio-economic determinants of poverty in rural and urban area in our country, the methodology consisted of the following steps. To show the impact of the socio-economic determinants on poverty, we have collected both the qualitative and quantitative data. Primary data is collected with the support of questionnaire by household survey. In questionnaire, different questions were asked to the respondent and the answers were recorded by the interviewer. We used this method because it is the most suitable method to get information as by visiting respondents. In this case we have done descriptive analysis to see the relationship between the variables and run the regression model to measure the impact of the variables.

4.1 Descriptive Analysis

To know the relationship between our socio-economic determinants and poverty, we have tested the chi square test and Phi and Cramer's V test. In statistics, Phi and Cramer's V is a measure of association between two nominal variables, giving a value between 0 and +1. It is based on Pearson's chi-squared statistic. Our descriptive analysis provide us the following results

Table 01: Estimated Results of Chi Square test, Phi and Cramer's V Test

Variables	Rural		Urban		Combined	
	Chi Square value	Phi and Cramer's V Value	Chi Square value	Phi and Cramer's V Value	Chi Square value	Phi and Cramer's V Value
Age of the household head	3.852	.253	12.234*	.452	10.194*	.291
Sex of the household head	5.250**	.296	17.485*	.540	20.445*	.413
Education of the household head	5.107**	.292	2.373	-.199	1.726	.120
Household size	1.689	-.168	.031	.023	.349	-.054
Highest level of education of the member of household	18.223*	.551	0.17	-.17	9.648*	.284
Women empowerment	19.753*	.574	15.601*	.510	35.011*	.540

Here in table 01, we have included all our six variables and their chi square test value and Phi and Cramer's V value for rural, urban and combined area. This table explains us that age of the household head has a relationship with poverty

and Phi and Cramer's V test shows that it has a relatively strong relationship but in the case of combined there is a

moderate relationship between the age of the household head and poverty. The sex of household head has a

moderate relationship in rural area, a relatively strong relationship in urban area and combined area. Education of the household head has a moderate relation with poverty only bin rural area. The Size of household has no relation with poverty. We find it insignificant in all area. The highest level of education of household member has a relatively strong relationship in rural area and moderate relation in combined area. Women empowerment has a relatively strong relationship in rural, urban and combined area. This is the most significant variable in this study.

4.2 Logistic Regression Model

To show the impact of these variables on being poor and being non-poor, we run the binary logistic regression model. This model shows the following results.

Table 02: Estimated Results of Logistic Regression Model

Variable	Rural		Urban		Combined	
	Coefficient	Marginal Effects dy/dx	Coefficient	Marginal Effects dy/dx	Coefficient	Marginal Effects dy/dx
Age of the household head	.0242715	.0048068	-.1102634**	-.0175819	-.0420013***	-.0079088
Sex of the household head	2.429462	.5414361	3.905101**	.751397	3.475092*	.6986061
Education of the household head	.1599503	.0316772	.0020966	.0003343	.0606984	.0114294
Household size	.0014623	.0002896	-.1246113	-.0198697	-.0428687	-.0080721
Highest level of education of the member of household	.2594097**	.0513746	.1114281	.0177676	.1827973*	.0344204
Women empowerment	2.761348**	.4635057	3.712261*	.706335	3.363622*	.6207948
Constant	-6.521043		-.6106191		-3.566184	

The table 02 represents the impact of the variables on being poor and being non poor. From the results, we can see that in the rural area only the highest level of education of the family member has an impact of being non poor. If we increase the highest level of education of the family member in one unit the probability of being non poor will increase 0.051%. Similarly, if we increase the women empowerment in one unit our probability of being non poor will increase 0.46%.

In the urban area, the scenario is little different. Here, if the age of the household head increases the probability of being non poor will decrease 0.11%. The sex of household head plays a great role here. If the household head is male the probability of being non poor will increase 3.905%. Women empowerment is the vital variable and if we increase the working opportunities for women in one unit the probability of being non poor will increase 0.70%.

When we combined all data, both rural and urban, we get a more significant result. In this case, the age of household head has a negative impact of being non poor. But the sex of household head has a great role that if the head of household is male the probability of being non poor will increase 0.69%. The highest level of education of the family member is positively significant and if we increase the education level the probability of being non poor will increase 0.034%. The half of our total population is women so creating working opportunity is very important. If we increase the working opportunities for women by one unit the probability of being non poor will increase by 0.62%.

5 Conclusion

Based on the findings of the research it is found that different demographic, socio- economic determinants affect the household poverty in Bangladesh. As reduction of poverty is a formidable challenge for Bangladesh.

The estimated results of statistical and econometric models are described. Descriptive analysis shows the relations between socio-economic determinants and poverty and Binary Logistic regression model is used to estimate the impact of socio-economic determinants on household poverty in the study area. In the rural area, the results of Logistic regression analysis reveal that highest level of education and women empowerment has significant effect on household poverty.In the urban area, the results of Logistic regression analysis reveal that age of household head, sex of household head and women empowerment has significant effect on household poverty. When we combined the rural and urban household data we find the age of household head, sex of household head, highest level of education and women empowerment has significant effect on household poverty. For rural and urban poverty reduction, through improving the different social and economic factors, it is necessary to recommend some policies for the wellbeing of the people.

- ❖ Poverty causes lack of education. It is beyond doubt that education contributes to social and economical development in a society. Education helps to alleviate poverty by affecting labor productivity and via other paths of social benefit. It is therefore a vital development goal. So, government should allocate adequate resources on quality of the educational programmes for eradicating poverty.

- ❖ As women are represented as half of the total population, reduction of poverty among women should be given the highest priority. It is a constitutional obligation of the government to provide a decent standard of living for the citizens to alleviate poverty. There are, however, many policies and programs for alleviating poverty through which Bangladesh has achieved some progresses in poverty reduction but poverty still remains a serious concern. Despite considerable trust on poverty alleviation in all planned documents, a significant number of women will sustain at an inferior level. So, government should be more careful about this matter and create more working opportunities for women.

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