Indebtedness among farm households: Evidences from Nadia district of West Bengal

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ABSTRACT: The present investigation was undertaken to find out the magnitude and the determinants of farmers' indebtedness in Nadia district of West Bengal. Data for the study was collected from 80 farm households during 2014-2015 through personal interview using survey method. The information was analyzed using simple statistical tools like averages and percentages and multiple regression technique. The findings revealed that almost 96 per cent of the farm households in the study area were indebted with an average outstanding amount of Rs. 51,455. The debt servicing capacity of sub-marginal farmers was very low. The major factors, influencing indebtedness positively, were observed to be the interest rate, diversion of farm loan towards non-productive purpose and high consumption expenditure. The study called for strengthening of rural financial institutions to persuade farmers to use institutional credit only.

Key words: Indebtedness, loan utilization pattern, rural credit, repayment, West Bengal

Agriculture in our country is the mainstay of majority of farm households, yet inadequate financial resources coupled with low accessibility to improved farm technologies and small and fragmented land holdings result into a low production and returns on Indian farms. Even most of the farmers are unable to generate enough income to continue with farming, which in turn increases the number of landless labourers and migrants. The need for agriculture credit becomes more imperative when there is a shift from traditional agriculture to modern agriculture, as it demands a rise in use of high yielding varieties, agricultural chemicals and mechanization. Incidentally the capacity of Indian farmers to save and invest money is very low which consequently makes farmers highly dependent on external credit. Even policy interventions like minimum support price based procurement mechanism and warehouse receipt financing do not help these farmers with low marketable surplus to raise their income much. No wonder that the National Sample Survey Organization (NSSO) 2003 data indicate that 40 per cent of farmers do not wish to continue cultivation. According to the NSSO survey (2013) about 52 per cent of the agricultural households in the country were estimated to be indebted and the average amount of outstanding loan per agricultural household was estimated to the tune of Rs. 47000. Agrarian distress has led many farmers in Indian states to commit suicide, and such suicides are reported regularly (Assadi, 1998; Deshpande, 2002; Gill, 2005; Sidhu and Gill, 2006; Bharti, 2011). In the context of West Bengal, 52 per cent of farmers were reported to be indebted to formal and informal sources of credit which is same as the all India average (NSSO, 2013). The outstanding loan per household was estimated

at Rs.17,800. In absolute term 3.3 million farm households have been found indebted in the NSSO survey. As per the District Human Development Report, 2011, the average rural indebtedness in Nadia district was 37 per cent. The extent of indebtedness in the district varied from 20 per cent to 50 per cent. Average interest rate on credit, availed by farm households in West Bengal, has been found to be around 14.64 per cent (Banerjee, 2007). Poor loan repayment and non-repayment of farm loans clearly threaten the growth of institutional credit in agriculture sector. The low recovery of loans in West Bengal has contributed to the rise in bad loans for banks, including United Bank of India (Lead bank for 10 districts out of 18 districts). As estimated for the year 2013 the recovery rate of farm loan for United Bank of India was only 58 per cent. Keeping in view the above backdrop, the study was undertaken in Nadia district of West Bengal with the following specific objectives (i) to examine the sources and quantum of farm credit availed by farm households, (ii) to examine the loan utilization pattern of farm households, (iii) to assess the magnitude of indebtedness and debt-servicing capacity of farm households, (iv) to identify factors determining indebtedness, and (v) to examine the repayment performance of farm households for farm credit.

The outcomes of the study would facilitate in analyzing the extent, incidence of indebtedness and the socio-economic factors that affect indebtedness in different size groups of farmers. The research findings will help suggesting various measures to this end and assist in formulating relevant policies by the government, in an attempt at reducing such debt. However, since study is

based on a limited sample, hence the extent of generalization has to be made cautiously as agro-socio-ecological conditions vary over time and space.

MATERIALS AND METHODS

The study was conducted in Nadia district of West Bengal. This district has the distinction of being one of the leading vegetables producing districts of West Bengal, evidently the farmers are engaged in a capital intensive farming which makes them highly dependent on external credit sources. From the district, two blocks were selected purposively, following the District Human Development Report (June, 2012), one with the highest indebtedness and the other with the lowest indebtedness among the 17 blocks in the district. From each block, two villages were selected randomly, i.e., in total four villages were selected for the study. From each of the four villages, twenty farm households were selected for different land holding sizes using probability proportion to size method. For convenience based on land holding size, farmers were categorised as 'Sub-marginal' (< 1.00 acre), 'Marginal' (1.00-2.50 acres), 'Small' (2.50-5.00 acres) and 'Medium and Large' (> 5.00 acres) farmers. The data was collected for the year 2014-2015. Pre-structured interview schedule was used to collect data personally from the respondents. The data were further analyzed, interpreted and tested with the help of appropriate statistical techniques *viz.*, averages, percentages and regression.

In order to explain the factors determining indebtedness, regression analysis was performed in which outstanding loan amount per household in rupees (Y) was considered as the dependent variable. The major explanatory variables *viz.*, average interest rate in per cent (X_1), per cent non-institutional loan (X_2), loan diverted to non-productive purposes in rupees (X_3), farm income in rupees (X_4), non-farm income in rupees (X_5), value of assets in rupees (X_6), education level measured in terms of number of years of schooling (X_7), and consumption expenditure in rupees (X_8) were included in the regression function. Following form of multiple linear regression equation was fitted to estimate the parameters (a and b's) of the model:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + \mu$$

Prior to estimating the coefficients, explanatory variables were examined for the presence of multicollinearity. The ordinary least squares (OLS) technique was applied to estimate the regression coefficients and their statistical significance was tested with the help of t-statistic.

RESULTS AND DISCUSSION

It seems worthwhile to mention here that Nadia district constitutes nearly 5.66 per cent of West Bengal's population. The population density per square kilometre is 1316 which is on rise over time due to migration from nearby regions of Bangladesh. The average literacy rate of the district is 75 per cent which is more in males (79 per cent) than that of females (71 per cent). The economy of the district is primarily agriculture based as majority of population derive income from crop production and animal husbandry.

The empirical results and findings in the light of predetermined objectives of the study are elucidated in this section under eight sub-heads *viz.*, sources of credit, quantum of credit, loan utilization pattern, magnitude of indebtedness, debt-income ratio, debt-servicing capacity, factors influencing indebtedness, and repayment performance of farmers.

I. Sources of Credit

Farmers borrow funds from different sources, broadly from institutional and non-institutional sources. In the investigation it was estimated that 26.25 per cent respondents borrowed from both institutional and non-institutional sources, while no farmer was found to borrow exclusively from non-institutional sources. As high as 72.50 per cent farmers availed credit only from institutional sources. The medium and large farmers and small farmers availed credit solely from institutional sources, whereas, marginal and sub-marginal farmers borrowed from both institutional and non-institutional sources of credit. However, dominance of institutional sources over non-institutional sources was also noted for all the cases. Hence, from the findings it can be inferred that in the study area farmers used institutional credit more than non-institutional credit probably on account of awareness regarding advantages of availing credit from institutional agencies, like low interest rate, debt-waiver schemes, less chances of losing their lands and assets on failure to repay the loan etc.

Institutional Credit: About 90 per cent farmers borrowed only short term credit, 7.50 per cent farmers borrowed both short term and term loan (medium-term loan and long-term loan), while 1.25 per cent farmer availed only term loan. Further, farm size category wise break-up of institutional loans indicated that almost all the farmers in each category availed short term credit, whereas, term loan was availed only by small and marginal farmers. Only 8.75 per cent farmers borrowed term loan and 2.50 per cent farm households availed term loan. From the findings it is clear that farmers in the district heavily relied on crop loans, irrespective of their land sizes, for meeting the costs involved in production of various crops.

The co-operatives and commercial banks were found to be two major sources serving credit need of the farming

community in the study area. Around 35 per cent farm households availed farm credit from co-operative banks followed by commercial banks (25.00 per cent) and regional rural banks (16.25 per cent). A very few farmers (2.50 per cent) availed credit from microfinance agencies and self help groups.

Non-institutional Credit: No medium and large farmers as well as small farmers availed non-institutional credit. Total 26.25 per cent farmers, who were found to borrow from non-institutional sources, were marginal (11.25 per cent) and sub-marginal farmers (15.00 per cent).

Among various non-institutional sources, friends and relatives appeared as the most important source of credit followed by professional moneylenders and traders. Amongst the marginal farmers, 3.75 per cent availed credit from professional moneylenders and 3.75 per cent from friends and relatives, whereas, 1.25 per cent borrowed from agricultural moneylenders and rest 2.50 per cent borrowed from traders. On the other hand, among the sub-marginal farmers, who borrowed from different non-institutional sources, majority of farmers, i.e., 6.25 per cent borrowed from friends and relatives. Further, 5.00 per cent borrowed from traders and rest 3.75 per cent availed credit from professional moneylenders.

II. Quantum of Credit

An average amount of short term credit availed of Rs. 43,782. Further for short term loan the average amount of loan availed by medium and large farmers was Rs. 86,250 and that of for small farmers was Rs. 52,500. The average short term loan availed by marginal and sub-marginal farm households were Rs. 43,382 and Rs. 33,276 respectively.

An average amount of term loan Rs. 1,80,000 was availed by farmers in the study area. For small farmers and marginal farmers, who availed term credit, the average borrowed amount were Rs. 2,10,000 and Rs. 1,05,000 respectively. Hence, the overall average institutional borrowing by the farmers in the study area turned out to be Rs. 59,177.

The average non-institutional borrowing in the study area was Rs. 61,143. Among marginal farmers the average non-institutional borrowing was Rs. 85,778 and that of for sub-marginal farmers was Rs. 42,667.

The average amount of both institutional and non-institutional credit borrowed by the farmers in the study area was Rs. 74,488. The average borrowings by medium and large farmers was Rs. 86,250 and that of for small, marginal and sub-marginal farmers were Rs. 1,40,000, Rs. 72,265 and Rs. 49,233 respectively. The average rate of interest was found to be 7 per cent per annum for short-term loan, 10.29 per cent for term loan and 22.74 per cent for non-institutional credit.

III. Loan Utilization Pattern

Farm loans availed by farmers are used in various productive purposes, while some portion of the loan sometimes may also be directed to meet the consumption or other unproductive needs of farm households. Table 1 presents the loan utilization pattern of sampled farm households. A perusal of table reveals that 86.78 per cent of the average institutional credit availed (Rs. 59,177) was used for productive purposes while 13.22 per cent was used in unproductive purposes.

Purpose of Availing Non-institutional Credit: The study found that the maximum portion of the non-institutional credit availed by farm households (75.13 per cent for marginal farmers and 49.00 per cent for sub-marginal

Table 1: Institutional loan utilization pattern of farmers

Average amount of loan availed = Rs. 59,177.00			
PRODUCTIVE PURPOSES		**NON-PRODUCTIVE PURPOSES**	
Items	**Amount (Rs.)**	**Items**	**Amount (Rs.)**
Seed	1526.76 (2.58)	Food	668.75 (1.13)
Fertilizers & Manures	2686.31 (4.54)	cloth	31.25 (0.05)
Plant protection	1301.89 (2.20)	Education	287.50 (0.49)
Labour	10409.33 (17.59)	Health	312.50 (0.53)
Irrigation	3805.08 (6.43)	Ceremony	1962.50 (3.32)
Other operating costs	2507.30 (4.24)	Repaying old debt	3937.50 (6.65)
Marketing	1976.51 (3.34)	House repairing	625.00 (1.05)
Livestock	1674.71 (2.83)		
Business	3704.40 (6.26)		
Machineries	21759.38 (36.77)		
TOTAL	51352.00 (86.78)	TOTAL	7825.00 (13.22)

Figures in the parentheses indicate percentage

farmers) was used for seeking jobs to other countries. For marginal farmers the next main purpose of borrowing was repaying old debt (19 per cent), whereas, that for sub-marginal farmers was ceremonies (27.40 per cent) followed by repayment of old debt (18.00 per cent).

IV. Magnitude of Indebtedness

As high as 96.25 per cent of the farm households were found to be indebted in the study area with an average outstanding amount of Rs. 51,455. The extent of indebtedness was 100 per cent among medium and large farmers, 91.67 per cent among small farmers, 97.06 per cent among marginal farmers and 96.66 among sub-marginal farmers. The outstanding loan amount (average of institutional and non-institutional loan) calculated on the basis of per farm household and per hectare is furnished in Table 2. The table reveals that the average outstanding amount with large and medium farmers was Rs. 22,500. The average outstanding amounts with small, marginal and sub-marginal farmers were Rs. 64,091, Rs. 53,031 and Rs. 42,939 respectively. The outstanding loan was very high on per hectare basis with sub-marginal farmers (Rs. 1,89,641) followed by marginal farmers (Rs. 88,527) as shown in Table 2.

V. Debt-Income Ratio

The debt-income ratio indicates the relative debt burden on farmers. A higher ratio indicates greater burden of debt. It was expressed as the ratio between the outstanding loan amount per farm household and the net income of that household for the period of the study (Table 3). The overall debt-income ratio was found to be 0.76. The debt-income ratio was found to be the highest (1.26) in case of sub-marginal farmers followed by marginal farmers (0.75) and small farmers (0.60) and the ratio was the lowest in case of medium and large farmers with a value of 0.13.

VI. Debt-Servicing Capacity of Farm Households:

The surplus, after meeting the consumption expenditure from gross income (which includes both farm and non-farm income), is the net income. After meeting the domestic consumption expenditure need from the net income, the remaining portion is available to farmer to repay his debts, which is considered to be debt servicing capacity.

The average debt servicing capacity for farmers was found to be Rs. 8,662 as shown in Table 3. The debt servicing capacity of medium and large farmers (Rs. 45,355) was much higher than that of farmers of other three classes. It was the lowest in case of sub-marginal farmers with a magnitude of Rs. -578, which indicates that their average consumption expenditure was higher than their net income by Rs. 578.

VII. Factors Influencing Indebtedness

The major factors determining indebtedness of farm households (Y) included in the model were average interest rate (per cent), proportion of non-institutional loan (per cent), loan diversion to non-productive purposes (Rs.), farm income (Rs.), non-farm income (Rs.), value of assets (Rs.), education level (number of years of schooling), and consumption expenditure (Rs.). The regression model was fitted in the linear form to examine the significance of the impact of select explanatory variables on the farmers' indebtedness.

The results of the multiple regression are depicted in Table 4. The table shows that, the average interest rate, diverted

Table 2: Outstanding loan amount (Rs.) per farm household and per hectare

Category	Outstanding per household (Rs.)	Outstanding per hectare (Rs.)
Sub-marginal	42,939	1,89,641
Marginal	53,031	88,527
Small	64,091	50,357
Medium & Large	22,500	25,453
Average	51,455	35,394

Table 3: Debt-income ratio and debt-servicing capacity of farmers for different farm categories

Farm size category	Average debt (Rs.)	Average net income (Rs.)	Debt-income ratio	Average domestic expenditure (Rs.)	Debt servicing capacity (Rs.)
Sub-marginal	42,939	33,939	1.26	34,517	-578
Marginal	53,031	70,737	0.75	59,779	10,957
Small	64,091	1,06,451	0.60	93,425	13,026
Medium & Large	22,500	1,74,605	0.13	1,29,250	45,355
Average	51,455	67,488	0.76	58,826	8,662

Table 4: Factors affecting indebtedness among farm households

Explanatory Variables	Coefficients	Standard Error
Intercept	-8607.57[NS]	17906
Average interest rate (Per cent)	6630.702*	1197.968
Proportion of non-institutional loan (Per cent)	127.524[NS]	181.0196
Diverted amount to non-productive purposes (Rs.)	0.492762***	0.24435
Farm income (Rs.)	-0.58173***	0.35488
Non-farm income (Rs.)	-0.49317*	0.193047
Value of assets (Rs.)	-0.02114[NS]	0.014109
Education (No. of year of schooling)	-1528.96**	753.6378
Consumption expenditure (Rs.)	0.771106*	0.266015
$R^2 = 0.76$	$n = 80$	

*, ** and *** indicate significance at 1%, 5% and 10% level of significance respectively

Table 5: Rate of repayment for different type of credit availed by farm households

Farm size classes	Repayment of Institutional Credit		Repayment of Non-institutional Credit (Per cent)
	Repayment of Short Term Credit (Per cent)	Repayment of Term Credit (Per cent)	
Sub-marginal	11.77	-	21.34
Marginal	26.73	24.31	27.80
Small	49.52	53.94	-
Medium & Large	73.92	-	-
Average	28.68	45.48	24.11

loan amount to non-productive purposes and consumption expenditure of farm households had positive and statistically significant effect on farmers' indebtedness implying as the level of these factors increases the indebtedness level goes up. However, both farm as well as non-farm incomes showed a negative and statistically significant impact on indebtedness. Education level also showed a negative and statistically significant relationship with farmers' indebtedness and indicated that one year rise in year of schooling would reduce indebtedness by Rs. 1528.96. This finding is supported by Pandey (2016), who found an inverse relationship between extent of indebtedness and education level, and suggests that the quantum of indebtedness is likely to decline as the household head's education level increases. This is probably due to the fact that education helps increasing the managerial capability and efficiency of the farmer leading to building the borrower's credit character. Undoubtedly, a person of high credit character can withstand unforeseen events and may save himself from becoming indebted.

VIII. Repayment Performance

The poor repayment performance severely discourages institutional agencies to lend in primary sector. In the study the rate of repayment for the surveyed households was examined for both institutional and non-institutional credit. The rate of repayment was calculated by taking repaid amount as proportion of the availed loan amount by the farmers. The results of the same are reproduced in Table 5.

Table reveals that the rate of repayment for short term credit was highest on medium and large farms (74%) followed by small farms (50%) and marginal farms (27%) and it was lowest on sub-marginal farms (12%). The repayment performance for term loan was better for small farmers (54%) than marginal farmers (24%). In case of non-institutional credit which was availed by only sub-marginal and marginal farmers, the rate of repayment was noted 21 per cent and 28 per cent, respectively.

CONCLUSION

Farmers irrespective of farm size groups were found availing both institutional credit as well as non-institutional credit in the study area. Therefore, efforts are called for strengthening of rural financial institutions to persuade farmers to use institutional credit only. Greater financial inclusion is also required especially for marginal and sub-marginal farmers to restrain them resorting to non-institutional credit for consumption need. Institutional financial agencies should take proactive steps to provide consumption credit to the farming community. Emphasis should be given to improve farmers' income and education level in order to reduce their indebtedness level and at the same time to improve their debt servicing capacity.

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