

AGRICULTURE INDEBTEDNESS AMONG THE FARMERS OF JHARKHAND

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Adoption of new agricultural technology has helped in transforming the subsistence agriculture into the commercial one. The modern technology is expensive and consequently expenditure on crop production is increasing. Since most of the inputs used by the farmers are now purchased from market, the farmer have to spend huge amounts of cash on purchasing market supplied farm inputs to carry out their production operations. Expenditure incurred by the Jharkhand farmers on modern farm inputs has been steadily growing it has resulted in continuous decline in the net surplus generated from the production of crops. The farmers have to purchase the inputs from the market at higher prices and they have to sell their produce at relatively lower prices. The farmers' dependence on the borrowed funds has increased. The main objective of the present study is to examine the extent and determinants of the indebtedness among the farmers of Jharkhand.

INTRODUCTION

Agriculture is the most important sector of the Indian economy which contributes about one-fifth of the national income besides providing employment to about three-fifths of the working population of the country. Agriculture in some of the states of Indian union experienced technological transformation during the mid sixties. The technological transformation has been in terms of increased use of high yielding varieties of seeds, assured irrigation, fertilizers, insecticides and pesticides and farm machinery. The success of the new agricultural technology was termed as green revolution. It has helped in increasing the food grains production as well as income levels of farmers in the region which adopted the new agricultural technology successfully. The adoption of new agricultural technology has helped in transforming the subsistence agriculture into the commercial one. The modern technology is expensive and consequently expenditure on crop production is increasing. Since most of the inputs used by the farmers are now purchased from market, the farmers have to spend huge amounts of cash on purchasing market supplied farm inputs to carry out their production operations.

Since expenditure incurred by the farmers on modern farm inputs has been steadily growing which has resulted in continuous decline in the net surplus generated from the production of crops. The new agricultural technology created the cultural links of the farmers with the cities. In the race of maintaining good standard of living the consumption expenditure of the farmers increased at a still faster rate. The farmers are also spending more on socio-religious ceremonies and construction of better houses. The growth of consumption expenditure has absorbed almost the entire increase in income of the farming community. Very little surplus is left with the farmers to finance the modern, market supplied farm inputs.

With the advent of new agricultural technology subsistence agriculture in many parts of India has been transformed into commercial agriculture. The process of farming with new methods of production has increased the financial needs of the farmers. Introduction of modern technology in the field of agriculture necessitated increased use of capital both in terms of building farm infrastructure and meeting operational costs. But the Indian farmers are suffering from stagnation owing to low

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productivity arising from inadequate investment. So, the farmers cannot afford investment from their own savings to transform traditional agriculture into modern one. The loans obtained for investment in seeds, fertilizers, agro-chemicals and so on are partly spent for their bare subsistence and for fulfillment of their social obligations. Consequently, they get fresh loans at higher rate of interest to pay back the old ones. Mechanization of agriculture has increased cultural links of the rural people with the cities, resulting in the race of maintaining good standard of living. In this race the farmers are caught in the vicious net of indebtedness.

REVIEW OF LITERATURE

Indebtedness is a difficult concept and there are differences of opinion on it. The existence of indebtedness among farmers in Indian economy has widely been explored and analyzed by scholars, economic theorists and policy-makers. Considerable amount of literature has been developed by the economists to evaluate effects of green revolution on income, consumption, indebtedness and factors affecting indebtedness of the farmers. Different studies have analyzed the different determinants of rural indebtedness.

Mukherjee (1949) observed that average loan per family increases as the area owned increases. The proportion of indebted families in different land-owning groups was more or less equal but the proportion of indebted families was the largest among small holders. The existing burden of debt was heavier on the poorer strata as a whole than on the strata of families that were comparatively well to do or self-sufficient.

Tewari (1965) analyzed the demand peculiarities and the factors influencing borrowing based on the data of the Reserve Bank of India. The author observed that the proportion of indebted families in areas, which had a fairly well developed economy, was higher than the districts, which were predominantly food grain producing. Areas with predominance of food crops had proportionately inferior repaying capacity than that of the areas with cash crops. The large proportion of total debt among big and large cultivators was contracted for agricultural purposes whereas between medium and small cultivators it was higher for consumption purposes.

Lavania and Shukla (1965) conducted a study on capital investment furnishing relevant details of assets and liabilities on various sizes of farms. Latest technology from abroad or have a competitive atmosphere, leaving the agriculture sector to the vagaries of free market provides disastrous for the farmers. (Jodhka, 2006). Climate and weather patterns have not supported agricultural growth and weather induced instability continued to increase indebtedness of the farmers. The subordination of cultivators to market and capital forces without any safety net to support them in times of crop loss accounts for the devastation of rural communities (Vasavi, 1998). Crop insurance has operated for a long as crop credit insurance and did not provide a sufficient safety net cover to the farmer's indebtedness. (Deshpande, 2002). In addition to the attending effects of impoverishment, there is the stigma and loss of honour that result from being indebted and penurious. (Vasavi, 1998).

The extent of indebtedness is also determined by the source of credit as observed in many studies (Lanjouw and Stern (1998); Sinha et al (2005); Singh and Malhotra (1973); Awasthi (2005)). One important cause of high indebtedness in dependence on non-institutional source of loan, particularly moneylenders [Pandey et al (2005) and Kumari (2005)].

There is a general trend that the amount of debt per indebted household increases as size of holdings increase (Singh and Mehrotra, 1973; Atteri, Amit and Alka, 2005; Kingra et al, 2005; Sale and et al, 2005; Hatai, Singh, Sen and Dixit, 2005).

Apart from the above Social Scientists, Balishter (1989), Assadi (1998), Deshpande (2002), Sukhvir Kaur (2006) has also examined the different aspects of indebtedness among the farmers in India. Deogharia (1994, 2006) has examined rural credit and indebtedness in Jharkhand. Singh (1972) has also analyzed the impact of bank loan on farm economy of Ranchi District of Jharkhand. Deogharia (2016) has analysed the determinants of rural indebtedness among the farmers of Jharkhand.

The analysis of levels and pattern of income and consumption of the farmers brings out the fact that the income of the farmers is not sufficient to meet the day-to-day expenses. The average propensity to consume is greater than one for the marginal, small and medium farm size categories. So as to bridge the expenditure income gap, the farmers are compelled to borrow loans from various institutional and non-institutional agencies. Institutional arrangements for providing loans have not yielded expected results. As a consequence of which the farmers are forced to approach the non-institutional credit providing agencies at the time of need.

The present paper attempts to assess and analyze the debt position of the different farm-size categories in the rural areas of Jharkhand and the objectives of the paper is to estimate the extent and determinants of indebtedness among the different sample farm-size categories.

METHOD

The study is based upon primary data. Stage stratified random sampling method was adopted. Data was collected by pre-tested schedules during 2015-16. The study has been conducted in the South-Chotanagpur region of Jharkhand. Five districts namely, Ranchi, Gumla, Lohardaga, Simdega & Khunti were selected for the purpose of the study. Two blocks from each districts were covered and primary data was collected from the selected sample households.

An attempt has been made to estimate and compare the debt position of sample households of the different farm-size categories in rural Jharkhand. Concentration of debt within various categories has also been studied. Source-wise debt has been classified according to the lending agencies. The various purposes for which the different categories of the farmers take loans have also been studied.

TOOLS

It is important to study the factors associated with indebtedness. Log linear regression is tried to analyze the relative indebtedness for the different farm-size categories of the selected regions as given below:

$$Y = f(x_1, x_2, x_3, x_4, x_5, x_6)$$

Where,

Y	=	Indebtedness;
x_1	=	Size of Family;
x_2	=	Ratio of credit from non-institutional sources to that from institutional sources
x_3	=	Income from sources other than the main occupation
x_4	=	Expenditure on unproductive purposes of borrowed fund
x_5	=	Educational level of the decision-maker in the family (Dummy Variables)
X_6	=	Farm-size (Acres).

The results of the tabular and functional analysis are discussed below.

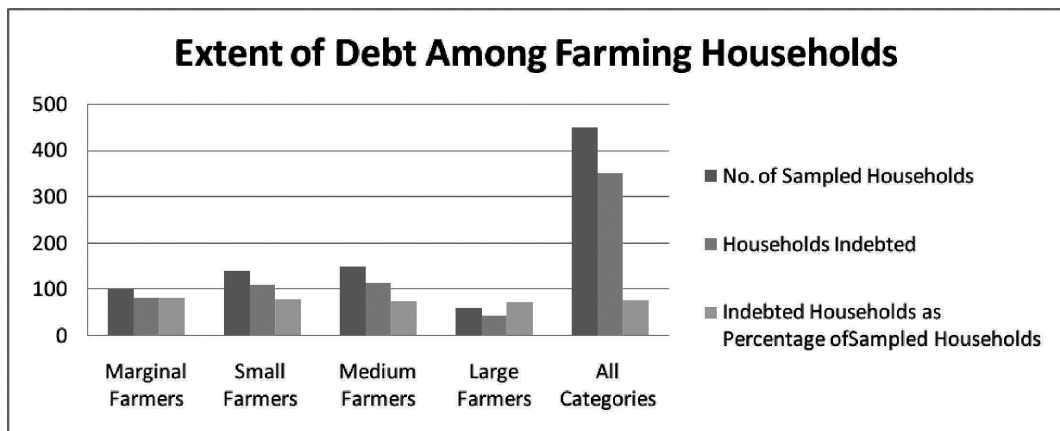
Extent of Debt Among Farming Households

The extent of debt among the different farm-size categories in the study area is shown in [Table-1](#). The table shows that 78.05 per cent of the farming households in the State of Jharkhand are under debt. There are certain variations across the different farm-size categories. The percentage of indebted households of the marginal farm-size category is 82.18, while in the case of small, medium and large farm-size categories, these percentages are 79.29, 76.00 and 73.33 respectively.

Table-1 : Extent of Debt Among Farming Households

Farm-size Categories	No. of Sampled Households	Households Indebted	Indebted Households as Percentage of Sampled Households
Marginal Farmers	101	83	82.18
Small Farmers	140	111	79.29
Medium Farmers	150	114	76.00
Large Farmers	60	44	73.33
All Categories	451	352	78.05

Source: Primary Data.



The average amount of loan per indebted farming household is Rs. 9010.43 in Jharkhand, while the average amount of loan per sampled household is Rs. 4105.70. It is interesting to note that the amount of loan per indebted household and per sampled household increases as farm-size goes up. This reveals that the needs of farmers are increasing as farm-size increases because without investing in operational as well as fixed costs, the major share of income cannot be generated.

PER ACRE INDEBTEDNESS

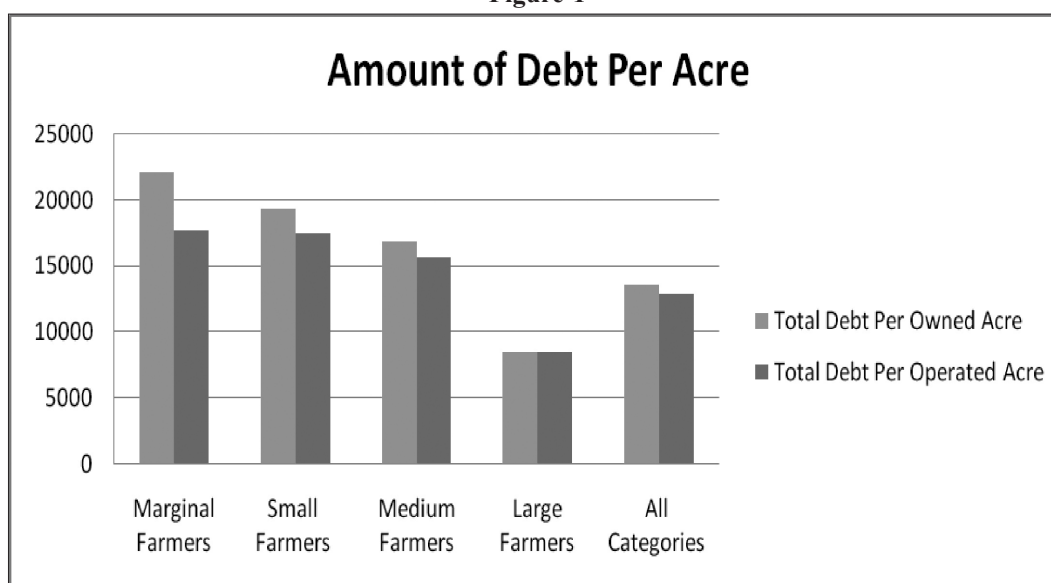
The amount of loan per operated acre and per owned acre is given in [Table-2](#). The table reveals that for an average farming household, the amount of loan per owned acre and per operated acre is Rs. 13637.98 and Rs. 12900.79 respectively. The category-wise amount of loan per owned acre and per operated acre is the highest among the marginal farm-size category followed by the small, medium and large farm-size categories.

Table-2 : Amount of Debt Per Acre

(Mean Value in Rs.)

Farm-Size Categories	Total Debt Per Owned Acre	Total Debt Per Operated Acre
Marginal Farmers	22104.45	17746.23
Small Farmers	19390.82	17495.81
Medium Farmers	16951.88	15686.82
Large Farmers	8529.83	8497.52
All Categories	13637.98	12900.79

Source: 1Primary Data.

Figure-1

The analysis shows that the burden of debt is greater on the lower farm-size categories as compared to the large farm-size category. The large farm-size category partly finances its crop production operations from its own savings as average propensity to consume of this category is less than one.

INDEBTEDNESS ACCORDING TO SOURCE OF CREDIT

The role of various credit agencies in the study area has been analyzed and the information is presented in [Table-3](#). The table shows that an average farming household in Jharkhand has taken Rs. 42553.67 of loan from non-institutional agencies, while Rs.81552.01 from institutional agencies. The marginal farmers are under a debt of Rs. 37799.48, out of which Rs. 20684.14 is taken from non-institutional agencies and the remaining Rs. 17115.34 from institutional agencies. The small farmers are indebted to the extent of Rs. 35154.27 to non-institutional agencies and Rs. 41827.29 to

the institutional agencies; where as the corresponding figures are Rs. 62706.67 and Rs. 105455.99 respectively for the medium farmers. The large farm-size category obtained Rs. 46250.00 from non-institutional agencies and Rs. 222951.67 from institutional agencies. This category has taken the highest amount of loans from commercial banks. The marginal, small and medium farm-size categories have taken the highest amount of loan from commission agents.

Table-3a : Debt Incurred From Different Credit Agencies (Non-Institutional Agencies)
(Mean Values in Rs.)

Sl. No.	Sources of Debt	Marginal Farmers	Small Farmers	Medium Farmers	Large Farmers	All Categories
1.	Large Farmers	3700.46	3992.85	666.67		2289.91
2.	Professional Money-lenders	2007.42	843.57			711.42
3.	Commission Agents	14976.26	30317.85	62040.00	46250.00	39552.34
	Sub-Total:	20684.14	35154.27	62706.67	46250.00	42553.67

Source: Primary Data.

Figure-2

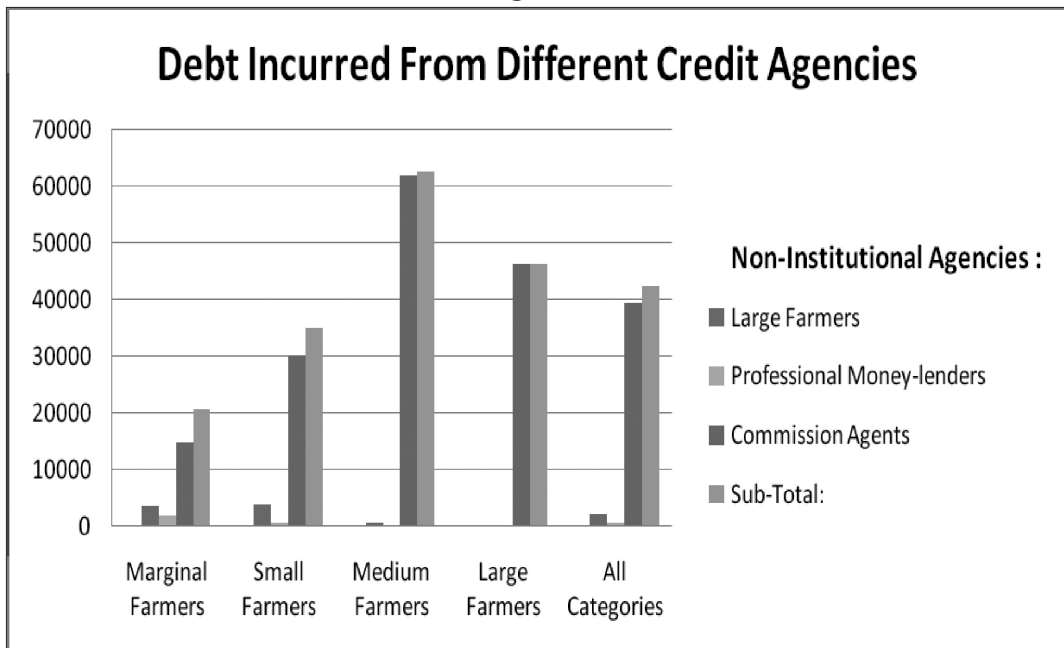
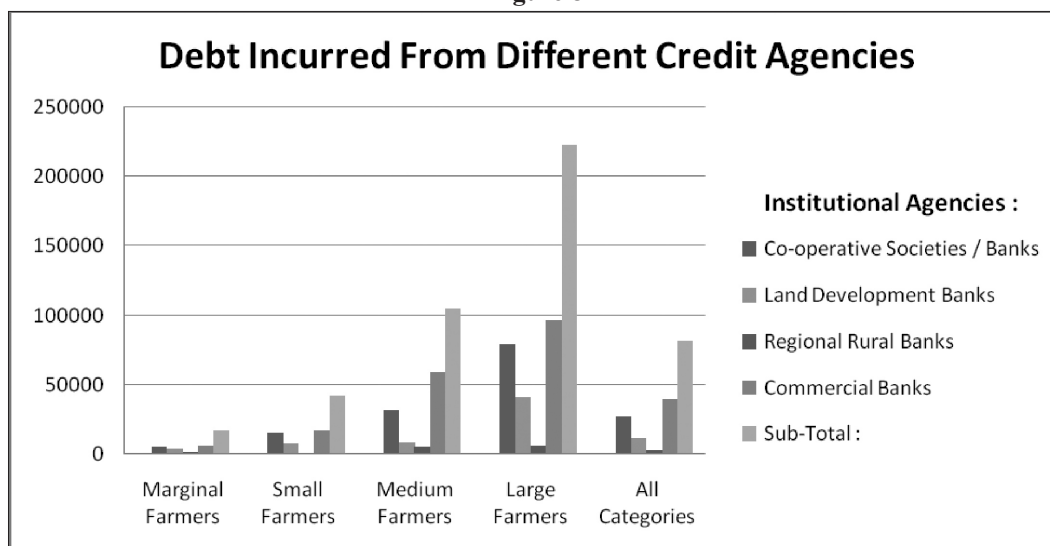


Table-3b : Debt Incurred From Different Credit Agencies (Institutional Agencies)

Sl. No.	Sources of Debt	Marginal Farmers	Small Farmers	Medium Farmers	Large Farmers	All Categories
1.	Co-operative Societies / Banks	5605.93	15792.86	32081.33	79305.00	27378.49
2.	Land Development Banks	3634.66	7928.57	8633.33	41000.00	11601.10
3.	Regional Rural Banks	1511.88	652.15	5193.33	6166.67	3088.69
4.	Commercial Banks	6362.87	17453.71	59548.00	96480.00	39483.63
	Sub-Total :	17115.34	41827.29	105455.99	222951.67	81552.01
	Total :	37799.48	76981.56	168162.66	269201.67	124105.68

Source: Primary Data.

Figure-3

So, here this fact is established that the farmers find it easy to get loans from private agencies and they hesitate to take loan from institutional agencies because of the time consuming formalities and cumbersome procedures. The proportionate shares of different credit agencies in total debt are given in [Table-4](#). The table depicts that an average farming household has taken about 66 per cent of total loans from institutional agencies. This proportion increases with the increase in farm-size. Remaining 34.28 per cent of total loans is taken from non-institutional agencies. This proportional share is inversely associated with farm-size. About 32 per cent of total loans are taken from commission agents by an average farming household. This proportional share is inversely related with farm-size. The marginal, small and medium farm-size categories have taken the highest loans from this source. The commercial banks are the second important source of loan for an average farming household contributing 31.30 per cent to the total loan. This proportion is positively associated with farm-

size. The large farm-size category has taken the highest loan from this source. The co-operative societies/banks are the third important source of loans from which an average farming household has taken 22.06 per cent of total loans. This proportion is the lowest for the marginal farm-size category followed by the medium, small and large farm-size categories. At the fourth rank comes the land development bank from which an average farming household has obtained 09.35 per cent of total loans and this proportionate share is the highest for the large farm-size category followed by the small, marginal and medium farm-size categories. The share of regional rural banks is 02.49 per cent for an average farming household. About 2 per cent of total loans have been taken from large farmers. This proportion is 09.79 per cent for the marginal farm-size category.

Table-4a : Debt Incurred From Different Credit Agencies (Non-Institutional Agencies)
(Percentage of Total Debt)

Sl. No.	Sources of Debt	Marginal Farmers	Small Farmers	Medium Farmers	Large Farmers	All Categories
1.	Large Farmers	09.79	05.19	00.40		01.85
2.	Professional Money-lenders	05.31	01.10			00.57
3.	Commission Agents	39.62	39.38	36.89	17.18	31.86
	Sub-Total:	54.72	45.67	37.29	17.18	34.28

Figure-4

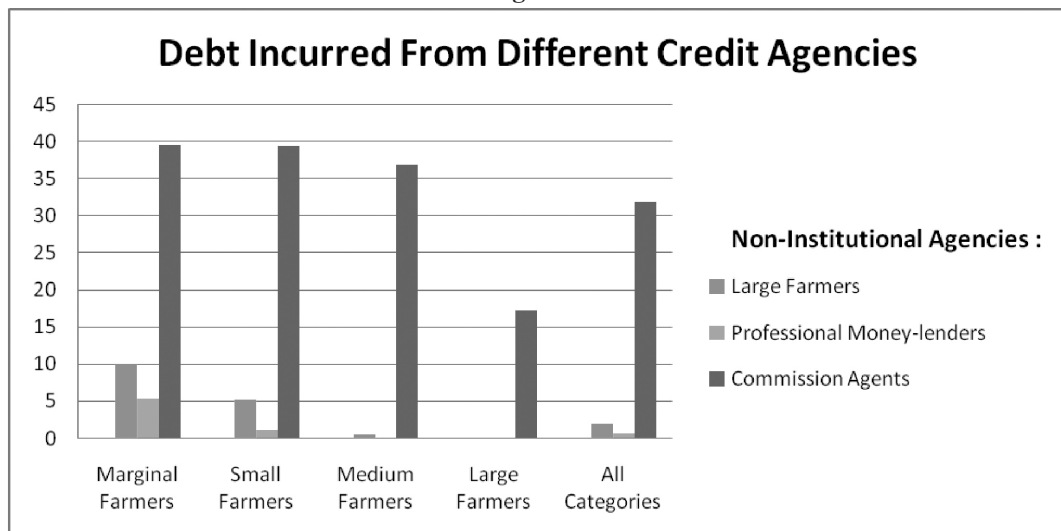
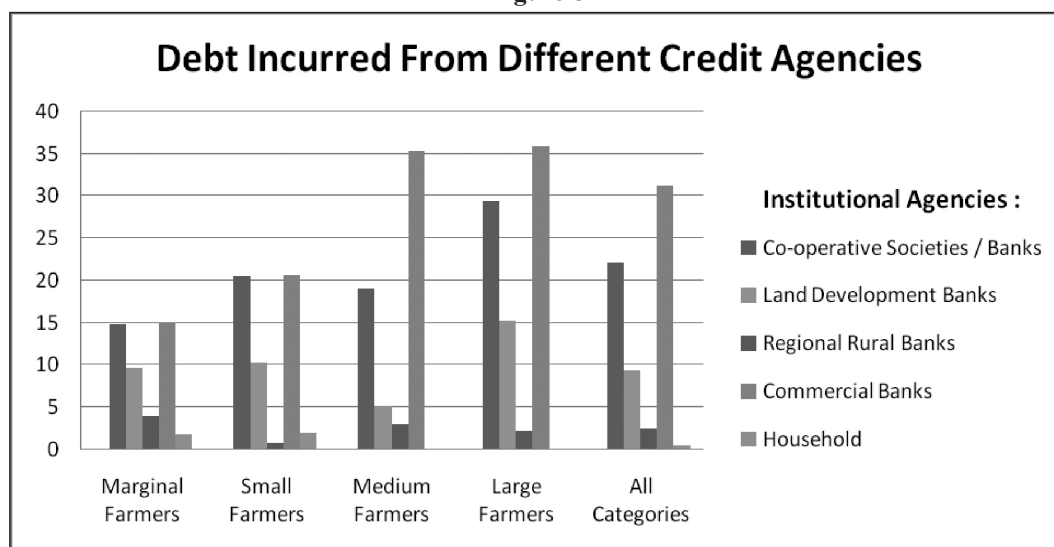


Table-4b : Debt Incurred From Different Credit Agencies (Institutional Agencies)
(Percentage of Total Debt)

Sl. No.	Sources of Debt	Marginal Farmers	Small Farmers	Medium Farmers	Large Farmers	All Categories
1.	Co-operative Societies / Banks	14.84	20.51	19.08	29.46	22.06
2.	Land Development Banks	09.61	10.30	05.13	15.23	09.35
3.	Regional Rural Banks	04.00	00.85	03.09	02.29	02.49
4.	Commercial Banks	14.92	20.66	35.41	35.84	31.30
5.	Household	01.91	02.01			00.52
	Sub-Total :	45.28	54.33	62.71	82.82	65.72
	Total :	100.00	100.00	100.00	100.00	100.00

Source: Primary Data.

Figure-5



Source-wise, the small and medium farm-size categories have much similarity in pattern. For these categories major sources of loans are commission agents, commercial banks, co-operative societies/banks and land development banks. The remaining two categories have a different pattern. For the marginal farm-size category the major sources of loans are commission agents, co-operative societies/banks, commercial banks and large farmers. In case of the large farm-size category the major sources of loans are commercial banks, co-operative societies/banks, commission agents and land development banks. These facts clearly bring out that even after about sixth decades of independence, the marginal, small and medium farmers in Jharkhand are still in the clutches of non-institutional agencies particularly commission agents.

FACTORS AFFECTING INFECTEDNESS

Purpose of Loan

The purpose for which a loan is taken is an important indication of its potential to be repaid. The farmers take loans for both productive and non-productive purposes. Loans for non-productive purposes here refer to those loans which are not directly utilized in the production process. The information about debt incurred for different purposes has been analyzed. An average farming household in the state incurs Rs. 80266.00 (64.48%) for productive purposes and remaining Rs. 43839.68 (35.32%) have been taken for non-productive purposes. Absolute amount of loans for productive purposes is positively associated with the farm-size. Farm inputs are the major purpose for which loans have been taken. An average farming household incurs Rs. 59124.77 for this purpose and this amount increases as the farm-size goes up. This is the result of application of new agricultural strategy which is a costly affair and known as inputs package.

The proportional share of loans spread on the different purposes is presented in Table-5. The table indicates that 64.68 per cent of the total loan is taken for productive purposes. This proportion increases as the farm-size increases. This proportion is as high as 82.82 per cent for the large farm-size category and about 40 per cent for the marginal farm-size category. Among the different purposes, the highest share goes to the purchase of farm inputs and this proportion is positively associated with the farm-size. The second main purpose is family maintenance expenditure which accounts for 22.85 per cent of total loans of an average farming household. This proportion is the highest for the small farm-size category followed by the marginal, medium and large farm-size categories. 13.33 per cent of total loans have been taken for building farm-inventory by an average farming

Table-5a : Debt Incurred For Different Purposes (Productive)

(Percentage of Total Debt)

Sl. No.	Purpose of Debt	Marginal Farmers	Small Farmers	Medium Farmers	Large Farmers	All Categories
1.	Farm Inventory	05.02	16.71	15.32	09.94	13.33
2.	Farm Inputs	20.91	30.46	44.37	70.53	47.64
3.	Milch Cattle	13.88	04.72	01.80	02.35	03.35
4.	Purchase of Land	--	--	00.79	--	00.36
	Sub-Total:	39.81	51.89	62.28	82.82	64.68

Source: Primary Data.

Figure-6

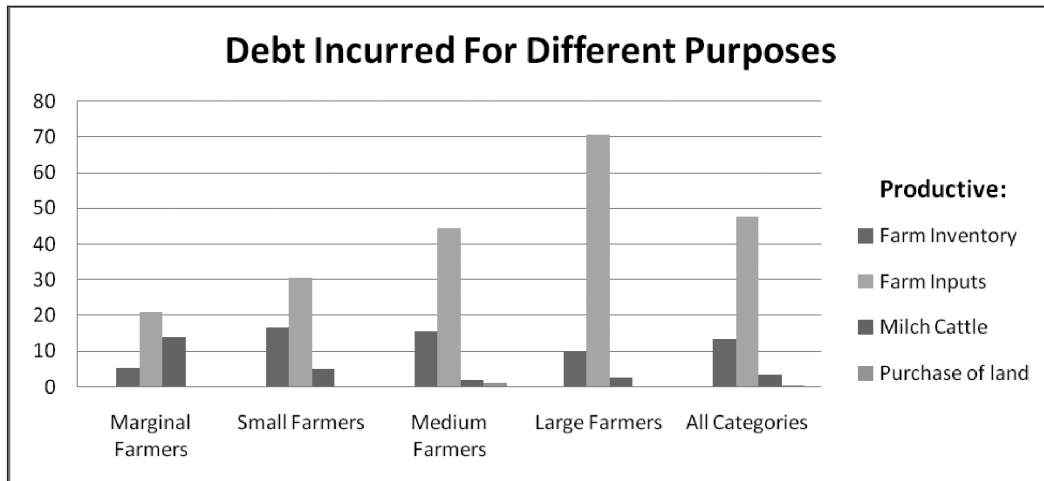
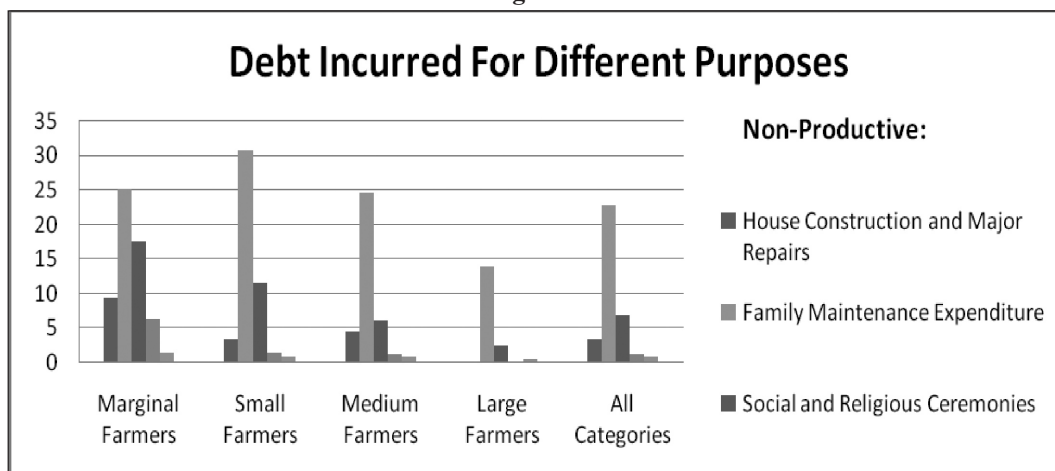


Table-5b : Debt Incurred For Different Purposes (Non-Productive)
(Percentage of Total Debt)

Sl. No.	Purpose of Debt	Marginal Farmers	Small Farmers	Medium Farmers	Large Farmers	All Categories
1.	House Construction and Major Repairs	09.49	03.41	04.58	--	03.36
2.	Family Maintenance Expenditure	25.24	30.82	24.75	14.02	22.85
3.	Social and Religious Ceremonies	17.66	11.57	06.15	02.54	06.94
4.	Redemption of Old Debts	06.28	01.39	01.28	--	01.28
5.	Expenditure on Health	01.52	00.92	00.84	00.62	00.84
6.	Others	--	--	00.12	--	00.05
	Sub-Total :	60.19	48.11	37.72	17.18	35.32
	Total :	100.00	100.00	100.00	100.00	100.00

Source: Primary Data.

Figure-7



household. About 7 per cent of total loans are incurred for social and religious ceremonies. House construction and major repairs is another important purpose of debt for an average farming household.

The marginal farm-size category has taken the highest share 60.19 per cent for non-productive purposes. Out of it 17.66 per cent and 25.24 per cent is incurred for expenditure on social and religious ceremonies and family maintenance respectively. 9.49 per cent of total loans have been taken for house construction and major repairs for this category. Remaining 39.81 per cent of total loans have been taken for productive purposes from which the highest share about 21 per cent goes to farm inputs followed by milch cattle and farm inventory.

The small farm-size category has taken 48.11 per cent of total loans for non-productive purposes. Out of it 42.39 per cent have been taken for family maintenance and social and religious ceremonies. These farmers incurred 51.89 per cent of total loans for productive purposes. From which 30.46 per cent and 16.71 per cent have been taken for farm inputs and farm inventory respectively. The higher debt for non-productive purposes as marriages and other social ceremonies, house construction and major repairs is the result of conservative approach towards maintaining fake social status which is far from reality. Another feature of the present study is quite disturbing. The annual consumption expenditure of both the small and marginal farmers' households far exceeds their annual income. Since they try to maintain the bare minimum level of consumption, they frequently resort to borrowing mainly for consumption purposes. The survey also revealed another disturbing feature. Very often the small and marginal farmers sell a part of their small land holding to raise funds for consumption needs of the family. The medium and large farm-size categories have taken maximum loans for productive purposes. The proportional share is 62.28 per cent and about 83 per cent for the medium and large farm-size categories respectively. Purchase of farm inputs is the main purpose for which these farmers resort to borrowings. The medium farmers have taken some loans for purchase of land. About 38 per cent and 17.18 per cent of total loans have been taken for non-productive purposes by the medium and large farm-size categories respectively.

Debt and Rate of Interest

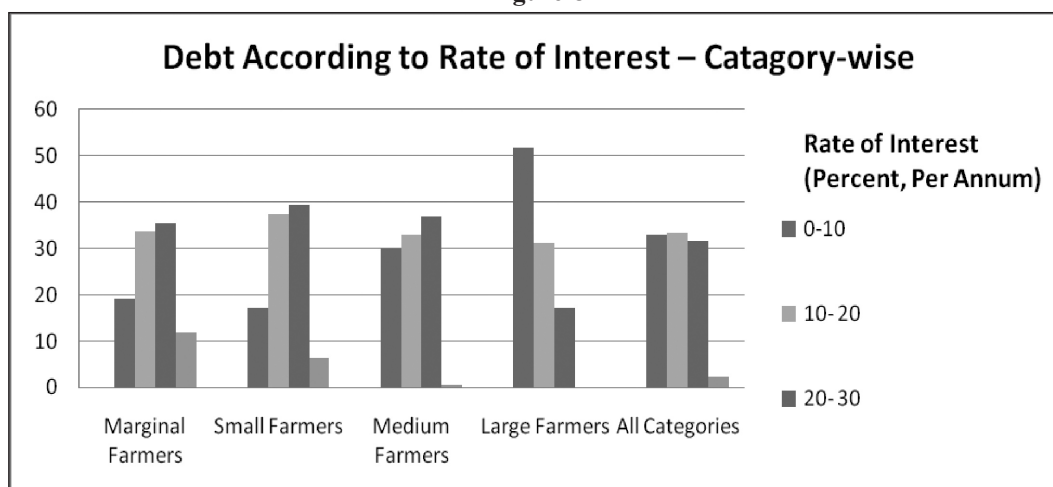
Relative shares of different ranges of rate of interest in total loans are given in Table-6. The table shows that on an average 33.29 per cent of total loans have been taken at the rate of interest ranging between 10 to 20 per cent. This proportion is the highest for the small farm-size category followed by the marginal, medium and large farm-size categories. Another substantial proportion about 33 per cent of total loans of an average farming household comes in the range of 0 to 10 per cent. This proportion increases as farm-size goes up except the small farmers. The large farm-size category has borrowed the maximum proportion of total loans at this rate of interest. 31.58 per cent of total loans have been taken at the rate of interest ranging between 20 to 30 per cent. The maximum proportion of total loans is borrowed in this range of rate of interest by the marginal, small and medium farm size categories. Slightly more than 2 per cent of total loans have been borrowed at more than 30 per cent. This proportion is 11.86 per cent and 6.27 per cent for the marginal and small farm-size categories respectively. The foregoing analysis brings out the fact that the marginal and small farm-size categories have borrowed the maximum amount of loans at higher rate of interest. These two categories of farmers are still dependent upon non-institutional sources which charge exorbitant rate of interest.

Table-6 : Debt According to Rate of Interest – Category-wise
(Percentage of Total Debt)

Sl. No.	Rate of Interest (Per cent, Per Annum)	Marginal Farmers	Small Farmers	Medium Farmers	Large Farmers	All Categories
1.	0-10	19.17	17.02	29.82	51.68	32.94
2.	10-20	33.55	37.40	32.86	31.14	33.29
3.	20-30	35.42	39.31	36.92	17.18	31.58
4.	30-40	11.86	06.27	00.40	--	02.19
	Total :	100.00	100.00	100.00	100.00	100.00

Source: Field Survey.

Figure-8



DETERMINANTS OF INDEBTEDNESS

The amount of debt at a point of time is influenced by several economic and non-economic factors. The various economic factors, important as they are in the policy framework are subjected to analysis. It is hypothesized that indebtedness depends upon farm-size, family-size, ratio of credit from non-institutional sources to that from institutional sources, subsidiary income, expenditure on unproductive purposes and educational level. This objective is met by fitting a number of series of regression function. Regression function finally selected is based upon the better coefficient of multiple determination (R^2), significance of the parameters and sign of the regression coefficients of the parameters and sign of the regression coefficients which are theoretically consistent. In order to determine and signify the factors influencing indebtedness among the farming households in rural Jharkhand, multiple regression model is used. The results obtained are presented in [Table-7](#).

Table-7 Factors Determining Indebtedness Among Farmers in Jharkhand
Results of Multiple Regression Analysis

Sl. No.	Factors	Marginal Farmers	Small Farmers	Medium Farmers	Large Farmers	All Categories
1.	Family Size	159 (1.02)	1238* (4.21)	367** (2.13)	891	3179.28** (2.56)
2.	Ratio of Credit from Non-Institutional Sources to that from Institutional Sources	1.30* (2.75)	0.316* (4.84)	0.88* (9.8)	0.15* (6.71)	0.92* (12.22)
3.	Income from Subsidiary Occupations	-0.36* (5.37)	-0.21* (5.54)	-0.78* (4.35)	-0.26* (4.98)	-0.22* (7.79)
4.	Expenditure on Unproductive Purposes	0.093* (5.39)	0.855* (3.00)	0.61	0.25* (6.24)	0.45* (4.73)
5.	Education Level	-155.6* (4.86)	-1718.63* (8.33)	-293.03* (5.59)	16918.5* (2.64)	-285.14* (7.12)
6.	Farm-size	107.33	2944.59*** (1.65)	1119.95 (0.35)	4368.75 (0.06)	5901.73* (4.57)
	R²	0.62	0.64	0.92	0.73	0.83

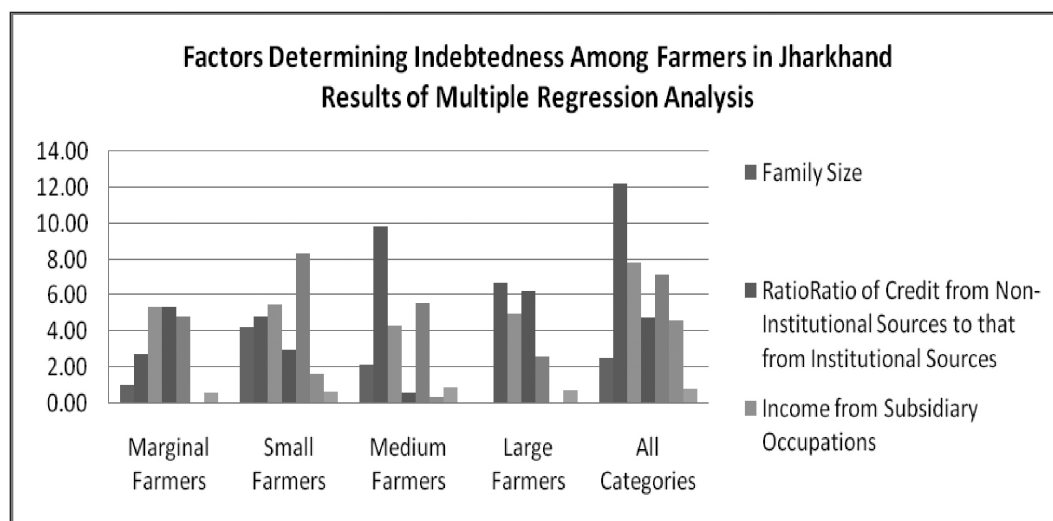
Source: Field Survey

Note : Figures in parentheses indicate t-values, where

* Significant at one per cent

** Significant at five per cent

*** Significant at ten per cent.



The estimated log linear relationship between indebtedness and explanatory variables for the marginal farmers is presented in the above table. The estimates indicate that the ratio of credit from non-institutional sources to that from institutional sources, income from subsidiary occupations, expenditure on unproductive purposes, and educational level are the main determinants of indebtedness. The regression coefficient for family size and farm-size are non-significant statistically.

The coefficient of ratio of credit from non-institutional sources to that from institutional sources and expenditure on unproductive purposes are positive and statistically significant at one per cent level of probability. The regression coefficient for income from subsidiary occupations and educational level are found to be negative which implies inverse relationship between income and indebtedness and between education level and indebtedness. Together, all the explanatory variables explain 62 per cent of the variation in the magnitude of indebtedness.

The estimates of regression coefficient suggest that the variations in the magnitude of indebtedness of the small farmers explained to a large extent by family size, ratio of credit from non-institutional sources, to that from institutional sources expenditure on unproductive purposes, income from subsidiary occupations and farm-size.

The regression coefficient for family size is of the order of 1238 and is significant at one per cent level, indicating positive relationship of family size with indebtedness. This may be due to the increased unproductive expenditure on family maintenance, marriages, shelter and so on with the increase in family size. The regression coefficient for farm-size is positive and significant at ten per cent level, which indicates indebtedness increases as farm-size goes up. The coefficient of multiple determinations is 0.64. This suggests that explanatory variable explains 64 per cent variation in the dependent variable.

Variations in the magnitude of indebtedness among the medium farmers are explained by family-size, ratio of credit from non-institutional sources to that from institutional sources, income from subsidiary occupations and educational level. These are statistically significant at one per cent level of probability. Regression coefficients of non-institutional to that from institutional sources and family size are positive which indicate that indebtedness increases as either family size increases or debt from non-institutional sources increases. Income from subsidiary occupations and educational

level are having inverse relation with indebtedness. If the educational level of the household increases the indebtedness decreases, the value of R^2 is of the order of 0.92.

For the large farmers the regression coefficients of credit from non-institutional sources to that from institutional sources and expenditure on unproductive purposes are positive and significant at one per cent level of probability, where as for the income from subsidiary occupations and educational level, the regression coefficients are negative and statistically significant. The coefficients for family size and farm-size are not significant. Taken together all the variables explain 73 per cent variation in the dependent variables.

In the case of all the categories of the farming households taken together, the contribution of the explanatory variables such as ratio of credit from non-institutional sources to that from institutional sources, expenditure on unproductive purposes, income from subsidiary occupations, educational level and farm-size are statistically significant at the one per cent level of probability, family size is significant at five per cent of probability. The regression coefficients for income from subsidiary occupations and educational level are negative which indicate that indebtedness decreases as education level of the head of family increases or the income from sources other than agriculture increases.

The regression coefficients for family size, farm-size and expenditure on unproductive purposes are positive. This implies that with the increase in family expenditure on family maintenance, the indebtedness also increases. Positive relation between farm-size and indebtedness shows that the capability to take loans increases as farm-size increases.

CONCLUSION

Indebtedness is a difficult concept to define and there can be genuine differences of opinion on what it exactly means or should mean. We have defined total debt as the amount on which the farmers have to pay interest, i.e. the principal amount that is due towards them and has to be repaid. It may be noted that although the short-term loans taken by farmers are mostly repaid after harvesting and sale of crops, yet this constitutes debt because interest has to be paid on these loans every year as the amount is borrowed again and again every year to finance the crop production operations. So, these short-term crop loans amount continues from year to year and may be called recurring debt.

The above analysis of determinants of indebtedness shows that increase in income from subsidiary occupations, increase in educational level of the head of the family and reducing the unproductive expenditure results in reducing the magnitude of indebtedness.

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