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# Indebtedness and its causal factors among farmers in Sangroor district, Punjab: A Household level analysis

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**Abstract**

*Indebtedness is one of the main causes of distress in agricultural sector. Despite tremendous expansion in the banking network and the growth of institutional credits for agriculture, severity of agricultural indebtedness still persists. Indebtedness of the farmers has been aggravated by the decline in profits from the agricultural production, the increasing cost of inputs, commercialization of agriculture and dependence on money lenders. The paper explores the nature and extent of indebtedness and its causal factors among farmers in an agriculturally advanced district of Punjab. The study is based on primary data collected through field work during 2011. The authors made a comprehensive survey of 380 households using stratified sampling technique. The results revealed that of the total indebted farmers, most of the large farmers availed loan from Gramin banks. Cooperative societies were the main source of majority of medium and semi-medium farmers. All the sampled small and marginal farmers borrowed money from money lenders at an exorbitant rate of interest. Large, medium and semi-medium farmers utilized their loan on productive purposes while small and marginal farmers spent borrowed money on non-productive purposes. Multilevel regression analysis showed that level of net returns is the most influencing causal factors of indebtedness among all farmers. Farm-wise regression analysis revealed that high cost of cultivation and low level of net returns have compelled the semi-medium, small and marginal farmers to borrow money. Correlation between indebtedness and causal factors in the case of medium and large farmers was not significant. However, discussion with these farmers indicated that they availed loan for increasing net returns. The study suggested measures for reducing debt burden among the vulnerable farmers in the study area.*

**Key words:** *Indebtedness, Causal factors, Variability, Farmers, Sangroor district, Punjab*

## Introduction

Agriculture not only provides food but also provides raw material to the manufacturing industries. Though share of agriculture and allied sectors has declined to13.9 per cent of the Gross Domestic Product in 2013-14 (Economic Survey, 2013-14), it is still the largest economic sector accounting for about 54.6 per cent of total employment and playing a significant role in the overall socio-economic development of the country (Census of India, 2011). The food grain production in India has increased from 218 million tonnes in 2009-10 to 264 million tonnes in 2013-14 but the per-capita availability of food grain has steadily declined from 444 grams per day in 2009 to 220 grams per day in 2013 (Ministry of Agriculture, 2009-14). This shows that significant increase in food grains has not

been able to keep pace with the increase in population. This situation has arisen due to the increasing cost of cultivation and falling crop prices. Further, income from cultivation is inadequate and it becomes difficult for the farmer to plan for all possible risks including vagaries of nature and market related uncertainties and it is in this context that indebtedness crops up as a problem (Mishra, S, 2007).

Farmers' indebtedness becomes distress if the debt taken is not used for productive purposes like purchase of inputs and creation of agricultural infrastructure instead it is utilized for non-productive purposes like marriages and social ceremonies. Agrarian distress due to indebtedness may also occur in the form of vulnerability of farmers to natural calamities. Indebtedness is further mounted because of high input costs, stagnant technology and lack of remunerative prices. All these factors make it impossible for the farmer to repay his capital and interest (Shergill, 1998; Ghuman, 2001; Gill, 2000, Rao and Suri, 2006). Small and marginal farmers generally borrow money from money lenders at high rate of interest. The accumulated liability of principal and compound interest can sometimes become crippling, and the farmers may be forced to mortgage or sell their land losing means of their livelihood. Heavy indebtedness and inability to pay can become one of the important causes for farmers' suicides (Radhakrishna, *et al*., 2007).

The structural transformation process in Punjab has reduced income generation in the rural economy. The commercialization and mechanization of agriculture have distorted the self-sufficiency of the villages, forcibly exposing them to be the vagaries of the market economy. The pace of transformation of the livelihood of the rural population from agricultural sector to non-agriculture sector has been pretty slow (Singh *et al*., 2008). Profitability from farming showed a downward trend, turning the green revolution pale and hence the crisis of the rural economy came to the fore in the form of indebtedness. There are harmful economic, social and political consequences of heavy rural indebtedness, affecting adversely the economy of the state. The consequences of mounting indebtedness on farmers are very serious indeed. It is this indebtedness that is responsible for low standard of living and worsening poverty amongst in cultivating classes. Due to heavy debts, the farmers are unable to properly market their product. The farmers are compelled to sell their produce in an isolated market for the advantage of the traders. As a result of debts, the income of the farmers is mostly spent for repayment and agricultural improvements tend to get neglected. Rural indebtedness is, therefore, the causes as well as the effect of the growing poverty of the Indian farmers. Keeping all these views in mind, this paper makes an attempt to explore and analyze the nature of indebtedness and its causal factors. Evidence has been taken from Sangroor district of Punjab.

**Study Area**

Sangroor district is one of the agriculturally prosperous districts of Punjab. Technology was ushered in the district in 1960s. With the result the district made rapid strides in agricultural productivity and production and achieved steady economic growth. Sangroor falls in the Malwa region of Punjab. The district forms a part of Indo-Gangetic plains.

The district is bounded by Ludhiana and Firozpur districts in the north, by Bhatinda and Barnala districts in the west and by Patiala district in the east and by Jind district of Haryana in the south. The district of Sangroor spreads from 29 º 44' and 30 º 42' North latitudes and 75 º 18' and 76 º 13' East longitudes (Fig.1). Sangroor has an area of 3610 sq. kms. According to 2011 census, the population of the district is 16, 54,408 with 8, 78,628 males and 7, 75,780 females. The district has recorded a decadal population growth rate of 13.16 per cent during 2001-2011. The district has population density of 419 persons per sq. km. The sex ratio is 883 females per thousand males. This district is dominated by rural population which is 68.76 per cent. The district has an overall literacy rate of 68.9 per cent; the male and female literacy rate is 74.2 per cent and 62.9 per cent respectively. The district is divided into five *tehsils* namely Maler Kotla, Dhuri, Sangroor, Sunam and Moonak. These *tehsils* are further sub-divided into 10 blocks namely Maler Kotla, Ahmadgarh, Amargarh, Sangroor, Bhawanigarh, Lehragaga, Andana, Sunam, Dhuri and Sherpur spread over 697 villages including nine uninhabited villages (Statistical Abstract of Punjab, 2011).

**Database and Methodology**

The data were collected from primary sources through field surveys, household surveys, interviews with farmers and discussion with government officials. The field work was done by the authors during the year 2011. For getting accurate information, the farmers' households were visited frequently. The data for studying indebtedness and its causal factors among the farmers were drawn from a comprehensive survey of 380 farmers' households covering 20 villages in the study area with the help of a questionnaire.

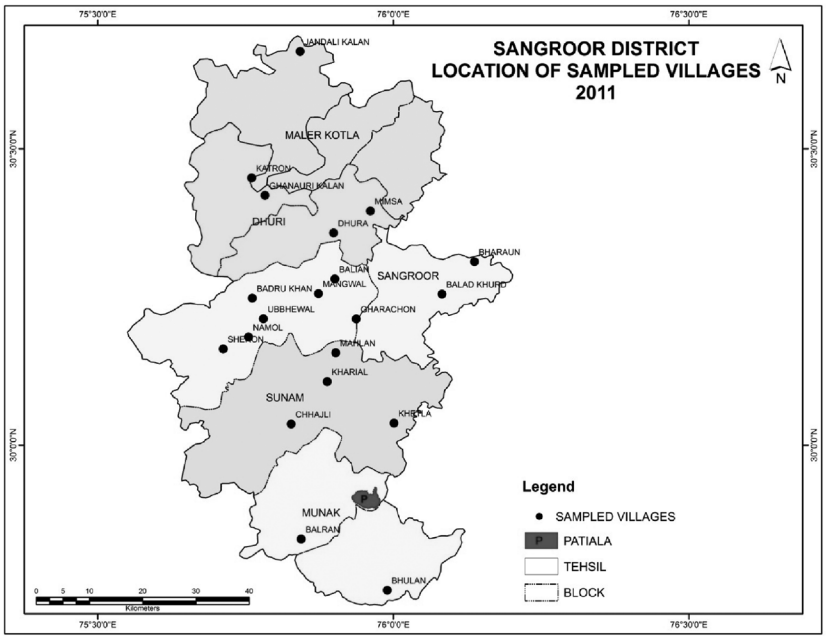


Fig. 1: Location of sampled villages in study area.

The sample design adopted was stratified random sampling. The population of villages was classified into five strata viz, less than 2,000, 2,000 to 4,000, 4,000 to 6,000, 6,000 to 8,000 and 8,000 and above. From each of these strata 4 villages were selected randomly keeping into consideration the wide spatial coverage of the entire district. In this way 20 villages were selected from the whole district (Fig. 1). In the category of more than 8,000 population size, there were only two villages, therefore, two more villages had been taken from the previous category i.e., 6,000 to 8,000 population size. Pondering over the selection of households in each village, again stratified random sampling was used. In this case, the criteria for judging the stratum were the farm size categories. From each farm size category, four households were selected randomly. Therefore, from each village 20 households were to be surveyed. But in five villages namely, Sheron, Bharo, Dhura, Jandali Kalan and Balad Khurd, there were no large farmers. Therefore, from the expected sample size of 400 households, 20 households were deducted and the ultimate sample size stood out to be 380.

The variability in yield levels, expenditure and net returns was measured by applying coefficient of variation across various farm-sizes. Since rice and wheat are the only crops grown during the entire year in Sangroor district, therefore, only these two crops have been the major focus of analysis. Correlation, multiple regression and bivariate regression techniques were used to analyze the relationship between indebtedness and its causal factors.

## Results and Discussion

### *Indebtedness of the sampled households*

In a total of 380 households surveyed, 97 per cent households were indebted. Among the households that were indebted, the comparison of the number of households across farm size gave a picture that only 12.8 per cent of the large farmers' households were indebted and 21.8 per cent of medium, semi-medium, small and marginal farmers each were indebted (Table 1).

Table 1: Farm-wise distribution of indebted households in Sangroor district, Punjab.

| Farmers' Category | Number of indebted farmers' households | Percentage of indebted farmers' households |
|---|---|---|
| Large | 47 | 12.8 |
| Medium | 80 | 21.8 |
| Semi-medium | 80 | 21.8 |
| Small | 80 | 21.8 |
| Marginal | 80 | 21.8 |
| Total | 367 | 100 |

Source: Based on Field Survey (2011)

***Outstanding debt and variation across farm size***

The average debt is the maximum for the large category of farmers but the coefficient of variation is low in comparison to other category of farmers. Also the proportion of households indebted is least among the large farmers. The proportion of the indebted large farmers' household is less than the proportion of indebted medium, semi-medium, small and marginal category of farmers' households. It is the majority of small and marginal farmers who have taken outstanding loans between Rs. 1,00,000 and Rs. 4,00,000 whereas the farmers have taken loan between Rs. 13,00,000 and Rs. 16,00,000 are the large farmers whose proportion is the least across the farm size. The farmers who have amount outstanding between Rs. 5,00,000 and Rs. 8,00,000 are mainly the large, medium and semi-medium farmers while the farmers who have amount outstanding between Rs. 9,00,000 and Rs. 12,00,000 are only the large and the medium farmers (Table 2).

Table 2: Outstanding debt of the sampled farmers in Sangroor district, Punjab

| Farm Size | 1,00,000 – 4,00,000 | 5,00,000 -8,00,000 | 9,00,000 – 12,00,000 | 13,00,000 – 16,00,000 | Total |
|---|---|---|---|---|---|
| Large | - | 24 (17) | 19 (83) | 4 (100) | 47 (12) |
| Medium | 4 (2) | 72 (51) | 4 (17) | - | 80 (22) |
| Semi-medium | 36 (18) | 44 (32) | - | - | 80 (22) |
| Small | 80 (40) | - | - | - | 80 (22) |
| Marginal | 80 (40) | - | - | - | 80 (22) |
| Total | 200 (100) | 140 (100) | 23 (100) | 4 (100) | 367 (100) |

Note: Figures in Parentheses are percentages of the total
Source: Based on Field Survey (2011)

Table 3: Average amount outstanding and variation across farm size in Sangroor district, Punjab

| Farm Size | Average debt (In Rs.) | Coefficient of variation % |
|---|---|---|
| Large | 9,26,786 | 31.4 |
| Medium | 6,30,000 | 22.0 |
| Semi-medium | 5,25,000 | 39.0 |
| Small | 2,60,000 | 38.0 |
| Marginal | 1,80,000 | 49.0 |

Source: Based on Field Survey (2011)

Focussing further on the outstanding amount across farm size, it can be seen from the Table 3 that the maximum average amount is found among the large category of farmers. The coefficient of variation of amount outstanding is 31 per cent among large farmers. The reason behind this is that there are some large farmers who are not indebted and there are some who have the debt up to Rs. 16, 00,000. The large farmers who are not indebted are the ones who also act as money lenders in their respective villages. On the other hand, the average amount outstanding is the least (Rs. 1,80,000) among the marginal farmers, but the relative dispersion is the second highest (49 per cent) among them with the outstanding debt ranging from Rs. 1,00,000 to Rs. 4,00,000. This indicated that fairly a large number of marginal farmers are inclined towards commercial agriculture incurring huge costs in farm activities and consequently engulfed in indebtedness. The average amount outstanding is the second highest among the medium farmers (Rs. 6,30,000) but the variation is least among them (22 per cent) with the amount outstanding varying from Rs. 4,00,000 to Rs. 12,00,000. The average amount outstanding in the category of semi-medium farmers' households is Rs. 5,25,000 and the coefficient of variation among them stood at 39 per cent. The average amount outstanding in the small farmers' category is Rs. 2,60,000 and the coefficient of variation is approximately 38 per cent.

***Source of debt taken***

The sources from which the loans are taken were mainly the *Gramin* Bank, the Cooperative Societies and the village money lender also popularly known as the *Arthiya*. Table 4 shows the proportion of farmers' households across various farm-sizes which availed loan from these three sources.

Table 4: Source of debt taken of the sampled households in Sangroor district, Punjab

| Farm size | Cooperative Societies | *Gramin* Bank | Money Lender | Total |
|---|---|---|---|---|
| Large | 20 (35.7) | 36 (64.3) | - | 56 (100) |
| Medium | 48 (60) | 32 (40) | - | 80 (100) |
| Semi-medium | 48 (60) | 32 (40) | - | 80 (100) |
| Small | - | - | 80 (100) | 80 (100) |
| Marginal | - | - | 80 (100) | 80 (100) |

Note: Figures in Parentheses are percentages to the total
Source: Based on Field Survey (2011)

A close perusal of the Table 4 shows that the marginal and the small farmers have availed credit from the village money lender which disburses loan at a very high interest rate of 15 per cent. Nearly two-thirds of the large farmers have availed credit from the *Gramin* Bank which disburses loan at an interest rate of 5 per cent which is the least of all. The medium and the semi-medium farmers have availed loan from the *Gramin* Bank and the Cooperative Societies in the proportion of 60 and 40

per cent respectively. This clearly shows that the large farmers availed maximum advantage of the institutional sources of credit which otherwise are actually meant to benefit the marginal and small farmers. Unfortunately these sources of credit are beyond the reach of the marginal and small farmers since many formalities are involved in availing loan from these institutions and also because most of the small and marginal farmers are illiterate. To avoid these hurdles these farmers prefer money lenders from whom loan is easily available at any time of the agricultural year though at very exorbitant rate of interest.

**Purpose of loan**

Table 5 shows the distribution of expenditure in productive and non-productive activities. Productive activities include the activities that help in generation of farm output and these include high yielding Varieties of seeds, fertilizers, pesticides and repair and maintenance of the machinery. Non-productive activities include marriages and social ceremonies, education, health and consumption expenditure.

For all farm-size class of farmers, 48 per cent of the households used loans for productive activities and the rest 52 per cent used it for non-productive activities. Within each farm-size category of farmers, the picture of the expenditure varies widely. Among the marginal and small farmers, 81 per cent of the households' utilised loans mainly for non-productive purposes and the rest 19 per cent utilised it for productive purposes. The loan taken by them for non-productive purposes was utilized mainly for consumption expenditure followed by marriages and social ceremonies..About 53 per cent and 47 per cent of the semi-medium farmers' households borrowed for productive and non-productive purposes respectively. Non-productive loan was utilized mainly for marriages and social ceremonies. Of the total households of semi-medium farmers which availed loan for productive purposes, 66.7 per cent utilized it for purchasing high yielding variety of seeds, 28.6 per cent household utilized productive loan for repair and maintenance and only 4.7 per cent households used productive loan for purchasing fertilizers.

Among the medium farmers, 71 per cent households borrowed loans for productive and 29 per cent non-productive purposes respectively. Of the total households who took loan for non-productive purposes, 52 per cent of the households utilised the loan for education, 39 per cent of households used it for marriages and social ceremonies and the rest for health related purpose. Regarding the productive purpose for which the loans were borrowed, 60 per cent of the households borrowed for the purchase of high yielding variety of seeds, 26 per cent for the repair and maintenance of farm machinery and 12 per cent for fertilizers. Within the large farm-size category, 92 per cent spent borrowed money on productive purposes and only 8 per cent household spent their amount borrowed for non-productive purposes. All the large farmers who borrowed money for non-productive purposes spent on education of their children..Nearly 71 per cent of the large farmers' households used productive loan for buying high yielding varieties of seeds, 16 per cent for the repair and maintenance of machinery, 7 per cent for fertilisers and 5 per cent households used productive loan for pesticides (Table 5).

Table 5: Farm-size wise loans borrowed for different purposes by the sampled households in Sangroor district

| Farm-size categories | Purpose of loan | | | | | | | | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | A-Productive | | | | | B-Non-productive | | | | | |
| | High Yielding Variety seeds | Repair & Maintenance | Fertilizers | Pesticides | Total (A) | Marriages & Social Ceremonies | Education | Health | Consumption expenditure | Total (B) | (A+B) |
| Large | 39(71.0) | 9(16.3) | 4 (7.3) | 3(5.4) | 55 (92) | - | 5(100) | - | - | 5 (8) | 60 (100) |
| Medium | 35(61.4) | 15(26.3) | 7(12.3) | - | 57 (71) | 9(39.1) | 12(52.2) | 2(8.7) | - | 23 (29) | 80 (100) |
| Semi-medium | 28(66.7) | 12(28.6) | 2(4.7) | - | 42 (53) | 28(73.7) | 6(15.8) | 4(10.5) | - | 38 (47) | 80 (100) |
| Small | 12(80.0) | - | 2(13.3) | 1(6.7) | 15 (19) | 14(21.5) | 3(4.6) | 12(18.4) | 36(55.5) | 65 (81) | 80 (100) |
| Marginal | 13(86.6) | - | 1(6.7) | 1(6.7) | 15 (19) | 8(12.3) | 1(1.5) | 18(27.7) | 38(58.5) | 65 (81) | 80 (100) |
| Total | 127(69.0) | 36(19.5) | 16(8.8) | 5(2.7) | 184 (48) | 59(30.1) | 27(13.8) | 36(18.3) | 74(37.8) | 196 (52) | 380 (100) |

Source: Based on Field Survey (2011) Note: Figures in Parentheses are percentages to the total

Table 6: Farm-size wise average and variability of indebtedness and its causal factors of the sampled households in Sangroor district

| Farm size | Sale of output | | Net returns | | Yield | | Expenditure | | Amount outstanding | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Average | C.V | Average | C.V | Average | C.V | Average | C.V | Average | C.V |
| Marginal | 6,4561.70 | 10.55 | 2,0438.00 | 25.39 | 5,468.75 | 5.01 | 85,000.00 | 5.27 | 1,80,000.00 | 48.74 |
| Small | 1,67,032.00 | 16.56 | 49,020.00 | 26.50 | 5,665.63 | 4.34 | 1,180,12.00 | 11.04 | 2,60,000.00 | 37.53 |
| Semi-medium | 2,90,556.88 | 11.03 | 1,48,881.88 | 15.18 | 6,037.50 | 3.46 | 1,41,675.00 | 13.58 | 5,25,000.00 | 39.22 |
| Medium | 7,02,132.81 | 17.72 | 3,90,695.31 | 19.45 | 6,268.75 | 3.16 | 3,11,437.50 | 19.06 | 6,30,000.00 | 22.08 |
| Large | 1,79,9452.67 | 39.00 | 10,55,536.00 | 37.21 | 6,741.67 | 2.46 | 7,43,916.67 | 43.10 | 9,26,785.71 | 31.44 |
| Total | 5,32,580.10 | 123.75 | 2,76,987.99 | 145.23 | 5,999.34 | 8.09 | 2,55,592.11 | 102.13 | 4,77, 393.62 | 64.10 |

Source: Based on Field Survey (2011)

***Indebtedness and variability in its causal factors across farm size***

The variation in amount outstanding for all the sampled farmers is 64 per cent. Looking at the variation in the causal factors (Table 6) that lead to indebtedness among all the farmers, it is seen that, the variation is highest with regard to net returns (145 per cent) followed by sale of output (124 per cent), expenditure (102 per cent) and the level of yield (8 per cent). From this it could be inferred that, the traditional factor leading to indebtedness is the most stable of all and the factors indicating commercialization i.e. sale of output, net returns and expenditure are highly unstable. Thus, it is concluded that yield levels affect every farm-size category of farmers more or less equally but on the other hand, the rest of the factors show great diversity across farm size. Therefore, it would be pertinent to look at the variation of the level of indebtedness and the factors affecting it across individual farm-size. Among the marginal farm-size category of farmers, the variation in amount outstanding is highest (48.74 per cent) when compared to other farm-size categories. Looking at the variation in the reasons behind indebtedness, it stands out to be highest in net returns (25.39 per cent) followed by sale of output (10.55 per cent), expenditure (5.27 per cent) and yield (5.01 per cent). This suggests that the yield and expenditure levels are almost the same across all farmers in the marginal farm-size category.

The sale of output and net returns fluctuates because of distress sale and unfavourable pricing in case of the small farm-size category of farmers. The variation in the level of indebtedness is 38 per cent and the variation in the traditional factor affecting i.e. yield (4.34 per cent) is the least. On the other hand the commercial factors leading to indebtedness shows the high variation being the highest in net returns (26.5 per cent) followed by sale of output (16.56 per cent). The variation in the expenditure is as low as 5.27 per cent. It means that almost every famer in both the small and marginal farm-size category has invested equally on the expenditure pertaining to cultivation. There is a slight change with regard to variation in indebtedness and factors affecting it among the semi-medium farm-size category. Here the variation in amount outstanding is second highest (39.22 per cent) among all the other farm-size categories. Apart from this, the variation in the level of yield is least (3.46) among all the factors. In fact, the variation in the level of yield in this farm-size category of farmers is low in comparison to the marginal and small farmers. This indicates stability in food grain production per unit area. The highest variation was found in the net returns (15 per cent) followed by expenditure (13.58 per cent) and sale of output (11.03 per cent).

In the case of medium farm-size category of farmers, it could be seen that, the variation in the amount outstanding is the least (22 per cent) of all the farm-size categories. Here again the variation in the level of yield is the least (3.16 per cent). Among other causal factors, the variation is highest in the net returns (19.45 per cent) followed by expenditure (19.06 per cent) and the sale of output (17.72 per cent). Similarly, in the large farm-size category of farmers it can be seen that the variation in

the level of indebtedness is 31.44 per cent and the variation in the factors affecting it is quite diversified. The variation in the level of yield stands out to be the least (2.46 per cent). Rather, the variation in the level of yield stands out to be least among all the farm-size categories. The highest variation is in the level of expenditure (43 per cent) followed by the variation in the sale of output (39 per cent) and the level of net returns (37 per cent). It is only among this farm-size category that the variation in the level of net returns is the least among the factors affecting indebtedness (except for level of yield).

The analysis reveals that, the variation in the level of yield is the lowest of all the factors affecting indebtedness. In the marginal and small category of farmers, the variation in the expenditure levels is almost same to the variation in the level of yield, whereas, in the semi-medium, medium and large category of farmers, the variation in the level of expenditure is totally different from the variation in the level of yield. This leads us to draw a conclusion that the marginal and small farmers are equally interested in investing in cultivation but unfortunately, the returns that they receive are unequal (even within their own farm-size categories) and this is seen through the high variation in net returns. Focussing at the variation in the level of yield, it is seen that it keeps on decreasing as one move up the farm-size category. On the other hand, the variation in the sale of output and net returns keep on increasing as one moves up the ladder of farm-size. With reference to the level of net returns, the variation is highest among the large farm-size category of farmers followed by small, marginal, medium and semi-medium farmers. The large farmers have the highest instability with regard to the sale of output, net returns, and expenditure on cultivation but they are not the worst hit because they are economically sound and they tend to take credit so as to invest in farming and maximize profit. They have a good repaying capacity and therefore, the amount outstanding against them is only a misnomer.

***Relationship between indebtedness and the causal factors***

A multivariate regression was run between the indebtedness on one hand and their causal factors on the other and the Beta coefficients of all the causal factors came out to be positive but statistically insignificant at 95 and 90 per cent confidence levels. Therefore, a bi-variate regression was run between the number of indebted farmers' households and each of the causal factors individually. When indebtedness was regressed upon the cost of cultivation it came out to be positive and significant with the value of $R^2$ being 0.491. Indebtedness when regressed upon the net returns came out to be positive and significant with the $R^2$ value being 0.519. While the level of indebtedness was regressed on the sale of produce, the Beta coefficient came out to be 0.253 which was positive and significant. The value of $R^2$ was the least among all the other factors at 0.293.

Table 7. Correlation between indebtedness and its causal factors among farmers in Sangroor district, Punjab

| | | Cost | Sale | Net returns | Yield | Amount outstanding |
|---|---|---|---|---|---|---|
| AMTOUT | Pearson Correlation | .701** | .717** | .721** | .695** | 1 |
| | N | 376 | 376 | 376 | 376 | 376 |

** Correlation is significant at the 0.01 level (2-tailed).

Table 8. Regression analysis between indebtedness and its causal factors among farmers in Sangroor district, Punjab

| Variables | Beta Coefficient | $R^2$ |
|---|---|---|
| Cost | 0.988 | 0.491 |
| Net Returns | 0.611 | 0.519 |
| Sale of Produce | 0.253 | 0.293 |
| Yield | 441.237 | 0.482 |

Finally, when indebtedness was regressed upon the level of yield, it came out to be positive as well as significant with the value of $R^2$ being 0.482. In all these three cases, the value of the Beta coefficient was significant at 99 per cent and since value of $R^2$ was the highest in case of the bi-variate regression analysis between indebtedness and the level of net returns, therefore, it could be said that the amount of net returns has a major impact on indebtedness among all the causal factors as 51.9 per cent of variation in indebtedness was explained by variation in the level of net returns. The influence of the sale of produce is the least on indebtedness as the value of $R^2$ is the least (0.293), i.e. 29.3 per cent variation in indebtedness is explained by variation in the sale of output. Therefore, the level of yield which is a traditional factor signifying distress is not a prominent factor affecting indebtedness. On the other hand, the high level of net returns and cost of cultivation which are the outcome of the market based economy are the ones that are main factors leading to indebtedness.

There is also a very high positive correlation between the yield level and the level of net returns. When the net returns were regressed upon the level of yield, then the Beta coefficient came out to be positive and statistically significant. The value of $R^2$ is 0.672 meaning that 67 per cent of the variation in the level of net returns is explained by the variation in yield levels.

Table 9. Correlation between yield and net returns among farmers in Sangroor district, Punjab

| Yield | Yield | Net Returns |
|---|---|---|
| Pearson Correlation | 1 | .820** |
| Sig. (2-tailed) | | .000 |
| N | 376 | 376 |

Table10: Regression between yield and net returns of the farmers in Sangroor district, Punjab

| Variable | Beta Coefficient | $R^2$ |
|---|---|---|
| Yield | 614.50 | 0.672 |

Dependent variable: Net returns

Theoretically, yield and cost have nothing to do with each other. But from the field experiences, it was observed that farmers in Punjab mentioning the fact that a higher cost of cultivation would fetch them a higher yield level. The story revealed through field work is something different. When the level of yield is regressed upon the cost of cultivation, the Beta coefficient is quite low though it is statistically significant but that clearly proves that the Punjabi farmer is living under a misguided optimism that higher cost of cultivation will provide them a higher level of yield which will further provide them higher net returns. The negative fall-out of this belief is that in the guise of going for a high level of yield the farmer indiscriminately invests heavily in the inputs and for that purpose he has to borrow from the moneylender and any other source of credit available. The final outcome is that he gets indebted and is never able to come out of that trap because of the complex credit borrowing and repaying net that prevails in the rural Punjab.

Farm-size wise variation in the causal factors and their impact on indebtedness. In this section an analysis of indebtedness and its causal factors has been carried out with respect to individual farm-size categories. This has been carried out to find out if there are any variations in the factors of indebtedness with respect to indebtedness. The pattern of expenditure and borrowing is different for individual farm-size categories and hence the factors affecting it may show different pattern of behaviour with respect to indebtedness.

Correlation between indebtedness and its causal factors does not come out to be significant in the case of large farmers. In the case of medium farmers, the correlation between the level of indebtedness and their causal factors comes out to be strong, positive and statistically significant. Here even exists a strong positive correlation between indebtedness and the level of net returns suggesting that the higher the net returns the higher will be the borrowing by the farmer. But when the causal factors are regressed upon the level of indebtedness, it comes out to be insignificant.

Table 11: Correlation between amount outstanding and causal factors among various categories of farmers in Sangroor district, Punjab

| Farm Category | Cost | Sale | Net Returns | Yield |
|---|---|---|---|---|
| Large | -.101 | -.174 | -.214 | -.014 |
| Medium | .242* | .256* | .463** | .376** |
| Semi-medium | .254* | .073 | -.112 | .022 |
| Small | .322** | -.190 | -.620** | -.604** |
| Marginal | .544** | -.078 | -.486** | -.211 |

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

There existed weak positive but significant correlation between the level of indebtedness and the cost of cultivation among semi-medium farmers. Rest of the causal factors did not have a strong and significant correlation with the level of indebtedness (Table 11). When the causal factors such as yield, cost of cultivation and net returns were regressed upon the level of indebtedness then it came out that the yield and the cost of cultivation has a significant positive impact on the level of indebtedness and therefore proves that the commercialization in agriculture is forcing the farmer to borrow. Among the small category of farmers, there is a weak positive but significant correlation between the level of indebtedness and the cost of cultivation but there is a strong negative and significant correlation between the level of indebtedness and the level of net returns and the level of yield. Further, when the level of indebtedness was regressed upon these causal factors, it came out to be significant that the cost of cultivation is positively influencing the level of indebtedness, whereas, the level of net returns is influencing it negatively. This suggests that the low level of net returns and high cost of cultivation is a major reason behind farmer borrowing from different sources. In the case of marginal farmers, there is a strong positive and significant correlation between the level of indebtedness and the cost of cultivation and there is a moderate negative but significant correlation between the level of net returns and the level of indebtedness. When the level of indebtedness were regressed upon these causal factors, then it came out significantly that the cost of cultivation positively impacts the level of indebtedness and the level of net returns has a significant negative bearing on the level of indebtedness. This means that the amount of net returns that a marginal farmer is garnering from cultivation is not enough to satisfy his needs and hence he is compelled to borrow.

Therefore, from the above analysis it is clear that among the marginal, small and semi-medium farmers, the cost of cultivation has a significant positive impact on the level of indebtedness, i.e. the higher cost of cultivation leads to higher degree of indebtedness. On the other hand, the level of net returns has a negative influence on the level of indebtedness. The low level of net returns may force the farmers to borrow more thereby leading to a situation of indebtedness. The other factors such as the sale of the produce and the level of yield stand out to be insignificant in explaining the reason for indebtedness. Among the medium and the large farmers, the causal factors and their impact on the level of the indebtedness is not significant and therefore, no particular conclusion can be drawn regarding the causal factors and their impact on indebtedness with regard to these two farm-size categories.

**Conclusion**

The main conclusion that arises from the foregoing analysis is that the relation of the level of indebtedness with the level of net returns differs with farm-size in the study area. Both these variables are directly related in the case of large farmers and this indicates that the large farmers borrow more to earn more profits. On the other hand, both these variables are inversely related in case

of the semi-medium, small and marginal farmers in Sangroor district. The level of indebtedness for all the sampled farmers is positively and significantly correlated with its causal factors like level of yield, level of net returns, cost of cultivation and sale of produce. Results of regression analysis revealed that the cost of cultivation and the level of net returns have a positive impact on the level of indebtedness. The positive impact of the level of net returns on the level of indebtedness suggests that because of the prevailing high net returns the farmers are attracted to invest more in cultivation so as to reap greater profits and in this process their debt gets accumulated. Among the different farm-size categories, the regression analysis of the level of indebtedness and its causal factors came out to be significant only with respect to semi-medium, small and marginal farmers. It revealed that net returns are inversely related to indebtedness and cost of cultivation is positively related to indebtedness in their case. The results also show that the level of yield has a less impact on indebtedness than the other causal factors like level of net returns and cost of cultivation.

In this era of high income expectation and concomitant consumerism, high net returns are leading to high borrowings which are further used for investing in agriculture to gain higher profits. This is further leading to high amount of indebtedness which is an outcome of the capitalism that is penetrating even the most primary sector of our economy i.e. agriculture. Admittedly, farmers' indebtedness, particularly due to growing borrowing from high cost informal sources, is one of the major manifestations of the crisis that needs to be addressed forthwith. In the short run, some concrete measures have to be taken up to reduce the debt burden of vulnerable sections of the peasantry. For this, the institutional arrangements for credit, extension and marketing need to be revived. In the long run, a serious attempt has to be made to rejuvenate the agricultural sector with large investments in rural infrastructure, and in agricultural research and technology. The long-term credit needs of the farmers have to be augmented substantially to increase overall investment in agriculture.

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