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Category-wise Magnitude and Determinants of Indebtedness among Farm Households in Rural Punjab

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Abstract

The present study examined the magnitude and determinants of indebtedness among farm households in the rural areas of Punjab. For this purpose, the primary data were collected from 510 farm households during the period of 2015-16. The results of the study reveal that as many as 88.24 per cent of the total farm households were under debt. The amount of debt per average and indebted farm household was relatively higher among the semi-medium, medium, and large farm-size categories as compared to the marginal and small farm-size categories. The average amount of debt per owned acre was inversely related with the farm size. There was a positive relationship between the proportionate share of debt from the institutional sources and the farm size. Commercial banks are the most important source of debt. All the farm-size categories have incurred the maximum debt for purchasing farm inputs, machinery and implements; and category-wise average amount and relative share of debt incurred for this purpose was positively related with the farm size. The marginal, small, semi-medium, and medium farm-size categories have incurred the maximum amount of debt at the high rate of interest as compared to the large farm-size category.

Keywords: Farm Households, Indebtedness, Rural, Punjab, institutional sources and non-institutional sources

JEL Classification: Q12, D14, O18, G20

Introduction

Indebtedness is the major problem and the cause of distress among farm households. Farmers' indebtedness was mainly induced by crisis in agriculture. This crisis was not built in a single day as its seeds were sown with the initiation of the New Agricultural Technology (NAT) which escalated in the wake of liberalisation (Singh *et al.,* 2014). The Punjab state was on the forefront in the adoption of NAT during the 1960s which was mainly combination of agricultural machinery, tube wells, high yielding varieties of seeds, fertilizers, herbicides, and pesticides. The NAT raised the production and productivity in agriculture and improved the economic conditions of farmers during the period of 1970s and 1980s, seemed to be growing dim with the passage of time (Sharma, 2019; and Kaur, 2017). During the 1990s, the agricultural production in the state showed the signs of stagnation. Due to increasing cultivation cost, declining productivity, income and profitability, and shrinking resource base, farmers had to borrow from various credit agencies and burden of debt became heavier as they were not able to attain adequate repaying capacity from agricultural income (Anupama *et al.,* 2017; Singh *et al.,* 2009; and Singh *et al.,* 2017a). The farmers of Punjab were more heavily indebted; and the average debt per farm household was the third highest in the state after Andhra Pradesh and Kerala (National Sample Survey Office, 2014). The average amount of debt of cultivator households was about five times more than that of the non-cultivator households in rural Punjab during 2012-13 (National Sample Survey Office, 2016). Low prices of farm produce, low profit margins due to stagnant productivity, higher expenditure on healthcare and house construction are the most common reasons for indebtedness in Punjab (Singh *et al.,* 2014). The incidence of indebtedness was high among the marginal and small farmers in the state because farmers have very little disposable production and income, borrowing is unavoidable to carry out the farm activity and to meet the basic households needs. This has become a gradual drag factor pushing them into a deeper debt trap (Barah, 2011). Once trapped, poor farmers must either sell or mortgage their land to clear their debt and thus get forced out of it becoming dispossessed of their means of livelihood (Khurana, 2011). The increasing indebtedness leads to the captivation of productive resources and aggravation of inequalities (Mitra *et al.,* 1986).

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Singh *et al.* (2017b) revealed that the average amount of debt per owned acre decreased with an increase in the farm size; and burden of debt was more on the lower farm-size categories as compared to the upper farm-size categories in the rural areas of Punjab. The medium and large farm households had incurred the maximum amount of debt at a relatively low rate of interest. Majority of the farmers also take loans for consumption as well as for a variety of social obligations, which are unproductive and do not help to generate income (Kingra et.al, 2018). The present study is an attempt to examine the magnitude and determinants of indebtedness among the different farm-size categories in the rural areas of Punjab.

Data Sources and Methodology

For the present study, Punjab state had been divided into high, medium, and low productivity regions on the basis of agricultural productivity. The value of the output of major ten crops was aggregated in order to calculate the agricultural productivity for the year 2013-14 (Government of Punjab, 2015). The high productivity region constitutes Moga, Jalandhar, Ludhiana, Sangrur, Kapurthala, Barnala, and Fatehgarh Sahib districts. The medium productivity region consists of Ferozepur, Patiala, Faridkot, Hoshiarpur, S.B.S. Nagar, S.A.S. Nagar, Tarn Taran, and Bathinda districts. The remaining seven districts viz. Amritsar, Sri Muktsar Sahib, Roopnagar, Mansa, Fazilka, Gurdaspur, and Pathankot represent the low productivity region. For avoiding the geographical contiguity, Ludhiana, S.A.S. Nagar, and Mansa districts had been selected from the high, medium, and low productivity regions respectively. These three selected districts also cover the agro-climatic zones of the state, representing the Central Plains, Shivalik Foothills, and South-West Zones respectively. The selected districts comprised 21 development blocks; and one village from each development block was selected by using random sampling method. As many as 10 per cent farm households out of the total farm households were selected randomly; and a representative sample of 510 farm households consisting of 188 marginal farmers, 144 small farmers,88 semi-medium farmers, 63 medium farmers and 27 large farmers was taken up. The present study related to the agricultural year 2015-16. The statistical tools and techniques such as mean values and percentage have been used for tabular analysis. The multiple regression analysis had been used to find out the determinants of indebtedness among farm households.

Results and Discussion

Extent and Distribution of Debt

The extent of debt among the different farm-size categories is given in Table 1. The study shows that as many as 88.24 per cent of the total farm households were under debt in the rural areas of Punjab. This proportion was 85.64, 88.89, 92.05, 93.65, and 77.78 per cent among the marginal, small, semi-medium, medium, and large farm-size categories respectively. The category-wise proportion of farm households who were under debt has increased with an increase in the farm size except the large farm-size category. The amount of debt per average farm household was Rs. 512855. This amount is the highest (Rs. 811818) for the semi-medium, followed by medium (Rs. 802444), large (Rs. 695370), small (Rs. 421271), and marginal (Rs. 319809) farm-size categories. It reveals that variations exist in the levels of debt among the different farm-size categories. The average amount of debt per indebted farm household is Rs. 581236, whereas it was Rs. 373441, Rs. 473930, Rs. 881975, Rs. 856847, and Rs. 894048 for the marginal, small, semi-medium, medium, and large farm-size categories respectively.

The average amount of debt per owned acre was Rs. 75824 for an average farm household. The category-wise average amount of debt per owned acre decreases with an increase in the farm size. The average amount of debt per owned acre of the marginal, small, semi-medium, and medium farm-size categories was 7.85, 5.09, 4.98, and 2.59 times of the large farm-size category respectively. The inverse relationship between the farm size and average amount of debt per owned acre clearly highlights the fact that as we scale down from the large farm-size category to the marginal farm-size category, the real burden of debt goes on increasing.

Table 1. Extent of debt among farmers

(Mean Values in Rs.)

Farm-size categories→ Extent of debt↓	Marginal	Small	Semi-medium	Medium	Large	All Sampled Farmers
Indebted households as percentage of sampled households	85.64	88.89	92.05	93.65	77.78	88.24
Debt per average household	319809	421271	811818	802444	695370	512855
Debt per indebted household	373441	473930	881975	856847	894048	581236
Debt per owned acre	164273	106613	104140	54272	20931	75824
Debt per operated acre	48351	46485	54891	36084	18926	41896

Source: Field Survey, 2015-16

The average amount of debt per operated acre was Rs. 41896 for an average farm household, whereas it was the highest (Rs. 54891) for the semi-medium, followed by marginal (Rs. 48351), small (Rs. 46485), medium (Rs. 36084), and large (Rs. 18926) farm-size categories. The average amount of debt per operated acre is inversely related with the farm size except the semi-medium farm-size category. It has been observed from the field survey that the farmers representing the semi-medium farm-size category have incurred relatively more credit for increasing their income from agricultural sector through leased in land at high rent and immigration.

Debt According to Sources of Credit

Table 2 demonstrates the data regarding debt incurred from the different sources among the different categories of farmers. The table shows that an average farm household is under a debt of Rs. 512855, out of which an amount of Rs. 406224 (79.21 per cent) is advanced by the institutional sources, and the remaining Rs. 106631 (20.79 per cent) by the non-institutional sources. The figures in the table depict that the proportionate share of debt incurred from the institutional sources accounts for 73.06, 73.71, 81.84, 84.75, and 91.74 per cent for the marginal, small, semi-medium, medium, and large farm-size categories respectively. It reveals that there is a positive relationship between the relative share of debt incurred from the institutional sources and farm size. The proportion of debt advanced by non-institutional sources is negatively associated with the farm size. The institutional sources are playing a significant role in providing loans to all the farm-size categories in the rural areas of Punjab. Commercial banks are one of the important institutional sources contributing 59.41 per cent to the total debt; and this proportion has increased from 47.02 per cent for the marginal

Table 2. Debt incurred from different sources of credit

(Mean Values in Rs.)

Farm-size categories→ Sources of debt↓	**Marginal**	**Small**	**Semi-medium**	**Medium**	**Large**	**All Sampled Farmers**
Institutional Sources						
Primary agricultural co-operative societies/co-operative banks	52750 (16.49)	49889 (11.84)	94034 (11.58)	113683 (14.17)	132407 (19.04)	70810 (13.81)
Commercial banks	150362 (47.02)	225764 (53.59)	541932 (66.76)	536190 (66.82)	487037 (70.04)	304702 (59.41)
Regional rural banks	27888 (8.72)	32431 (7.70)	12500 (1.54)	30159 (3.76)	18519 (2.66)	26300 (5.13)
Land development banks	2660 (0.83)	2431 (0.58)	15909 (1.96)	0 (0.00)	0 (0.00)	4412 (0.86)
Sub-total	**233660 (73.06)**	**310514 (73.71)**	**664375 (81.84)**	**680032 (84.75)**	**637963 (91.74)**	**406224 (79.21)**
Non-institutional Sources						
Commission agents	62207 (19.46)	79576 (18.89)	119489 (14.72)	116063 (14.46)	55556 (7.99)	83296 (16.25)
Money-lenders	8745 (2.73)	11319 (2.69)	13920 (1.72)	5556 (0.69)	1852 (0.27)	9606 (1.87)
Large farmers/landlords	9176 (2.87)	12014 (2.85)	12045 (1.48)	0 (0.00)	0 (0.00)	8853 (1.72)
Traders	1596 (0.50)	2083 (0.49)	1307 (0.16)	794 (0.10)	0 (0.00)	1500 (0.29)
Relatives and friends	4426 (1.38)	5764 (1.37)	682 (0.08)	0 (0.00)	0 (0.00)	3376 (0.66)
Sub-total	**86149 (26.94)**	**110757 (26.29)**	**147443 (18.16)**	**122413 (15.25)**	**57407 (8.26)**	**106631 (20.79)**
Total	**319809 (100.00)**	**421271 (100.00)**	**811818 (100.00)**	**802444 (100.00)**	**695370 (100.00)**	**512855 (100.00)**

Source: Field Survey, 2015-16
Note: The figures given in parentheses denote the percentages.

farm-size category to 70.04 per cent for the large farm-size category. As much as 13.81 per cent of the total debt was raised from the primary agricultural co-operative societies/ co-operative banks; and this proportionate share was the highest (19.04 per cent) for the large farm-size category, and the lowest (11.58 per cent) for the semi-medium farm-size category. The regional rural banks, and land development banks account for 5.13, and 0.86 per cent to the total debt respectively. It is clear from the table that the large farm-size category has incurred the major amount of debt from commercial banks, followed by agricultural co-operative societies/co-operative banks. The farmers representing this category possess enough collateral to avail required loans from the institutional sources. The field survey has also revealed that farmers' possession of collateral to get loans from the institutional sources increases with an increase in the farm size.

Among the non-institutional sources, commission agents were the main source of credit for farmers contributing 16.25 per cent of the total debt. This proportionate share of debt from this source was the highest (19.46 per cent) for the marginal farm-size category, and the lowest (7.99 per cent) for the large farm-size category. Money-lenders, and traders are contributing 1.87, and 0.29 per cent to the total debt. The proportionate shares of debt from these sources are inversely related with the farm size. An average farm household has incurred 1.72, and 0.66 per cent of the total debt from large farmers/landlords; and relatives and friends. It is clear that commission agents were the second important source of debt among all the farm-size categories except the large farm-size category. The marginal, small, and semi-medium farm-size categories were also dependent on relatives and friends, large farmers/landlords; and traders. The field survey has brought out that the marginal and small farm-size categories have inadequate collateral security due to their small land holdings; and along with this, they also find it difficult to follow the procedures of getting loans from the institutional sources.

Debt According to Purpose

The data regarding debt incurred for various purposes among the different farm-size categories are given in Table 3. The table shows that an average farm household has incurred the highest amount of debt, *i.e.,* Rs. 23132 (45.11 per cent) for purchase of farm inputs, machinery and implements. The category-wise average amount and proportionate share of debt incurred for this purpose is positively related with the farm size. The payment of rent of leased in land has appeared as the next important purpose for availing debt, and on an average, 17.67 per cent of the total debt was incurred for this purpose. This proportionate share was the highest (21.44 per cent) for the small farm-size category, and the lowest (1.60 per cent) for the large farm-size category. The field survey has shown that all the farmers irrespective of their farm-size categories have borrowed money for purchasing improved seeds, fertilizers, hiring in agricultural machinery, installation of tubewells, payment of rent of leased in land, and the like in order to take the maximum benefit of the latest agricultural technology in the rural areas of Punjab.

An average farm household (table 3) has incurred 9.26 per cent of the total debt for marriages and other socio-religious ceremonies; 7.30 per cent for house construction, addition of rooms and major repairs; and 2.49 per cent for healthcare. The loan obtained for the purpose of education of children and for immigration which might yield income in the long run but presently considered under consumption/ unproductive purpose (Singh et. al, 2019). As much as 3.82 per cent of the total debt was incurred for immigration. The field survey has shown that more and more young members of the farm families have either migrated or trying to migrate to other countries with the hope of a better future due to low agricultural income and lack of sufficient employment opportunities outside the agricultural sector in the rural areas of Punjab. The proportion of debt incurred for durable and non-durable consumer goods is 5.83 per cent on an average; and this proportionate share is inversely related with the farm size. Redemption of old debt accounts for 3.09 per cent of the total debt. This percentage share is the highest (6.57) for the marginal, followed by medium (2.67), small (2.31), and semi-medium (1.93) farm-size categories. It is clear that all the farm-size categories except the large farm-size category have availed loans only to pay the old debt as their repaying capacity is not sufficient. The relative share of debt incurred for dairying, purchase of land, self-employment, and other purposes is 1.37, 1.26, 0.34, and 0.27 per cent, respectively. It has been observed that all the farm-size categories were under debt mainly for purchase of farm inputs, machinery and implements. It is clear from the analysis that major proportion of debt has been utilized for productive purposes such as purchase of farm inputs, machinery and implements and payment of rent of leased in land. Besides this, a significant proportion of debt has been utilized for non-productive purposes such as house construction, addition of rooms, marriages and other socio-religious ceremonies, purchase of durables and non-durables consumer goods.

Source-wise Debt According to Rate of Interest

The farming households have taken loans from institutional and non-institutional agencies. The rate of interest charged on these loans is given in Table 4.

The table shows that an average farm household has obtained the maximum amount of debt, i.e. Rs. 63653 from primary agricultural cooperative societies followed by commercial banks up to the six percent rate of interest. The proportionate share of debt incurred at the rate of interest ranging from 6 to 12 per cent is 46.49 per cent for an average farm household under the institutional sources. The table clearly shows that non-institutional agencies charge higher

Table 3. Debt incurred for different purposes

(Mean Values in Rs.)

Farm-size categories→ Purpose↓	Marginal	Small	Semi-medium	Medium	Large	All Sampled Farmers
Productive Purposes						
Purchase of farm inputs, machinery & implements	118729 (37.12)	172410 (40.93)	359886 (44.33)	426778 (53.19)	454444 (65.35)	231324 (45.11)
Payment of rent of leased in land	60751 (19.00)	90313 (21.44)	162045 (19.96)	114841 (14.31)	11111 (1.60)	90629 (17.67)
Dairying	6995 (2.19)	3819 (0.91)	9091 (1.12)	4365 (0.54)	24074 (3.46)	7039 (1.37)
Self-employment	1516 (0.47)	0 (0.00)	0 (0.00)	4762 (0.59)	11111 (1.60)	1735 (0.34)
Purchase of land	3191 (1.00)	0 (0.00)	0 (0.00)	42857 (5.34)	0 (0.00)	6471 (1.26)
Sub-total (A)	191182 (59.78)	266542 (63.28)	531022 (65.41)	593603 (73.97)	500740 (72.01)	337198 (65.75)
Non-Productive Purposes						
House constructions, addition of rooms and major repairs	26149 (8.18)	42917 (10.19)	39716 (4.89)	24286 (3.03)	110370 (15.87)	37453 (7.30)
Marriages and other socio-religious ceremonies	30505 (9.54)	44722 (10.62)	84432 (10.41)	66190 (8.25)	16667 (2.40)	47500 (9.26)
Purchase of durables and non-durables consumer goods	31718 (9.91)	29521 (7.01)	35352 (4.35)	25667 (3.20)	11111 (1.60)	29886 (5.83)
Education	5239 (1.64)	8854 (2.10)	21523 (2.65)	13651 (1.70)	26852 (3.86)	11253 (2.19)
Healthcare	7606 (2.38)	6979 (1.65)	28977 (3.57)	22698 (2.83)	3704 (0.53)	12775 (2.49)
Redemption of old debt	21027 (6.57)	9722 (2.31)	15682 (1.93)	21429 (2.67)	0 (0.00)	15849 (3.09)
Immigration	6383 (2.00)	12014 (2.84)	55114 (6.79)	34921 (4.35)	0 (0.00)	19569 (3.82)
Others*	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	25926 (3.73)	1373 (0.27)
Sub-total (B)	128627 (40.22)	154729 (36.72)	280796 (34.59)	208842 (26.03)	194630 (27.99)	175658 (34.25)
Total (A+B)	319809 (100.00)	421271 (100.00)	811818 (100.00)	802444 (100.00)	695370 (100.00)	512855 (100.00)

Source: Field Survey, 2015-16
Note: The figures given in parentheses denote the percentages.
**Others include political participation*

rate of interest than the institutional sources. It is clear that institutional agencies charge rate of interest ranging up to 18 per cent in the specific cases. But non-institutional agencies charge even above the 30 per cent rate of interest. Among the non-institutional sources, maximum amount is taken from the commission agents at exorbitant interest rates. The farmers are not much aware about the formalities and procedures to be followed for obtaining loans from the institutional credit sources (Singh & Toor, 2005). Further, the terms and conditions of the banks suit the influential farmers more for availing loans easily as compared to the small farmers (Singh *et al.,* 2014).

Table 4. Source-wise debt according to rate of interest by all farm households

(Mean Values in Rs.)

Rate of Interest→ Sources of Debt↓	0-6	6-12	12-18	18-24	24-30	Above 30	Total
Institutional Sources							
Primary agricultural co-operative societies/co-operative banks	63653 (12.41)	7157 (1.40)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	70810 (13.81)
Commercial banks	60525 (11.80)	211039 (41.15)	33137 (6.46)	0 (0.00)	0 (0.00)	0 (0.00)	304702 (59.41)
Regional rural banks	5878 (1.15)	17480 (3.41)	2942 (0.57)	0 (0.00)	0 (0.00)	0 (0.00)	26300 (5.13)
Land development banks	1667 (0.32)	2745 (0.54)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	4412 (0.86)
Sub-total	131724 (25.68)	238422 (46.49)	36078 (7.03)	0 (0.00)	0 (0.00)	0 (0.00)	406224 (79.21)
Non-institutional Sources							
Commission agents	20 (0.01)	1569 (0.31)	61345 (11.96)	17216 (3.36)	2431 (0.47)	716 (0.14)	83296 (16.24)
Money-lenders	0 (0.00)	980 (0.19)	3716 (0.72)	3812 (0.74)	608 (0.12)	490 (0.10)	9606 (1.87)
Large farmers/landlords	196 (0.04)	118 (0.02)	2843 (0.55)	4088 (0.80)	392 (0.08)	1216 (0.24)	8853 (1.73)
Traders	235 (0.04)	0 (0.00)	814 (0.15)	431 (0.08)	0 (0.00)	20 (0.01)	1500 (0.29)
Relatives & friends	2578 (0.50)	0 (0.00)	798 (0.16)	0 (0.00)	0 (0.00)	0 (0.00)	3376 (0.66)
Sub-total	3029 (0.59)	2667 (0.52)	69516 (13.55)	25547 (4.98)	3431 (0.67)	2441 (0.48)	106631 (20.79)
Total	134753 (26.28)	241089 (47.01)	105594 (20.59)	25547 (4.98)	3431 (0.67)	2441 (0.48)	512855 (100.00)

Source: Field Survey, 2015-16

Note: The figures given in parentheses denote the percentages.

Determinants of Indebtedness

The multiple regression model has been applied to find out the relationship between the magnitude of indebtedness and various independent factors. The regression function is selected on the basis of coefficient of multiple determination (R^2), and sign and significance of regression coefficients of the parameters. The model is described as follows:

$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6)$$

Where,

Y = Indebtedness (Rs.)

X_1 = Farm size (Acres)

X_2 = Percentage of non-institutional debt

X_3 = Income from subsidiary occupations and non-farm income (Rs.)

X_4 = Proportion of dependents in the family

X_5 = Consumption expenditure (Rs.)

X_6 = Expenditure on farm inputs, machinery and implements (Rs.)

The variations in the significance of factors determining indebtedness among the different farm-size categories have been worked out; and the results are presented in Table 5.

The farm size, percentage of non-institutional debt, income from subsidiary occupations and non-farm income, proportion of dependents in the family, consumption expenditure, and expenditure on farm inputs, machinery and implements are the main factors of indebtedness for all the farm-size households. The regression coefficient for consumption expenditure is positive and statistically significant at one per cent level of significance for marginal farmers and it is significant at 10 per level in the case of small,

Table 5. Factors determining indebtedness among farmers

(Results of Multiple Regression Analysis)

Farm-size Categories→ Factors↓	Marginal	Small	Semi-medium	Medium	Large	All Sampled Farmers
Farm size	8.167*** (2.526)	4.716* (1.658)	5.198* (1.640)	3.590* (1.950)	1.701* (2.048)	0.529** (1.934)
Percentage of non-institutional debt	0.207*** (4.278)	0.139** (2.007)	0.288* (1.859)	0.140ns (0.568)	0.517** (2.479)	0.243*** (5.186)
Income from subsidiary occupations and non-farm income	-0.153*** (5.398)	-0.092*** (3.632)	-0.145*** (2.746)	-0.016ns (0.979)	-0.014ns (0.659)	-0.052*** (5.191)
Proportion of dependents in the family	0.018ns (0.234)	0.064ns (0.496)	0.570*** (3.457)	0.030ns (0.089)	0.137ns (0.529)	0.161** (2.270)
Consumption expenditure	0.550*** (5.492)	0.419*** (4.881)	0.352*** (3.497)	0.141** (2.496)	0.071* (2.068)	0.112*** (3.983)
Expenditure on farm inputs, machinery and implements	0.118*** (9.296)	0.162*** (11.572)	0.136*** (7.504)	0.158*** (8.465)	0.101*** (4.293)	0.148*** (19.171)
R^2	0.704	0.708	0.751	0.757	0.851	0.702

Source: Field Survey, 2015-16

Note: The figures given in parentheses indicate t-values.

****significant at one per cent **significant at five per cent *significant at ten per cent ns: non-significant*

semi-medium, medium and large farmers which indicates that consumption expenditure of farmers is positively associated with indebtedness. The field survey has revealed that farmers' income from agriculture is inadequate to meet their expenditure on family maintenance, healthcare, socio-religious ceremonies, house construction, and the like. As a result, they find no other way than to take loans from various credit agencies. The regression coefficient for percentage of non-institutional debt was positive; and it is statistically significant at one per cent significance level for all the sampled households which reveal that magnitude of debt among farmers increases with an increase in the percentage of non-institutional debt. The factor expenditure on farm inputs, machinery and implements has a positive relationship with the level of indebtedness, and it was statistically significant at one per cent significance level for all the farm size categories. It reveals that more expenditure on farm inputs, machinery and implements result in higher indebtedness. It has been observed from the field survey that productive assets such as tractors and related implements are not used at the optimum capacity. Many times, agricultural machinery is purchased because of social compulsion.

The regression coefficient for income from subsidiary occupations and non-farm income is negative, and statistically significant at one per cent significance level. It indicates that an increase in income from subsidiary occupations and non-farm sources results in decreasing the farmers' amount of debt. The regression coefficient for farm size is positive, and statistically significant at five per cent level of significance. It describes that farmers' indebtedness assumes a greater dimension with an increase in the farm size. It may be due to the reason that as the farmers' ownership of land holdings as a collateral security increases; their capacity of availing loans also increases. The regression coefficient for proportion of dependents in the family is positive, and statistically significant at five per cent level of significance for all the farm house taken together. It reflects that higher the proportion of dependents among the farm households, greater would be the indebtedness. The coefficient of determination (R^2) for all the farm-size categories is 0.702 which suggests that explanatory variables explain 70.2 per cent variation in the magnitude of indebtedness. All the explanatory variables when taken together explain 70.4, 70.8, 75.1, 75.7 and 85.1 per cent variation in the magnitude of indebtedness in the case of marginal, small, semi-medium, medium and large farm size categories. The above analysis suggests that by increasing farm household income through subsidiary occupations and non-farm income and encouraging them to take the debt from the institutional sources, the magnitude of indebtedness can be curtailed to some extent.

Conclusion and Policy Implications

The foregoing analysis reveals that 88.24 per cent farm households were under debt in the rural areas of Punjab. The average amount of debt per average and indebted farm household is Rs. 512854.90, and Rs. 581235.56 respectively. The average debt per owned and per operated acre was Rs. 75824.32, and Rs. 41895.88 respectively for an average farm

household. There was a negative relationship between the average amount of debt per owned acre and the farm size. The burden of debt is relatively high among the farmers belonging to the marginal, small, and semi-medium farm-size categories; and these categories were under debt mainly for purchase of farm inputs, machinery and implements, followed by payment of rent of leased in land. Thus, the government should take certain effective measures to overcome the problem of indebtedness among the farmers. The government should ensure adequate and timely supply of quality seeds, fertilizers, pesticides, insecticides, and the like at the subsidized rates through village level co-operative societies for reducing their dependency on commission agents, money-lenders, and traders. Arrangements should also be made to provide modern agricultural machinery/ implements to the farmers through the primary co-operative societies, so that they can hire it at reasonable rates. It is essential to provide crop insurance at reasonable premium to overcome the losses caused by the natural calamities. However, in the case of marginal and small farm-size category farmers the insurance premium must be paid by the government or the agricultural marketing board (Kaur *et al.,* 2018). There is need to fix fair or maximum rent on leased land under tenancy laws by state (one-third of produce or value thereof) not through the market forces as prevailing. For providing adequate income to farmers, government should fix the remunerative prices of the different crops on the basis of cost of production as well as consumer price indices. There is need to generate gainful farm and non-farm employment opportunities and revisit land reforms in favour of marginal and small farm-size categories for increasing their income base. The relative share of debt advanced by institutional sources is 79.21 per cent for an average farm household and this proportion increases from 73.06 per cent for the marginal farm-size category to 91.74 per cent for the large farm-size category. The proportionate share of debt advanced by the non-institutional sources is 20.79 per cent for an average farm household; and this proportion decreases with an increase in the farm size. The results further revealed that 26.94, and 26.29 per cent of the total debt against the marginal, and small farm-size category farmers respectively has been incurred from non-institutional sources at exorbitant rate of interest because they possessed small size land holdings as collateral security for incurring debt from institutional sources. There is a need to regulate and monitor the functioning of the non-institutional agencies to save farmers from exploitation in the rural areas of Punjab.

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