Effects of Different Socio-economic Characteristics of Rural Households on Their Saving Decision in Pabna District of Bangladesh: A Binary Logistic Regression Analysis

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Authors' contribution

The sole author designed, analysed, interpreted and prepared the manuscript

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ABSTRACT

Household saving ensures a smooth future by softening the potential insecurities arise from uncertainty at the cost of present consumption. Moreover, the volume of national investment determines the actual health of an economy which is intensively associated with national savings. This study aimed at determining the effects of different socio-economic characteristics of rural households on their saving decision in Pabna district of Bangladesh. This research used a set of cross-sectional data from 250 households from three upazilas in Pabna district namely Pabna Sadar, Iswardi and Sujanagar on the relevant variables for the empirical analysis. A multistage random sampling technique involving simple, purposive and stratified random sampling was used to draw the sample. The study employed a binary logistic regression model to assess the influences of different socio-economic and demographic characteristics of rural household on their saving decision. The findings of the current study asserted that gender, family size and dependency ratio of household have significant and negative effects on their decision to start saving or not to start saving. Contrarily, the effects of the variables age, education level, marital status, income, secondary earner and liabilities on the decision of households to participate in saving were positive

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and significant. Moreover, the results revealed that social status has a strong but insignificant effect, but the variables access to bank and credit facilities have almost no significant effect on the household saving decisions. Since, private savings is essential for both the micro and macro level of an economy, therefore the study tried to suggest some recommendations with a view to increase private savings.

1. INTRODUCTION

The prime macroeconomic variable, economic growth is mostly targeted by every economy to achieve their any national goal. Notwithstanding the procurement of other requirements, the possibility of attaining the target of economic growth by a country depends on how much flexible is the investment facilities in the economy. However, the flexibility of investment facilities of an economy directly associated with the abundance of national savings of the economy, which depends on the nature of attitude of individuals and households towards savings in the country. As a way of acknowledging the significance of household savings, it can be noted that household savings is one of the paramount components of national savings of any country. It is evident from economic history that the economies acquired rapid economic growth and development who could attain a massive level of investment predominantly financed by domestic savings [1].

Since the independence, Bangladesh had been belonged to the category of least developed countries (LDCs) for a long time because of its economic backwardness, afterwards being able to flourish its economy recently it has been qualified to be included in the group of developing countries (DCs). Although it is a challenge for the developing countries like Bangladesh to sustain in this group, but this can be faced smoothly if the country is competent to pursue a heavy investment largely financed by its domestic savings. Consequently, there is a goal set in the seventh five year plan in Bangladesh to achieve a GDP growth rate of 8.0 percent or more, which requires to increase its investment to 34.4 percent of GDP by 2020 from 31.2 percent in 2018 by raising national savings rate from 27.4 percent of GDP in 2018 to 32.0 percent by this time [2].

Besides, most of the people both in rural and urban regions lead a distressed life due to future uncertainty which may arise from physical health or even from natural calamities. People may reduce distress by keeping a portion of their income unspent for future use which is called personal savings, because it acts as a mainstay of life in uncertain situations. The more a person saves, the more he is protected against the undesirable outcome appeared from future uncertainty. The level of savings by households does not completely depend on their income only, but on their saving behavior what may be influenced by their various socio-economic characteristics and subjective preferences.

Savings is an economic term which is so important for every sector of an economy of a country even in an individual's life. Since national savings of a country largely depends on the private savings of the country, hence it implies that there is a direct association between national savings and saving decisions of the individuals in the country. A variety of factors affect the saving decision that an individual takes, of which income is the most dominating one as per the theories of economics. However, it have been noticed from various practical situations that two individuals with same income save different amounts; or one saves a substantial amount but another doesn't a single money; or one individual with smaller income saves a considerable amount but another saves nothing even with larger income. That means, there are some situations observed in practice when income solely cannot explain the saving decision of individuals. In that moment, the research question arises for this study that, what are the other factors influencing the saving decision of individuals? Therefore, the study has set its objective to examine the effects of demographic and socio-economic characteristics of rural households in Pabna district of Bangladesh on their decisions to start saving who had never previously done it.

2. LITERATURE REVIEW

Worldwide, a substantial number of researches have been conducted concerning the determinants of household savings. However, all the studies are not similar; they vary one to

another depending on their ideas, analytical techniques and types of data used for analysis. By using least square method for the study on saving behavior and determinants of saving in southern Tigrai Ethiopia, Region & Tesfamariam [3] showed that savings depends on household annual income, whereas age, family size and education level of households are negatively associated with savings. Rehman et al. [4] conducted study to investigate the factors of household savings in Multan district of Pakistan by using a multivariate regression model. The results revealed that household age is positively related to their savings, whereas education of household head, children's educational expenditures, family size, liabilities, marital status and value of house were negatively influencing the household savings. Jongwanich [5] analyzed the determinants of household savings in Thailand with the help of error correction model to examine a broad set of macroeconomic factors. The author disclosed that savings is positively affected by economic growth, inflation and terms of trade. By contrast, the impact of availability of credit, public and corporate savings as well as elderly and young dependencies on household savings is negative in Thailand. Lisa Grace S. Bersales et al. [6] used instrumental variable estimation technique for studying the patterns and determinants of household saving in the Philippines and concluded that level of income, education, percentage of young dependents, percentage of the elderly and percentage of income from abroad have significant influence on household savings, but factors such as the inflation rate and number of banks in the area had insignificant effects. A research regarding the effect of household income along with other demographic and socio economic factors such as education, dependency ratio, earning status, employment status, occupation and secondary earners on household savings by using ordinary least squares (OLS) method has been done by Burney et al. [7], with which they inferred that dependency ratio and the numerous kinds of education are found to have a negative effect on household savings. Athukorala and Sen [8] evaluated the determinants of private saving in India by estimating a saving rate function using the life-cycle model as the analytical tool. They found that the growth rate of per capita income, real interest rate, rate of inflation and spread of banking facilities are the significant and stimulating determinants of domestic savings in India. Olayemi, OS & Michael, J [9] showed that real interest rate has a negative impact on the

level of savings mobilization by conducting an empirical research with a view to determine the impact of real interest rate on savings mobilization in Nigeria. By assessing the determinants of private savings in South Asia, Bhandari, RDD et al. [10], asserted depending on their research findings that private savings is negatively affected by government expenditure and past savings, but it is positively influenced by financial development and growth of per capita income. In addition, other variables like real interest rate, dependency ratio and urbanization have no significant impact on private savings. By using structural equation modelling (SEM) for the adult population of UK, Furnham, A & Cheng, H [11], concluded that adult savings and investment have significantly strong and direct association with parental social status, educational qualifications and occupational prestige, trait conscientiousness, personal financial assessment and gender. Hua, TX & Erreygers, G [12] carried out a study in order to investigate the heterogeneity of household saving propensities in Vietnam by applying quantile regression approach. The results of the study revealed that the effects of household characteristics on saving rates vary across the quantiles in such a fashion that the influences of these characteristics on propensity to save are weaker at higher quantiles compared to lower ones. The study also showed that the impacts of the household characteristics are not similar in rural and urban areas, the characteristics have a stronger significant impact in rural areas than in urban areas.

The most of previous studies focused on the effects of demographic or socio-economic characteristics of households or both on their level of savings, but the present study tried to determine effects of these two types of characteristics on the decisions of households to start saving who had never previously done it. Thus, the review of literature granted the feasibility to conduct a study on effects of different socio-economic characteristics of rural households on their saving decisions in the Pabna district of Bangladesh.

3. RESEARCH METHODOLOGY

Assessing the effects of different demographic and socio-economic characteristics of rural households on their decision to participate in saving in the Pabna district of Bangladesh was the prime objective of the study. A multistage random sampling technique was used for designing the sample for the study in order to

collect a set of cross-sectional data. At first, three upazilas namely Paban Sadar, Iswardi and Sujanagar were selected randomly. Afterwards, fifteen villages (five from each upazila) were chosen purposively, targeting the villages with population of different occupations. Subsequently, the population of these villages were split into five strata depending on their occupations specifically farmer, labourer, service, business and others for the purpose of drawing the sample households with a variety of income and attributes, next a total of 250 people were selected by taking 50 from each stratum. Lastly, a structured questionnaire contained close-ended questions was used to collect data from the selected respondents by using face to face interview method.

The study employed the binary logistic regression model (or simply logit model) in order to assess the effects of different demographic and socio-economic characteristics of rural households on their decision to participate in saving. The property of the binary logistic regression model is that it incorporates the binary response dependent variable which can take only one of two values at a time. The dependent variable in this study is saving decisions made by households, that is, the variable represents whether the households decide to start saving or not, who had never previously done it. The responses of this dependent variable may be either 'yes' or 'no' which can be represented by the 1 (one) and 0 (zero) respectively, where, 1 means decide to start saving and 0 means decide not to start saving. The equation of the logit model picked up here from econometrics text book written by Gujarati, N [13] for the empirical analysis.

$$L_i = Ln\left(\frac{P_i}{1-P_i}\right) = \beta_0 + \beta_1 GEN_i + \beta_2 AGE_i + \beta_3 EDU_i + \beta_4 FAS_i + \beta_5 MAS_i + \beta_6 INC_i + \beta_7 SER_i + \beta_8 ACB_i + \beta_9 DER_i + \beta_{10} SOS_i + \beta_{11} ACF_i + \beta_{12} LIA_i + U_i$$

Where, p_i = probability of the decision to start saving
$(1-p_i)$ = probability of the decision not to start saving
$p_i/(1 - p_i)$ = odds ratio
L= natural logarithm of the odds ratio

Table 1 represents the introduction of the explanatory variables.

4. RESULTS AND DISCUSSION

The results of the logit model, represented in Table 2, were estimated with the help of the software statistical package for social sciences (SPSS). The second column (B) of the Table 2 represents the coefficients of various explanatory variables; which have importance in signs but not in magnitudes. The sign of the coefficient of any explanatory variable indicates the direction of relationship between the probability of the decision to start saving and that variable. The table shows that the coefficients of most of the variables are positive except gender, family size and dependency ratio, which imply that all the factors influence the probability of the decision to start saving positively but gender, family size and dependency ratio affect the probability negatively. The sixth column (Sig.) of the Table 2 represents the significance of the coefficients of different variables. The results assert that the coefficients of education level and liabilities are significant at 1% level; coefficients of age, family size, income and secondary earner are at 5%; and coefficients of gender, marital status and dependency ratio are at 10%; but the coefficients of access to bank, social status and credit facilities are not significant even at 15% level. The seventh column [Exp(B)] in the Table 2 depicts the odd ratios which can be interpreted in magnitudes. The odd ratio for the variable gender is 0.418952 implies that male headed households are about 0.42 times less likely to take the decision to start saving than not to start, other factors remaining unchanged. Likewise, the households with relatively larger family about 0.73 times less likely to take the decision to start saving than not to start, if other factors are held constant. The odd ratio for the variable dependency ratio is 0.764143 means a household with additional one point dependency ratio about 0.76 times less likely to participate in saving than not, if other things remain constant. The results show that age has a positive influence on saving decision, the odd ratio for age means that a household with one additional year older head likely to decide start saving about 1.24 times more than not to decide start, if other things kept constant.

Moreover, it is evident from the results that education level of household has a positive impact on their saving decision, that is, others thing remaining constant a household with relatively more educated head about 1.5 times more likely to decide to start saving than not. The odd ratio for the variable marital status states that keeping other factors constant married household head about 1.4 times more likely to participate in saving than not. The variable income of the household has a positive influence

on their saving decision, which can be inferred from the result that a household with additional one thousand taka income about 1.22 times more likely to participate in saving than not to participate, if all other determinants are not allowed to vary. Additionally, the results illustrate that secondary earner is a very influential variable in the model which strongly dominate the household saving decision, that is, households with secondary earner about 2.31 time more likely to take the decision to start saving than no to start, if all others determinants are kept constant. Besides, the results show that

the variable liabilities has a strong and significant impact on household saving decision, the odd ratio of the variable states that the household with liabilities about 2.6 times more likely to decide to start saving than not start, if all the influences are remained constant. The value of odd ratio for the variable social status represents that it has dominant influence on the household saving decision, but not significant even at 20% level. Furthermore, the results reveal that the variable access bank and credit facilities have almost no significant effect on the household saving decisions.

Table 1. Introduction of explanatory variables

Variable	Symbol	Explanation
Gender of the household head	GEN	'Male' and 'female' are two categories, 0 represents 'female' and 1 means 'male'
Age of the household head	AGE	Quantitative and continuous in nature
Education level of the household head	EDU	Categorized into five groups namely, illiterate, primary, secondary, higher secondary and higher, and represented by 0, 1, 2, 3 and 4 respectively. That is, higher value means higher level of education.
Family size	FAS	Categorized into three groups depending on the number of family members as small, medium and large which is represented by 0, 1 and 2 respectively.
Marital status	MAS	'Single' and 'married' are two categories, 1 for 'married' and 0 for 'single'
Income of the household head	INC	Quantitative and continuous in nature
Secondary earner	SER	'Yes' and 'no' are two categories, 1 means 'yes' and 0 means 'no'.
Easy access to bank	ACB	'Yes' and 'no' are two categories, and represented by 1 and 0 respectively.
Dependency ratio in the household	DER	Measured by the ratio of the number of dependent in the family to total family member
Social status of the household head	SOS	Categorized into three groups depending on their occupation and social dignity, as low, medium and high and represented by 0, 1 and 2 respectively.
Availability of credit facilities	ACF	'Yes' and 'no' are two categories, 1 means 'yes' and 0 means 'no'.
Liabilities	LIA,	'Yes' and 'no' are two categories, 1 for 'yes' and 0 for 'no'.

U_i = error term
i = 1, 2, 3, ... , 250

Table 2. Estimated results of the logit model

Effects of Demographic and Socio-economic Characteristics on Saving Decision						
Variables	B	S.E.	Wald	df	Sig.	Exp(B)
Gender	-0.87	3.101	8.002	1	0.080*	0.418952
Age	0.215	0.024	0.376	1	0.040**	1.239862
Education level	0.407	0.057	1.190	1	0.000***	1.502304
Family size	-0.318	0.002	2.510	1	0.030**	0.727603
Marital status	0.333	0.609	1.446	1	0.089*	1.395147
Income	0.195	1.472	0.018	1	0.040**	1.215311
Secondary earner	0.839	0.897	0.071	1	0.026**	2.314052
Access to bank	0.00058	0.627	1.411	1	0.165	1.00058
Dependency ratio	-0.269	0.543	0.016	1	0.095*	0.764143
Social status	0.925	0.004	0.191	1	0.220	2.521868
Credit facilities	0.0036	2.006	7.036	1	0.156	1.003606
Liabilities	0.957	0.522	9.206	1	0.000***	2.603873
Constant	-2.421	13.111	0.005	1	0.290	0.088833

*Note: *significant at 10%, **significant at 5%, and ***significant at 1% level of significance.*
Source: Researcher's Estimations

5. CONCLUSION AND RECOMMENDATIONS

Although saving is a very crucial terminology both in the macro level of an economy as well as in micro level even in an individual's livelihood. People may reduce the anxieties of life by saving a substantial portion of his income, since it acts a safeguard against probable unfavorable outcomes in future. Moreover, the accumulated savings, by the households who are economically vulnerable at present, can be used as a source of emergency private investment required to overcome their economic hardship. Although the private savings is a dominant component of national savings, accordingly the saving action of household performs as a complementary operation for the macro level of the country.

Furthermore, there is a progressive trend of budget deficits in Bangladesh has been noticed from the nature of fiscal budgets of the country in the recent years, consequently the country is facing a challenge to identify the sources of deficit financing. Under these circumstances, the national savings of the country may play the role as a savior, which requires a substantial increase in the national savings immediately. In this regard, accelerating the private savings is the most feasible way to achieve the sufficient level of national saving. The discussion guided that it is inevitable for any country to increase private savings, since it essential for both the micro and macro level of an economy. The findings of the current study assert that gender, family size and dependency ratio of household have significant and negative effects on their decision to start saving or not to start saving. Contrarily, the effects of the variables age, education level, marital status, income, secondary earner and liabilities on the decision of households to participate in saving are positive and significant. Based on the findings, the present study tried to provide some policy recommendations with an aim to increase private savings in Bangladesh. Those are as follows:

- As per the findings of the study, households with additional education and additional age tend to participate more in saving because of their extra knowledge and experience about savings. So, if it is possible to provide ideas about advantages and process of savings to the rural people by arranging seminar, workshop or any other with an aim of raising their awareness about savings, may be stimulating for private savings.
- It was reported from the field survey, at present interest is no more a so lucrative factor to attract people towards savings, therefore additional incentives such as extension of the range of savings for tax rebate will tend to rise private savings by the tax payers. Besides, launching new saving windows with flexible and attractive in nature, and making it popular by advertising may be feasible way to increase private savings.
- According to the tax payer respondents' opinion, only a very few types of savings are acceptable for tax rebate. So, if more types of savings are brought into this category, in that case saving will be more attractive to the tax payers.

- Since, the research findings revealed that the households with secondary earner are more to likely participate in saving, hence if it is possible to create earning facilities for the unemployed members in households, in that situation savings of the household may rise. This seems to be feasible by making the unemployed in the households skilled in a specific work through training.
- From the field survey it was observed that many of the rural people are not interested in saving, albeit they have the ability. Therefore, if it is possible to implement a specific type saving scheme (like provident fund for government employees) by the government that will force the people lies in a certain range of income to save a portion of their earnings.
- The findings of research illustrated that household with high dependency ratio tend to save less and vice versa. So, it can be possible to increase savings by arranging flexible working facilities for the dependents in the households.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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