The Effect of Shocks and Remittances on Household's Vulnerability to Food Poverty: Evidence from Bangladesh

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Introduction

Bangladesh made remarkable development progress over the years achieving an average economic growth of 6 percent per year. The national poverty rate declined from 52 percent in 1983 to 32 percent in 2015 (World Bank, 2015), and the gender parity in primary and secondary education has improved significantly mainly due to the school stipend and/or food for education program (Raynor and Wesson, 2006). Despite these remarkable economic developments in Bangladesh, approximately 47 million of the population live under the poverty line, particularly in rural areas (Azam and Imai, 2009; World Bank, 2015). In the rural areas of Bangladesh, food insecurity is a reality for many. Various sources of risk and uncertainty are relevant to households in Bangladesh. Although some of the main sources are common to all households and occur naturally, e.g., cyclones, many other sources are targeted towards individual households, e.g., economic and health shocks. According to Mordch (1991) and Udry (1991), idiosyncratic risks contribute the highest variation in income than common risks.

In recent years, the implication of the sources of risk and uncertainty to the dynamics of poverty has gained popularity within the field of poverty studies. Examining the vulnerability of households to living under the poverty line and the implications for both poverty alleviation and poverty protection are clearly evident by the proliferation of studies in this research area. Assessing the vulnerability to poverty is viewed as a forward looking measure instead of a static form of poverty, and has been proven to provide a better assessment of poverty under uncertainty (Pritchett, Suryahadi and Sumarto, 2000). Calvo and Dercon (2005) state that households that are

currently living under poverty line, may or may not be poor in the future, and therefore, vulnerability to poverty appears to be the best measure that can capture poverty under uncertainty. Azam and Imai (2009) studied poverty and vulnerability levels in Bangladesh in 2005 and found that many households living above the poverty line were also vulnerable to poverty. The objective of the current study is to examine the impact of shocks - positive and negative economic events - and remittance to the vulnerability of households to food poverty, measured by their consumption expenditure on food.

Poverty, Vulnerability, and Coping Mechanisms: Shocks and Remittances

Poverty is a dynamic and persistent phenomenon, where some households can remain in poverty and others can move in and out of it. Due to persistent shocks and risks such as variation in weather and output, price fluctuations, and health risks, millions of people are in a continuous state of vulnerability to poverty. As Ligon and Schechter (2003) argue, studying the risks or any other sources of uncertainty are as equally important as poverty while attempting to reduce poverty.

The World Bank Social Risk Management has outlined three strategies to address poverty which includes: prevention, mitigation and coping mechanisms (Holzmann and Jørgensen, 2000). Ajay and Rana (2005) suggest that the identification of households who are vulnerable to poverty and the factors that cause their vulnerability to poverty provide critical insights in setting appropriate anti-poverty policies.

In sub-Saharan African countries, for example, some of the common events that affect households include drought, flooding and frost, plant pests and diseases, policy shocks, war and other risks (Kalinda and Langyintuo, 2014; Little et al., 2006; Dercon, 2002; Dercon and Krishnan,

2000). Dercon (2000) and Dercon (2002) rank the most prevalent adverse shocks affecting households in Ethiopia in descending order: drought, flooding and frost (78%), policy shocks (42%), labor problem (40%), oxen problems (39%), other livestock problem (35%), land problems (17%), assets losses (16%), war (7%), and other risks (3%). Padlli and Habibullah (2009) found that among the major adverse shocks in Asia, floods (22%) were ranked first, followed by earthquake (17%), tropical clones (12%) and storms (7%).

Resource poor households are often disproportionately affected by economic and noneconomic shocks. Gaiha and Imai (2004) examined the impact of crop shocks on vulnerability to poverty in India. Applying a general method of moments estimation, Gaiha and Imai (2004) showed the significant impact of crop shocks on income. Gray and Mueller (2012) studied the impact of drought on migration using more than 10 years of longitudinal data from Ethiopia and found that climate-induced migration increases with increase in drought events. Studies by Mueller, Gray and Kosec (2014) in Pakistan and Gray and Mueller (2012) in Ethiopia also quantified the impact of climate related shocks on migration using longitudinal data, and discovered that flood impact had a modest to insignificant influence on migration. However, heat related stress adversely impacted farm and non-farm income. Another study by Rodriguez et al. (2016) examined the association of adverse shocks, e.g., floods, with nutrition status of children in India and found evidence that occurrence of flooding increased underweight children.

Kurosaki (2002) observed farming households in Pakistan employ various coping mechanisms against any risk of poverty incidence, and noted that households who have better risk coping mechanism were less vulnerable relative to households with less risk coping mechanism. Kurosaki (2001) also found that households without risk coping mechanisms experience large reductions in consumption, remained landless, and expose their children to absenteeism in school.

The coping mechanisms households' use during adverse exogenous shocks include: livestock sales, consumption credit, insurance, government assistance (food aid) and remittance. Sales of livestock are often used as a buffer stock during income fluctuation (Rosenzweig and Wolpin, 1993; Watts, 1983). Kalinda and Langyintuo (2014) identified households in Zambia cope with various risks through selling livestock, borrowing and through external assistance such as food aid. No to little evidence was found indicating that livestock sales can be used as a buffer stock during income fluctuations during poor crop cultivation in West Africa (Fafchamps, Udry and Czukas, 1998). Remittance is another effective coping mechanism employed by households who are vulnerable to poverty and its use increases with the increase in adverse exogenous shocks (Bettin et al., 2015). Studies indicate that remittance are larger and more stable compared to official development assistance (World Bank, 2016).

Data and methodology

Model

Statistical advances have allowed researchers to model vulnerability of households to poverty incorporating the risky nature of farming using cross sectional data (Chaudhuri, et al., 2000). A common approach used to assess vulnerability to poverty when applying cross-sectional data is to model vulnerability as expected poverty (Chaudhuri et al., 2000) based on the expected mean income and its variability, in which the income variability is determined by idiosyncratic and covariate shocks. Unlike most studies that include the idiosyncratic factors (shocks) that determine variability of household income/expenditure in general, the current study distinguishes the sources of shocks into observed and unobserved components. The observed negative shocks could be unexpected increases in prices, loss of productive assets, loss of livestock due to death, and medical expenses due to illness or injury. Positive economic shocks include remittances,

primary education stipend, secondary school stipend, and so on. The remaining shocks not captured by observed collected data will constitute unobserved shocks and will be modelled through the error terms in the model. Household level and community level covariates are used as control variables.

The probability that household h becomes food poor at time $t+i$ is given by:

$$V_{ht} = prob(\ln f_{h,t+1} < \ln P) \quad (1)$$

Where V_{ht} is the vulnerability to food poverty of household, h, at time, t, and $f_{h,t+i}$ is food consumption of household h at time $t+i$, and P indicates a food poverty line for household h, expressed in natural log.

Household's food consumption expenditure is determined by a number of observable and unobservable characteristics. Assuming a linear relationship with its determinants, the household food consumption expenditure can be expressed as:

$$\ln f_h = \alpha X_h + \varepsilon_h \quad (2)$$

Where X_h is a vector of household's observable characteristics as well as observed shocks and α is a vector of parameters of interest and ε is the error term, related to individual idiosyncratic characteristics with mean zero and normal distribution. Household vulnerability to food poverty is estimated by Equation (3) using the estimated coefficients of equation (2).

$$\hat{V}_{h,t} = prob(\ln f_{h,t+i} < \ln P \mid X_{h,t}) = \Phi(\ln P - \hat{\alpha}\hat{\sigma}X_{h,t}) \quad (3)$$

Where $\hat{V}_{h,t}$ is the estimated vulnerability to food poverty, which is the probability of the individual household's food consumption falling below a given food poverty line conditional on the household's characteristics. The Φ in equation (3) defines the cumulative density of standard normal distribution and $\hat{\sigma}$ is the estimated standard error from equation (2).

The assumption of constant variance may not be achieved while using cross-sectional data for analysis, which may lead to inefficient estimates (Chaudhuri, Jalan and Suryahadi, 2002). To address the issue of heteroscedasticity (i.e. the assumption of no constant variance), the variance of the consumption function may be expressed as a linear function of household characteristics as in equation (4) below.

$$\sigma^2_{\varepsilon,h} = \beta X_h + \theta_h \tag{4}$$

Amemiya's (1977) three-stage Feasible Generalized Least Square (FGLS) approach could be used to empirically implement equation (4) and overcome possible heteroscedasticity problem. To apply this FGLS technique, first estimate equation (2) by Ordinary Least Squares (OLS) method and then use the predicted error term from Equation (2) and estimate the following Equation (5) using an OLS method:

$$\hat{\sigma}^2_{OLS,h} = \hat{\beta} X_h + \hat{\theta}_h \tag{5}$$

Where $\hat{\theta}_h$ is a random error term.

The predicted values from equation (5) are used to transform Equation (4) as follows:

$$\frac{\sigma^2_{\varepsilon,h}}{\hat{\beta}x_h} = \beta\left(\frac{x_h}{\hat{\beta}x_h}\right) + \frac{\theta_h}{\hat{\beta}x_h} \tag{6}$$

Equation (6) is estimated using an OLS regression to obtain the $\hat{\beta}_{FGLS}$ which is an asymptotically efficient FGLS estimate. This $\hat{\beta}_{FGLS} x_h$ is an efficient estimate of the idiosyncratic variance $\sigma^2_{\varepsilon,h}$ component of the food consumption. Using the $\hat{\beta}_{FGLS}$, the standard error and the transformed form of Equation (2) are given by Equations (7) and (8), respectively, as follows:

$$\hat{\sigma}_{\varepsilon,h} = \sqrt{X_h \hat{\beta}_{FGLS}} \tag{7}$$

$$\frac{\ln f_h}{\hat{\sigma}_{\varepsilon,h}} = \alpha \left[\frac{X_h}{\hat{\sigma}_{\varepsilon,h}} \right] + \frac{\varepsilon_h}{\hat{\sigma}_{\varepsilon,h}} \tag{8}$$

Equation (8) is obtained by dividing Equation (2) by the standard error described in Equation (7). The coefficient, α, is then asymptotically consistent and efficient estimate.

After obtaining efficient and consistent estimates of α_{FGLS} and β_{FGLS}, the expected log food consumption and its variance are given by equations (9) and (10), respectively.

$$E\left[\left(\frac{\ln \hat{f}_h}{X_h}\right)\right] = \hat{\alpha} X_h \tag{9}$$

$$Var\left[\left(\frac{\ln \hat{f}_h}{X_h}\right)\right] = \hat{\sigma}_h^{\,2} \quad = \hat{\beta} X_h \tag{10}$$

Finally, assuming the log food consumption is normally distributed, the vulnerability to food poverty is estimated as:

$$\hat{V}_h = prob\left(nf_{h,t+1} < \ln P \mid X_h\right) = \Phi\left[\frac{\ln P - X_h \hat{\alpha}_{FGLS}}{\sqrt{X_h \hat{\beta}_{FGLS}}}\right] \tag{11}$$

A threshold of 0.5 will be used to establish vulnerability to food poverty for the purpose of the current study (Chaudhuri et al. 2002, Pritchett et al. 2000, Zhang, 2008, and Novignon et al. 2012). A household with a 50% or more probability of falling into food poverty in the future (i.e. the next period) will be considered vulnerable to food poverty. Zhang (2008) showed that using a threshold of 0.5 provides a more improved prediction of vulnerability.

Measuring Household's Food Poverty

The three widely reported measures of consumption poverty are: the poverty prevalence index, the poverty gap index, and the squared poverty gap index. The poverty prevalence index measures the proportion of households or individuals identified as poor or falling below an established poverty line. The poverty gap index, often referred to as the depth of poverty, measures the extent to which those identified as poor fall below the poverty line; and the squared poverty gap index (also referred as poverty severity) measures the extent of inequality among the poor (Foster et al. 1984). In a similar manner, the current study estimates the food poverty indices as:

$$H_{\alpha} = \frac{1}{n}\sum_{i=1}^{n}\left[\frac{P - E_i}{P}\right]^{\alpha} \qquad (12)$$

Where H_{α} is the food poverty index of interest, and α with a value of 0, 1, or 2 represents the incidence, depth, and severity measures, respectively. The variable P is the food poverty line and E_i is the daily per capita food expenditure for each household, i. The above formula is taken to equal to zero if the daily per capita food expenditure for each household, i, is greater than or equal to the food poverty line. The study is interested in using the food poverty incidence measures.

Food poverty line and calorie consumption

The following cost-of-calories function can be estimated provided that information on food expenditure and caloric consumption is available:

$$\ln f_h = \delta_1 + \delta_2 C_h \qquad (13)$$

Where F_h and C_h measure the value of daily food consumption per AE and daily caloric consumption per AE for household *h*, respectively. From equation *(12)*, the food poverty line P (i.e. the expenditure required to acquire the Recommended Daily Allowance (RDA) calories) is estimated as:

$$P = e^{\hat{\delta}_1 + RDA\hat{\delta}_2} \qquad (14)$$

Where $\hat{\delta}_1$ and $\hat{\delta}_2$ are estimates of δ_1 and δ_1, respectively, from equation *(14)*. The energy requirements (kcal/day) for a developing country profile, demography and anthropometry, presented in UNHCR et. al. (2004) are used to compute the AE for each household as the product of the households' total daily calorie consumption divided by the sum of the energy requirements for each household member. The Recommended Daily Allowance (*RDA*) is taken to equal 2250 calories per adult per day. In equation *(13)* it is assumed that all households have a common basket of food which varies according to the household tastes and preferences and income. It is also assumed that all households face identical market prices.

There are 7 administrative divisions in the study area. These administrative divisions are Barisal, Chittagong, Dhaka, Khulna, Rajshahi, Rangpur, and Sylhet. Divisions are considered to have some level of homogeneity in terms of the households' livelihoods. For example, the assumption in equation (13) that all households have a common basket of food which varies

according to the household tastes and preferences and income and that all households face identical market prices can be assumed at the division level rather than at the entire study region. In order to satisfy the forgoing assumptions in equation (13), the averages of food poverty lines for each division are estimated and used in the development of food poverty headcounts.

Data

Bangladesh is a country in South Asia with a total population of more than 168 million in 2015. The data used in this study was drawn from the Bangladesh Integrated Household Survey (BIHS) conducted between October and November 2012 (USAID, 2013). In addition to providing the data for several studies planned under the USAID-funded Bangladesh Policy Research and Strategy Support Program (PRSSP), the BIHS also serves the baseline for a set of key indicators of the Feed the Future (FTF) program of the USAID-Bangladesh. The BIHS is statistically nationally representative of rural Bangladesh, and rural areas of each of the 7 administrative divisions of the country. In addition, the BIHS is also representative of the FTF zone of influence. The sample design of the BIHS follows a stratified sampling in two stages; (1) selection of 325 primary sampling units (PSUs) allocated among the 8 strata (7 divisions and the FTF zone) with probability proportional to the number of households in the 2001 population census data for each stratum, and (2) selection of 6,500 households in 325 PSUs. A final sample of 5844 households are used to do the analysis in the current study.

Results

Descriptive results

Table 1 presents descriptive statistics of the variables used for the analysis. The average daily per capita expenditure on food is $1.10 (measured in 2005 PPP international prices). The average

remittance amount received by a household is $571. Almost 20 percent of the households indicated that they have received some level of primary education stipend and only 5 percent of them have received a secondary education stipend. The percentage of households that have indicated to have secured a new regular job was only 3 percent.

Descriptive results show that the prevalence of negative shocks in households in descending order are medical expenses due to illness or injury (20 %), loss of productive assets (6%) and loss of livestock due to death (5%). Other negative shocks have relatively insignificant occurrences. The highest negative shock experienced is on medical expense in the amount of $ 290 per household on average. The average value losses due to asset loss, crop loss, and livestock loss are $ 74, $ 40, and $30, respectively.

The table also shows that the average age of the head of the household is around 45 years. The average number of education years attained by a primary respondent is a little over 3 years. About 20 percent of the households are female headed households. Almost two thirds of the households have access to credit. The average number of persons per sleeping room is less than 1. Households spent an average of about $23, $6, and $3 on house rent, cellphone, and electricity, respectively. A typical household receives a loan in the amount of $1038.

Table 1 about here.

The descriptive statistics of the average daily per capita expenditure on food (in 2005 PPP international dollars) disaggregated by the status of the economic shocks is presented in Table 2. The average daily per capita expenditure on food by households that have received remittance is about $1.3 and for those households that did not have remittance source is $ 1.0. The difference in the daily food expenditure for these two groups of households is statistically significant.

Households that receive some level of remittance spend on average 31% more on food on a per capita basis compared to households that do not receive any remittance. The per capita expenditure on food is also significantly different among the households grouped by the status of the other positive economic events.

Table 2 also provides information for households grouped by their status in terms of their exposure to negative economic events. For example, there is statistically different per capita expenditure on food between households that experience loss of livestock and those that do not experience livestock loss. Per capita food expenditure differences among households grouped by the other negative economic events are not statistically different.

Table 2 about here.

Estimation Results

Vulnerability to Food Poverty

The estimated mean food poverty line adjusting for differences by divisions is $ 0.87 (in 2005 PPP International Dollars). Using this threshold, 35 percent of the household have daily food expenditure below this food poverty line. Using the model estimates, 59 percent of households in the study area are considered to be vulnerable to food poverty, after accounting for the economic shocks as well as control variables. Pearson's chi squared test ($X^2_{(1)}$ =318.8) of independence reveals that food poverty and vulnerability to food poverty are not independent from each other.

The food vulnerability rates (%) of households by the status of households to positive and negative economic events is shown in Table 3. Those households that get some level of external

assistance in the form remittance have the lowest vulnerability to food poverty (35 %) than any other group. Those households that do not receive any remittance are almost twice (66 %) as vulnerable than those who receive such transfer of funds. The difference in household groups by educational stipends (primary and secondary) are significantly different from each other. Although such stipends are believed to supplement the overall income level of the households, the results seem to show that expenditures on food are not proportionally spent. Those households that received any form of stipend are more likely to be vulnerable to food poverty compared to those that do not receive any. These two education stipends seem to have been gaining popularity during the five years prior to the survey. The amount of stipend given to the households steadily increased reaching its peak in 2011 and sharply declined in 2012 during the survey year. However, the results in Table 1 show that only 5 percent of the households indicated that they received secondary education stipend. There is also significant difference between those who experience crop or livestock losses and those that do not. Both types of losses are shown to result in higher rates of vulnerability to food poverty. Groups of households by income loss, or medical expense or productive assets have no differences in their exposure to food poverty.

Table 3 about here.

Determinants of vulnerability to food poverty

The following control variables are significantly and positively correlated with the expected daily per capita expenditure on food: remittance received, livestock losses, household head's years of education, female headship in a household, and persons sleeping in a room. For example, households whose heads have higher years of schooling have higher future mean consumption expenditure on food. This result further supports previous results that show

households headed by employed and educated men are less vulnerable to shocks than other households groups (Ligon and Schechter, 2003). Households that have experienced some level of livestock loss are associated with significantly higher future mean daily per capita expenditure on food. Variables that were significantly and negatively correlated with the expected daily per capita expenditure on food are: education stipends, value of lost assets, household head's age, electricity cost, cellphone cost, and crop yield production. The higher the expenses on either electricity or cellphone, the lower is the mean future daily per capita expenditure on food. Other variables such as new regular job, value of income loss, medical expenditure, rental expense, and loan amount received do not seem to be associated with the per capita food expenditure.

Table 4 about here.

Conclusion

Despite the remarkable economic developments in Bangladesh over the years, significant proportion of the population still live under the poverty, particularly in rural areas (Azam and Imai, 2009; World Bank, 2015). Various sources of risk and uncertainty are relevant to households in Bangladesh of which some are common to all households and occur naturally, e.g., cyclones, and many other sources are targeted towards individual households, e.g., economic and health shocks. Assessing the vulnerability to poverty is viewed as a forward looking measure instead of a static form of poverty, and has been proven to provide a better assessment of poverty under uncertainty (Pritchett, Suryahadi and Sumarto, 2000). Calvo and Dercon (2005) state that households that are currently living under poverty line, may or may not be poor in the future, and therefore, vulnerability to poverty appears to be the best measure that can capture poverty under uncertainty.

The objective of the current study is to examine the impact of economic shocks - positive and negative economic events - and remittance to the vulnerability of households to food poverty.

The study uses survey data of 5844 households from the Bangladesh Integrated Household Survey (BIHS) conducted between October and November 2012 (USAID, 2013). The BIHS was collected to establish baseline information for a set of key indicators of the Feed the Future (FTF) program of the USAID-Bangladesh. It also provides the data for several studies planned under the USAID-funded Bangladesh Policy Research and Strategy Support Program (PRSSP). Results show that households' food consumption is affected by the incidence of both negative and positive economic shocks affecting their vulnerability to food poverty. Economic events such as remittances appear to have the highest impact on household's welfare by providing supplemental income in times of need that boost their consumption levels and therefore reducing their vulnerability to poverty.

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Tables

Table 1: Summary statistics of the principal variables used in the study (N=5844)

Variable	Description	Mean	Std. Dev.
Daily Per Capita Food Expenditure (2005 PPP)		1.10	0.63
Positive Economic Events			
Remittance Amount	Remittance amount per household	571.63	2191.94
Primary Education Stipend	1= Household received primary education stipend ; 0=otherwise	0.18	0.39
Secondary Education Stipend	1= Household received secondary education stipend; 0=otherwise	0.05	0.21
New Regular Job	1= Household secured a new regular job; 0=otherwise	0.03	0.16
Other	1= Other positive economic events occurred ; 0=otherwise	0.03	0.17
Negative Economic Events			
Value of Income Loss	Value of income loss incurred	48.71	465.61
Value of Medical Expense	Value of medical expense incurred	290.32	1611.10
Value of Crop Loss	Value of crop loss incurred	40.30	406.64
Value of Livestock Loss	Value of livestock incurred	30.20	240.71
Value of Asset Loss	Value of asset loss incurred	74.10	1059.46
Value of Other Losses	Value of other losses incurred	102.76	1043.74
Household Characteristics			
Household Head Age (Years)		44.05	13.96
Household Head Education (Years)		3.44	4.15
Household Head Gender	1= Female; 0=Male	0.17	0.38
Home Ownership	1= Household own home ; 0=otherwise	0.51	0.26
Persons per sleeping room		0.52	0.33
Rental Expense	Amount of rent paid by a household	22.60	35.87
Electricity Cost	Amount of electricity expense by a household	2.78	4.06
Light Fuel Cost	Amount of light fuel expense by a household	2.46	19.63
Cell Phone Cost	Amount of cellphone expense a household	6.16	9.11
Loan Amount	Amount of loan received by a household	1037.94	2974.70
Credit	1= Yes; 0=Otherwise	0.65	0.48
Crop Yield	Amount of crop yield	190.84	361.86

Table 2: Per capita food expenditure per day by household's positive and negative economic events (N=5844)

	Household's status regarding an economic event		
	Yes	No	Difference
Positive Economic Events			
Received Remittance	1.34	1.02	-0.32***
Received Primary Education Stipend	0.98	1.13	0.15***
Received Secondary Education Stipend	0.97	1.10	0.14***
Obtained New Regular Job	1.23	1.09	-0.14**
Negative Economic Events			
Lost Income	1.07	1.10	0.03
Incurred Medical Expense	1.11	1.10	-0.02
Lost Crop	1.05	1.10	0.05
Lost Livestock	0.88	1.11	0.22***
Lost Productive Asset	1.11	1.10	-0.01

*** significant at 1%, ** significant at 5 %

Table 3: Vulnerability (%) to food poverty profile comparisons by household's positive and negative economic events (N=5844)

	Household's status regarding an economic event		
	Yes	No	Difference
Overall		58.62	
Positive Economic Events			
Received Remittance	35.01	66.14	31.13***
Received Primary Education Stipend	80.63	53.64	-26.99***
Received Secondary Education Stipend	82.71	57.48	-25.23***
Obtained New Regular Job	39.10	59.16	20.06***
Negative Economic Events			
Lost Income	61.57	58.50	-3.07
Incurred Medical Expense	58.27	59.92	-1.65
Lost Crop	73.03	58.24	-14.79***
Lost Livestock	80.49	57.83	-22.66***
Lost Productive Asset	55.22	58.75	3.52

*** significant at 1%, ** significant at 5 %

Table 4. Regression results of expected log daily per capita food expenditure (N=5844)

	Daily Per Capita Food Expenditure (2005 PPP)
Remittance Amount	0.000
	(6.45)***
Primary Education Stipend	-0.066
	(3.80)***
Secondary Education Stipend	-0.161
	(4.94)***
New Regular Job	0.051
	(1.32)
Other	-0.009
	(0.21)
Value of Income Loss	0.000
	(0.47)
Value of Medical Expense	-0.000
	(1.28)
Value of Crop Loss	-0.000
	(1.29)
Value of Livestock Loss	0.000
	(2.12)**
Value of Asset Loss	-0.000
	(1.56)
Other Losses	-0.000
	(0.95)
Household Head Age (Years)	-0.004
	(9.57)***
Household Head Education (Years)	0.009
	(4.93)***
Household Head Gender	0.044
	(2.19)**
Home Ownership	-0.015
	(0.88)
Persons per sleeping room	0.222
	(8.63)***
Rental Expense	0.000
	(0.69)
Electricity Cost	-0.017
	(8.74)***
Light Fuel Cost	0.000
	(0.08)
Cell Phone Cost	-0.007
	(8.68)***
Loan Amount	0.000
	(0.94)
Credit	-0.023
	(1.56)
Crop Yield	-0.000
	(16.61)***
R^2	0.17

*** significant at 1%, ** significant at 5 %