

## **Magnitude of Indebtedness Among Farmers in Rural Punjab : An Inter-regional Analysis**

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*The present study is an attempt to examine the magnitude of indebtedness among farmers across the regions in rural Punjab. The results of the study reveal that the percentage of indebted farm households is the highest (91.67) in the high productivity region, and the lowest (78.95) in the medium productivity region. The high productivity region has recorded the highest per owned and per operated acre debt. The relative share of debt incurred from institutional sources is the highest (91.51 per cent) in the medium productivity region, and the lowest (71.67 per cent) in the low productivity region. All the farm-size categories across the regions except the*

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**JOURNAL OF NATIONAL DEVELOPMENT, Vol. 36, No. 2 (Winter), 2023  
Peer Reviewed, Indexed & Refereed International Research Journal**

*marginal farm-size category in the low productivity region have incurred a major proportion of debt from the institutional sources. The major proportion of debt is incurred for the purchase of farm inputs, machinery and implements, and this proportion is 48.94, 45.27, and 44.06 per cent in the medium, low, and high productivity regions respectively. All the farm-size categories in the low productivity region have incurred debt at relatively higher interest rates. The explanatory variables have explained 72.1, 76.5, and 76.7 per cent variation in the magnitude of indebtedness among the farm households in the high, medium, and low productivity regions respectively.*

[**Keywords :** Indebtedness, Farmers, Inter-regional, Institutional and Non-institutional sources]

## **1. Introduction**

Punjab holds place of pride among the Indian states for its outstanding achievements in agricultural development. The state had witnessed tremendous increase in agriculture production after implementation of the New Agricultural Technology (Singh et al., 2012). The New Agricultural Technology (NAT) was accepted somewhat over-enthusiastically and un-critically in the state during the mid-sixties (Dhanagare, 1987) which was related to the package of high-yielding varieties of seeds, use of chemical fertilizers, insecticides, pesticides, herbicides, assured irrigation, machinery and modern agricultural practices (Kaur & Singh, 2014). The age-old techniques had been refined and sharpened, agricultural practices changed and adjusted to new innovations, thus improving production (Singh, 1974). The modern technology was expensive and consequently expenditure on crop production increased. Since most of the inputs used by the farmers were purchased from market, the farmers had to spend huge amounts of cash on purchasing market supplied farm inputs to carry out their production operations (Deogharia, 2016). In its initial phase, the significant increments in productivity and production led to higher and higher income benefitted to the farming community (Aggarwal, 1971). Since the area under wheat and paddy cultivation as well as the intensity of cropping have reached saturation levels, farmers' income from per unit area have almost totally stagnated. Due to low income and stagnant productivity, farmers had to borrow for their productive activities, consumption needs as well as social obligations. The small farmers are facing more financial crisis as compared to large farmers and hence rely on expensive borrowed funds which are usually expensive credit from non-institutional resources and are further dragged into

the financial crunch (Singh et al., 2014). Thus, the poor farmers found increasingly hard to sustain on farming, were getting pushed out from agriculture and the Green Revolution tend to monopolized by large commercial farmers (Maheshwari, 1998). In the present paper, an attempt has been made to examine indebtedness among farmers across the regions in Punjab.

## **2. Methodology**

For the purpose of the present study, the whole Punjab state has been divided into high, medium, and low productivity regions on the basis of agricultural productivity which is the average of output of major ten crops for the year 2013-14. In order to avoid the geographical contiguity, Ludhiana, S.A.S. Nagar, and Mansa districts have been selected from the high, medium and low productivity regions respectively; and the respective districts represent the Central Plains, Shivalik Foothills, and South-West zones. All the twenty-one development blocks from the selected districts have been taken up; and one village from each development block has been chosen. As many as 10 per cent farm households out of the total farm households are selected randomly from the selected villages. Thus, a sample of 510 farm households from the different farm-size categories has been selected with the help of multi-stage sampling technique. Out of 510 farm households, 264, 114, and 132 farm households are from Ludhiana, S.A.S. Nagar, and Mansa districts respectively. The reference period of the present study relates to the agricultural year 2015-16. For analyzing the results, statistical tools such as averages and percentages have been used for tabular analysis; and multiple regression model has been applied to find out the determinants of indebtedness among the farm households across the regions.

## **3. Results and Discussion**

### **3.1 Extent of Debt**

The data exhibiting the extent of debt among the farm households across the regions are shown in Table-1. The table shows that the percentage of indebted farm households is the highest (91.67) in the high, followed by low (89.39) and medium (78.95) productivity regions. In the case of marginal and large farm-size categories, the proportion of indebted farm households is in the low productivity region, and the lowest in the medium productivity region. For the

marginal and large farm-size categories, the proportionate share of indebted farm households is the highest in the low productivity region. The highest proportion of the small and semi-medium farm-size category households under debt falls in the high productivity region. The medium productivity region has shown the highest proportion of farm households under debt for the medium farm-size category.

**Table-1 : Extent of Debt among Farmers**

Farm-size Categories	Indebted Households as Percentage of Sampled Households	Average amount of Debt (₹)		Debt Per Owned Acre	Debt Per Operated Acre
		Per Average Household	Per Indebted Household		
<b>High Productivity Region</b>					
Marginal Farmers	90.91	385147.73	423662.50	205412.12	49120.29
Small Farmers	90.79	519263.16	571942.03	134231.29	49176.32
Semi-medium Farmers	96.15	967423.08	1006120.00	123450.31	54384.86
Medium Farmers	94.12	949823.53	1009187.50	64717.43	35982.17
Large Farmers	78.57	569285.71	724545.45	18797.17	15094.70
All Sampled Farmers	91.67	620935.61	677384.30	91604.92	42656.00
<b>Medium Productivity Region</b>					
Marginal Farmers	71.15	312423.08	439081.08	153990.52	52918.57
Small Farmers	85.29	283382.35	332241.38	69411.76	37636.72
Semi-medium Farmers	83.33	540833.33	649000.00	68821.43	54309.62
Medium Farmers	100.00	673636.36	673636.36	42102.27	36683.17
Large Farmers	60.00	570000.00	950000.00	14467.01	14467.01
All Sampled Farmers	78.95	373956.14	473677.78	59875.00	39418.40

Low Productivity Region					
Marginal Farmers	91.67	208020.83	226931.82	104554.97	40507.10
Small Farmers	88.24	340117.65	385466.67	85659.26	46912.78
Semi-medium Farmers	87.50	610166.67	697333.33	79156.76	56980.54
Medium Farmers	88.89	602777.78	678125.00	42300.19	35986.73
Large Farmers	87.50	994375.00	1136428.57	28822.46	29794.01
All Sampled Farmers	89.39	416651.52	466084.75	58014.77	41712.55

**Source :** Field Survey, 2015-16.

The results further show that the amount of debt per average farm household is the highest (₹ 620935.61) in the high productivity region, and the lowest (₹ 373956.14) in the medium productivity region. The average amount of debt per average farm household for all the farm-size categories is the highest in the high productivity region except the large farm-size category. For the large farm-size category, it is the highest (₹ 994375.00) in the low productivity region. For the small, semi-medium and large farm-size categories, this amount is the lowest in the medium productivity region. For the marginal and medium farm-size categories, it is the lowest in the low productivity region. It is clear that the average amount of debt per indebted household is the highest (₹ 677384.30) in the high productivity region, followed by the medium productivity region (₹ 473677.78), whereas it is the lowest (₹ 466084.75) in the low productivity region. The small, semi-medium, and medium farm-size categories have the highest amount of debt per indebted household in the medium productivity region. For the marginal, and large farm-size categories, it is the highest in the medium, and low productivity regions respectively. All the farm-size categories except the marginal farm-size category have the lowest values in this regard in the medium productivity region.

The analysis further shows that the average amount of debt per owned acre is the highest (₹ 91604.92) in the high, followed by medium (₹ 59875.00) and low (₹ 58014.77) productivity regions. The average amount of debt per owned acre is inversely related with the farm size across all the regions. The marginal, small, semi-medium, and medium farm-size categories have the highest amount of debt per owned acre in the high productivity region. For the large

farm-size category, it is the highest in the low productivity region. The average amount of debt per operated acre is ₹ 42656.00, ₹ 39418.40, and ₹ 41712.55 in the high, medium, and low productivity regions respectively. For the marginal, and medium farm-size categories, the amount of debt per operated acre is the highest in the medium productivity region; and for the small farm-size category, it is the highest in the high productivity region. For the semi-medium and large farm-size categories, this amount is the highest in the low productivity region, and the lowest in the medium productivity region. The high productivity region has recorded the highest per owned and per operated acre debt. It is due to the adoption of latest agricultural technology on a large scale in this region. The field survey has brought out that the burden of debt per operated acre is relatively high among the marginal, small and semi-medium farm-size categories across all the regions. These farm-size categories are unable to invest in farm activities from their income as a consequence of high cost of cultivation and stagnant agricultural income after the Green Revolution. Thus, they have availed relatively large amount of loans for farm operations and their daily requirements.

### **3.2 Debt according to Sources of Credit**

The data relating to the region-wise debt incurred from the different sources of credit are presented in Table-2. The table shows that an average farm household has incurred a major proportion of debt through institutional sources across all the regions. The average amount of debt incurred from institutional sources is the highest (₹ 487685.61) in the high, followed by medium (₹ 342201.76) and low (₹ 298590.91) productivity regions. The average amount of debt incurred from non-institutional sources is ₹ 133250.00, ₹ 31754.38 and ₹ 118060.61 in the high, medium, and low productivity regions respectively. All the farm-size categories across the regions except the marginal farm-size category in the low productivity region, have incurred a major proportion of debt from the institutional sources. The field survey shows that the marginal farm-size category farmers in the low productivity region are facing financial crisis due to cotton crop-failure, and they had to borrow money from the non-institutional sources at exorbitant rates of interest, which further deepens their financial crisis.

Table-2 : Debt Incurred from Different Sources of Credit  
(Mean Values in ₹)

Sources of Debt	Farm-size Categories					
	Marginal Farmers	Small Farmers	Semi-medium Farmers	Medium Farmers	Large Farmers	All Sampled Farmers
<b>High Productivity Region</b>						
<b>Institutional Sources</b>						
Primary agricultural co-operative societies/ co-operative banks	53477.28 (13.88)	58355.26 (11.24)	119923.08 (12.40)	168588.24 (17.75)	147857.14 (25.97)	87799.24 (14.14)
Commercial banks	216477.27 (56.21)	289473.68 (55.75)	656153.85 (67.83)	600000.00 (63.17)	342857.14 (60.23)	380189.39 (61.23)
Regional rural banks	6818.18 (1.77)	21710.54 (4.18)	13461.54 (1.39)	0.00 (0.00)	21428.57 (3.76)	12310.61 (1.97)
Land development banks	2272.73 (0.59)	4605.26 (0.88)	26923.08 (2.78)	0.00 (0.00)	0.00 (0.00)	7386.36 (1.19)
<b>Sub-total</b>	<b>279045.46 (72.45)</b>	<b>374144.75 (72.05)</b>	<b>816461.55 (84.40)</b>	<b>768588.24 (80.92)</b>	<b>512142.85 (89.96)</b>	<b>487685.61 (78.53)</b>
<b>Non-institutional Sources</b>						
Commission agents	83636.36 (21.72)	106105.26 (20.43)	126250.00 (13.05)	173882.35 (18.31)	53571.43 (9.41)	108526.52 (17.48)
Money-lenders	9431.82 (2.45)	13026.32 (2.51)	10576.92 (1.09)	5882.35 (0.62)	3571.43 (0.63)	9924.24 (1.60)
Large farmers/ landlords	9090.91 (2.36)	13947.37 (2.69)	12692.31 (1.31)	0.00 (0.00)	0.00 (0.00)	9545.45 (1.54)
Traders	1136.36 (0.30)	2697.37 (0.52)	1250.00 (0.13)	1470.59 (0.15)	0.00 (0.00)	1590.91 (0.26)
Relatives & friends	2806.82 (0.72)	9342.11 (1.80)	192.31 (0.02)	0.00 (0.00)	0.00 (0.00)	3662.88 (0.59)
<b>Sub-total</b>	<b>106102.27 (27.55)</b>	<b>145118.42 (27.95)</b>	<b>150961.54 (15.60)</b>	<b>181235.29 (19.08)</b>	<b>57142.86 (10.04)</b>	<b>133250.00 (21.47)</b>
<b>Total</b>	<b>385147.73 (100.00)</b>	<b>519263.17 (100.00)</b>	<b>967423.09 (100.00)</b>	<b>949823.53 (100.00)</b>	<b>569285.71 (100.00)</b>	<b>620935.61 (100.00)</b>

Medium Productivity Region						
<b>Institutional Sources</b>						
Primary agricultural co-operative societies/ co-operative banks	80692.31 (25.83)	48529.41 (17.13)	82500.00 (15.25)	64545.45 (9.58)	200000.00 (35.09)	74964.91 (20.06)
Commercial banks	116538.46 (37.30)	121764.71 (42.97)	433333.33 (80.13)	436363.64 (64.78)	330000.00 (57.89)	191666.67 (51.25)
Regional rural banks	75865.38 (24.28)	74117.65 (26.15)	0.00 (0.00)	150000.00 (22.27)	40000.00 (7.02)	72938.60 (19.50)
Land development banks	5769.23 (1.85)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	2631.58 (0.70)
<b>Sub-total</b>	<b>278865.38 (89.26)</b>	<b>244411.77 (86.25)</b>	<b>515833.33 (95.38)</b>	<b>650909.09 (96.63)</b>	<b>570000.00 (100.00)</b>	<b>342201.76 (91.51)</b>
<b>Non-institutional Sources</b>						
Commission agents	17884.62 (5.72)	16176.47 (5.71)	16666.67 (3.08)	18181.82 (2.70)	0.00 (0.00)	16491.23 (4.41)
Money-lenders	5961.54 (1.91)	8823.53 (3.11)	0.00 (0.00)	4545.45 (0.67)	0.00 (0.00)	5789.47 (1.55)
Large farmers/ landlords	7692.31 (2.46)	10882.35 (3.84)	8333.33 (1.54)	0.00 (0.00)	0.00 (0.00)	7631.58 (2.04)
Traders	769.23 (0.25)	1617.65 (0.57)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	833.33 (0.22)
Relatives & friends	1250.00 (0.40)	1470.59 (0.52)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	1008.77 (0.27)
<b>Sub-total</b>	<b>33557.70 (10.74)</b>	<b>38970.59 (13.75)</b>	<b>25000.00 (4.62)</b>	<b>22727.27 (3.37)</b>	<b>0.00 (0.00)</b>	<b>31754.38 (8.49)</b>
<b>Total</b>	<b>312423.08 (100.00)</b>	<b>283382.36 (100.00)</b>	<b>540833.33 (100.00)</b>	<b>673636.36 (100.00)</b>	<b>570000.00 (100.00)</b>	<b>373956.14 (100.00)</b>
<b>Low Productivity Region</b>						
<b>Institutional Sources</b>						
Primary agricultural co-operative societies/ co-operative banks	21145.83 (10.17)	32323.54 (9.51)	43708.33 (7.16)	40000.00 (6.64)	63125.00 (6.35)	33242.43 (7.98)



Commercial banks	65791.67 (31.63)	187352.94 (55.08)	348750.00 (57.16)	476666.67 (79.08)	837500.00 (84.220)	251348.48 (60.33)
Regional rural banks	14541.67 (6.98)	14705.88 (4.32)	16666.67 (2.73)	13888.89 (2.30)	0.00 (0.000)	14000.00 (3.36)
Land development banks	0.00 (0.00)	0.00 (0.00)	(0.00) (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Sub-total	101479.17 (48.78)	234382.36 (68.91)	409128.52 (67.05)	530555.56 (88.02)	900625.00 (90.57)	298590.91 (71.67)
<b>Non-institutional Sources</b>						
Commission agents	70937.50 (34.10)	83676.47 (24.60)	156250.00 (25.61)	66666.67 (11.06)	93750.00 (9.430)	90530.31 (21.73)
Money-lenders	10500.00 (5.05)	10000.00 (2.94)	28125.00 (4.61)	5555.56 (0.92)	0.00 (0.000)	12265.15 (2.94)
Large farmers/ landlords	10937.50 (5.26)	8823.53 (2.59)	12500.00 (2.05)	0.00 (0.00)	0.00 (0.000)	8522.73 (2.05)
Traders	3333.33 (1.60)	1176.47 (0.35)	2083.33 (0.34)	0.00 (0.00)	0.00 (0.00)	1893.94 (0.45)
Relatives & friends	10833.33 (5.21)	2058.82 (0.61)	2083.33 (0.34)	0.00 (0.00)	0.00 (0.00)	4848.48 (1.16)
Sub-total	106541.66 (51.22)	105735.29 (31.09)	201042.32 (32.95)	72222.22 (11.98)	93750.00 (9.43)	118060.61 (28.33)
<b>Total</b>	<b>208020.83 (100.00)</b>	<b>340117.65 (100.00)</b>	<b>610166.67 (100.00)</b>	<b>60277.78 (100.00)</b>	<b>994375.00 (100.00)</b>	<b>416651.52 (100.00)</b>

**Source :** Field Survey, 2015-16.

**Note :** The figures given in brackets indicate percentages.

The table further shows that the relative share of debt incurred from institutional sources is the highest (91.51 per cent) in the medium productivity region, followed by the high productivity region (78.53 per cent), whereas it is the lowest (71.67 per cent) in the low productivity region. Among the institutional sources, commercial banks are the most important source of advancing loans. The relative share of debt advanced by commercial banks is 61.23, 51.25, and 60.33 per cent in the high, medium, and low productivity regions respectively. The relative share of debt advanced by primary agricultural co-operative societies/co-operative banks is the highest (20.06 per cent) in the medium, followed by high (14.14 per cent) and low (7.98 per cent) productivity regions. The regional rural banks are contributing 19.50, 3.36, and 1.97 per cent to the total debt in the medium, low, and high productivity regions respectively. Land

development banks contribute only 1.19, and 0.70 per cent in the high, and medium productivity regions respectively.

The relative share of debt from non-institutional sources is the highest (28.33 per cent) in the low, followed by high (21.47 per cent) and medium (8.49 per cent) productivity regions. Commission agents are contributing 21.73, 17.48, and 4.41 per cent of the total debt in the low, high, and medium productivity regions respectively. All the farm-size categories in the low productivity region have incurred the highest percentage of debt from this source. The field survey has revealed a disturbing fact that keeping in view the low repaying capacity of the marginal farmers from the low productivity region, the commission agents generally hesitate to advance loans to them. As a result, some of them have to mortgage or sell their land. The percentage share of debt incurred from money-lenders is the highest (2.94) in the low, followed by high (1.60) and medium (1.55) productivity regions. The percentage of debt incurred from large farmers/landlords is the highest (2.05) in the low, followed by medium (2.04) and high (1.54) productivity regions. The filed survey has shown that the proportionate share of debt from the institutional sources is relatively high in the medium productivity region because the farmers in this region are more educated and aware about the banking system. In the low productivity region, farmers have low access to the institutional sources due to high level of illiteracy and ignorance. Even they are not much aware about the terms and conditions of the non-institutional sources such as commission agents under which the loan is advanced to them.

### **3.3 Debt according to Purpose**

The data regarding debt incurred for the different purposes across the regions are presented in Table-3. The table shows that all the farm-size categories across the regions spend a major proportion of the total debt for the purpose of purchase of farm inputs, machinery and implements across all the regions. An average farm household has incurred 48.94, 45.27, and 44.06 per cent of the total debt for this purpose in the medium, low, and high productivity regions respectively. The average amount and relative share of debt incurred for this purpose is positively related with the farm size across all the regions. The payment of rent of leased in land has appeared at the second rank in the high and low productivity regions. The proportionate share of debt incurred for this purpose is the

highest (22.63 per cent) in the high, followed by low (11.55 per cent) and medium (6.51 per cent) productivity regions. The field survey has highlighted the fact that due to lack of non-farm employment opportunities, farmers in the high and low productivity regions have leased in land for cultivation to supplement their income. But the prevailing rate of rent for leased in land is too high. The households belonging to marginal and small farm-size categories are not economically viable under the present circumstances; and it is difficult for them to pay high rent of leased in land from their low income. Therefore, the high rate of rent of leased in land has pushed the farmers into debt-trap.

Table-3 : Debt Incurred for Different Purposes

(Mean Values in ₹)

Purpose	Farm-size Categories					
	Marginal Farmers	Small Farmers	Semi-medium Farmers	Medium Farmers	Large Farmers	All Sampled Farmers
<b>High Productivity Region</b>						
Farm inputs, machinery & implements	138204.55 (35.88)	210065.79 (40.46)	418076.92 (43.22)	492705.88 (51.87)	400000.00 (70.26)	273556.82 (44.06)
Payment of rent of leased in land	79375.00 (20.61)	144210.53 (27.77)	248461.54 (25.68)	174558.82 (18.38)	24128.57 (3.76)	140530.30 (22.63)
Dairying	7215.91 (1.87)	1578.95 (0.30)	14423.08 (1.49)	8088.24 (0.85)	46428.57 (8.16)	9204.55 (1.48)
Education	6931.82 (1.80)	8421.05 (1.62)	20673.08 (2.14)	12058.82 (1.27)	25000.00 (4.39)	11685.61 (1.88)
Purchase of land	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	38235.29 (4.03)	0.00 (0.00)	4924.24 (0.79)
Self-employment	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
House construction, addition of rooms & major repairs	17977.27 (4.67)	49934.21 (9.62)	37884.62 (3.92)	20588.24 (2.17)	60000.00 (10.55)	33662.86 (5.42)
Marriages and other socio-religious ceremonies	41704.55 (10.83)	49276.32 (9.49)	78846.15 (8.15)	64705.88 (6.81)	7142.86 (1.25)	52329.55 (8.43)

Durable and non-durable consumer goods	40670.45 (10.56)	33473.68 (6.45)	35980.77 (3.72)	26235.29 (2.76)	9285.71 (1.63)	34151.52 (5.50)
Healthcare	12272.73 (3.19)	10460.53 (2.01)	12500.00 (1.28)	21470.59 (2.26)	0.00 (0.00)	12329.55 (1.99)
Redemption of old debt	27159.09 (7.05)	7894.74 (1.52)	22692.31 (2.35)	26470.59 (2.79)	0.00 (0.00)	19204.55 (3.09)
Immigration	13636.36 (3.54)	3947.37 (0.76)	77884.62 (8.05)	64705.88 (6.81)	0.00 (0.00)	29356.06 (4.73)
Others	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
<b>Total</b>	<b>385147.73 (100.00)</b>	<b>519263.17 (100.00)</b>	<b>967423.09 (100.00)</b>	<b>949823.53 (100.00)</b>	<b>569285.71 (100.00)</b>	<b>620935.61 (100.00)</b>
<b>Medium Productivity Region</b>						
Farm inputs, machinery and implements	127711.54 (40.88)	124117.65 (43.80)	308333.33 (57.01)	404545.45 (60.05)	370000.00 (64.91)	182991.23 (48.94)
Payment of rent of leased in land	36076.92 (11.55)	12794.12 (4.51)	5000.00 (0.92)	36363.64 (5.40)	0.00 (0.00)	24307.02 (6.51)
Dairying	9423.08 (3.02)	10294.12 (3.63)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	7368.42 (1.97)
Education	5769.24 (1.85)	11911.76 (4.20)	17500.00 (3.24)	18181.82 (2.70)	20000.00 (3.51)	10657.89 (2.85)
Purchase of land	11538.46 (3.69)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	5263.16 (1.41)
Self-employment	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	60000.00 (10.53)	2631.58 (0.70)
House construction, addition of rooms and major repairs	41250.00 (13.20)	29411.76 (10.38)	58333.33 (10.79)	43636.36 (6.48)	80000.00 (14.04)	41447.36 (11.08)
Marriages and other socio-religious ceremonies	37019.23 (11.84)	26176.47 (9.24)	102500.00 (18.95)	65454.55 (9.72)	10000.00 (1.75)	42236.84 (11.29)
Durable and non-durable consumer goods	26326.92 (8.43)	20735.29 (7.32)	32500.00 (6.01)	28181.81 (4.18)	10000.00 (1.75)	24771.93 (6.62)
Healthcare	0.00 (0.00)	1470.59 (0.52)	16666.67 (3.08)	50000.00 (7.42)	20000.00 (3.51)	7894.74 (2.11)
Redemption of old debt	17307.69 (5.54)	11764.71 (4.15)	0.00 (0.00)	27272.73 (4.05)	0.00 (0.00)	14035.09 (3.75)
Immigration	0.00 (0.00)	34705.88 (12.25)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	10350.88 (2.77)

Others	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
<b>Total</b>	<b>312423.08</b> <b>(100.00)</b>	<b>283382.36</b> <b>(100.00)</b>	<b>540833.33</b> <b>(100.00)</b>	<b>673636.36</b> <b>(100.00)</b>	<b>570000.00</b> <b>(100.00)</b>	<b>373956.14</b> <b>(100.00)</b>
<b>Low Productivity Region</b>						
Farm inputs, machinery and implements	73291.67 (35.23)	136529.41 (40.15)	259583.33 (42.55)	315833.33 (52.41)	602500.00 (60.59)	188598.48 (45.27)
Payment of rent of leased in land	53333.33 (25.64)	47352.94 (13.92)	53333.33 (8.74)	50000.00 (8.29)	0.00 (0.00)	48106.06 (11.55)
Dairying	3958.33 (1.90)	2352.94 (0.69)	2083.33 (0.34)	0.00 (0.00)	0.00 (0.00)	2424.24 (0.58)
Education	1562.50 (0.75)	6764.71 (1.99)	25375.00 (4.16)	13888.89 (2.30)	34375.00 (3.46)	10901.52 (2.62)
Purchase of land	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	77777.78 (12.91)	0.00 (0.00)	10606.06 (2.55)
Self-employment	5937.50 (2.85)	0.00 (0.00)	0.00 (0.00)	16666.67 (2.76)	0.00 (0.00)	4431.82 (1.06)
House construction, addition of rooms and major repairs	24770.83 (11.91)	40735.29 (11.98)	34375.00 (5.63)	19444.44 (3.23)	217500.00 (21.87)	41583.33 (9.98)
Marriages and other socio-religious ceremonies	2916.67 (1.40)	53088.24 (15.61)	87500.00 (14.34)	69444.44 (11.52)	37500.00 (3.77)	42386.36 (10.17)
Durable and non-durable consumer goods	21145.83 (10.17)	29470.59 (8.66)	35416.66 (5.80)	23055.56 (3.82)	15000.00 (1.51)	25772.73 (6.19)
Healthcare	7291.67 (3.51)	4705.88 (1.38)	70833.33 (11.61)	8333.33 (1.38)	0.00 (0.00)	17878.79 (4.29)
Redemption of old debt	13812.50 (6.64)	11764.71 (3.46)	8333.33 (1.37)	8333.33 (1.38)	0.00 (0.00)	10704.55 (2.57)
Immigration	0.00 (0.00)	7352.94 (2.16)	33333.33 (5.46)	0.00 (0.00)	0.00 (0.00)	7954.55 (1.91)
Others	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	87500.00 (8.80)	5303.03 (1.26)
<b>Total</b>	<b>208020.83</b> <b>(100.00)</b>	<b>340117.65</b> <b>(100.00)</b>	<b>610166.66</b> <b>(100.00)</b>	<b>602777.78</b> <b>(100.00)</b>	<b>994375.00</b> <b>(100.00)</b>	<b>416651.52</b> <b>(100.00)</b>

**Source :** Field Survey, 2015-16.

**Note :** The figures given in brackets indicate percentages.

The relative share of debt incurred for marriages and other socio-religious ceremonies is the highest (11.29 per cent) in the

medium productivity region; and the corresponding figures for the low, and high productivity regions are 10.17, and 8.43 per cent respectively. This share is inversely associated with the farm size in the high productivity region. The proportion of debt incurred for house construction, addition of rooms and major repairs is the highest (11.08 per cent) in the medium, followed by low (9.98 per cent) and high (5.42 per cent) productivity regions. The proportion of debt incurred for purchase of durable and non-durable consumer goods is 5.50, 6.62, and 6.19 per cent in the high, medium, and low productivity regions respectively; and this proportionate share is inversely associated with the farm size across all the regions. It is clear from the table that the marginal, small, and semi-medium farm-size categories have incurred a major proportion of the total debt for purchase of farm inputs, machinery and implements; payment of rent of leased in land, and unproductive purposes such as house construction, major repairs and addition of rooms, purchase of durable and non-durable consumer goods, and marriages and other socio-religious ceremonies across all the regions. The medium, and large farm-size categories have also incurred debt for some productive activities such as dairying, self-employment, and purchase of land across the regions in the rural areas of Punjab. The semi-medium farm-size category in the low productivity region has spent a considerable amount of the total debt on healthcare due to the prevalence of cancer disease in this region.

### **3-4 Debt according to Rate of Interest**

Table-4 shows the region-wise debt according to the different ranges of rate of interest. The table highlights that an average farm household has incurred a major proportion of the total debt at the rate of interest ranging from 6 to 12 per cent across all the regions. The relative share of debt incurred at this rate of interest is the highest (55.66 per cent) in the medium, followed by high (47.92 per cent) and low (39.50 per cent) productivity regions. An average farm household has incurred 28.45 per cent of the total debt in the range of 0 to 6 per cent rate of interest in the medium productivity region; and the corresponding figures for the low, and high productivity regions are 25.42, and 25.24 per cent respectively. The relative share of debt incurred at the rate of interest ranging from 12 to 18 per cent is 20.13, 8.71, and 31.53 per cent in the high, medium, and low productivity regions respectively.

Table-4 : Debt according to Rate of Interest

(Mean Values in ₹)

Rate of Interest (%)	Farm-size Categories					
	Marginal Farmers	Small Farmers	Semi-medium Farmers	Medium Farmers	Large Farmers	All Sampled Farmers
<b>High Productivity Region</b>						
0-6	128022.73 (33.24)	133342.11 (25.68)	168576.93 (17.43)	206823.53 (21.77)	297857.14 (52.32)	156696.97 (25.24)
6-12	145795.45 (37.85)	241447.37 (46.50)	530288.46 (54.81)	494117.65 (52.02)	214285.71 (37.64)	297556.82 (47.92)
12-18	88318.18 (22.93)	84342.11 (16.24)	218269.23 (22.56)	207705.88 (21.87)	28571.43 (5.02)	124977.27 (20.13)
18-24	22556.82 (5.86)	56052.63 (10.79)	38750.00 (4.01)	23529.41 (2.48)	28571.43 (5.02)	35833.33 (5.77)
24-30	454.55 (0.12)	3947.37 (0.76)	5769.24 (0.60)	17647.06 (1.86)	0.00(0.00)	4696.97(0.76)
Above 30	0.00 (0.00)	131.58 (0.03)	5769.23 (0.59)	0.00 (0.00)	0.00 (0.00)	1174.24 (0.18)
<b>Total</b>	<b>385147.73 (100.00)</b>	<b>519263.17 (100.00)</b>	<b>967423.09 (100.00)</b>	<b>949823.54 (100.00)</b>	<b>569285.71 (100.00)</b>	<b>620935.61 (100.00)</b>
<b>Medium Productivity Region</b>						
0-6	86653.85 (27.74)	105000.00 (37.06)	157500.00 (29.12)	105454.55 (15.65)	200000.00 (35.09)	106368.42 (28.45)
6-12	155000.00 (49.61)	132941.18 (46.91)	358333.33 (66.26)	454545.45 (67.48)	370000.00 (64.91)	208157.89 (55.66)
12-18	44038.46 (14.10)	12500.00 (4.41)	0.00 (0.00)	90909.09 (13.50)	0.00 (0.00)	32587.72 (8.71)
18-24	16634.62 (5.32)	10294.12 (3.63)	25000.00 (4.62)	18181.82 (2.70)	0.00 (0.00)	15043.86 (4.02)
24-30	192.31 (0.06)	12352.94 (4.36)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	3771.93 (1.01)
Above 30	9903.84 (3.17)	10294.12 (3.63)	0.00 (0.00)	4545.45 (0.67)	0.00 (0.00)	8026.32 (2.15)
<b>Total</b>	<b>312423.08 (100.00)</b>	<b>283382.35 (100.00)</b>	<b>540833.33 (100.00)</b>	<b>673636.36 (100.00)</b>	<b>570000.00 (100.00)</b>	<b>373956.14 (100.00)</b>
<b>Low Productivity Region</b>						
0-6	62937.50 (30.26)	84823.53 (24.94)	165375.00 (27.10)	133333.33 (22.12)	213125.00 (21.43)	105901.52 (25.42)
6-12	42083.33 (20.23)	151617.65 (44.58)	245833.33 (40.30)	286111.11 (47.47)	437500.00 (44.00)	164583.33 (39.50)
12-18	88125.00 (42.36)	96617.65 (28.41)	165625.00 (27.14)	172222.22 (28.57)	343750.00 (34.57)	131363.64 (31.53)



18-24	14875.00 (7.15)	7058.82 (2.07)	33333.33 (5.46)	11111.11 (1.84)	0.00 (0.00)	14803.03 (3.55)
24-30	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Above 30	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
<b>Total</b>	<b>208020.83</b> <b>(100.00)</b>	<b>340117.65</b> <b>(100.00)</b>	<b>610166.66</b> <b>(100.00)</b>	<b>602777.78</b> <b>(100.00)</b>	<b>994375.00</b> <b>(100.00)</b>	<b>416651.52</b> <b>(100.00)</b>

**Source :** Field Survey, 2015-16.

**Note :** The figures given in brackets indicate percentages.

An average farm household has incurred 5.77, 4.02, and 3.55 per cent of the total debt at the rate of interest ranging from 18 to 24 per cent in the high, medium, and low productivity regions respectively. The proportionate share of debt incurred at the rate of interest ranging from 24 to 30 per cent is 0.76, and 1.01 per cent in the high, and medium productivity regions respectively. The relative share of debt incurred at the rate of interest above 30 per cent is the highest (2.15 per cent) in the medium productivity region, whereas it is only 0.18 per cent in the high productivity region. The analysis shows that all the farm-size categories in the low productivity region have incurred debt at relatively high interest rates, whereas in the medium productivity region, the proportion of debt incurred at the high interest rates is the minimum among all the farm-size categories. The field survey has highlighted the fact that farmers in the low productivity region depend more on commission agents for availing loans who charge exorbitant rates of interest from them.

### 3-5 Determinants of Indebtedness

It is assumed that the incidence of indebtedness is influenced by numerous factors such as 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. The multiple regression model has been applied to find out whether the magnitude of indebtedness has any relationship with the various above mentioned 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 (₹)

X1 = Farm size (Acres)

X2 = Percentage of non-institutional debt

X3 = Income from subsidiary occupations and non-farm income (₹)

X4 = Proportion of dependents in the family

X5 = Consumption expenditure (₹)

X6 = Expenditure on farm inputs, machinery and implements (₹)

The variations in the significance of factors influencing magnitude of indebtedness across the regions have been worked out; and the results obtained are presented in Table-5 below:

**Table-5 : Factors determining Indebtedness among Farmers**

(Results of Multiple Regression Analysis)

Factors	Regions		
	High Productivity Region	Medium Productivity Region	Low Productivity Region
Farm size	1.175* (2.707)	1.267* (2.507)	1.120* (3.042)
Percentage of non-institutional debt	0.285* (3.916)	0.314* (3.775)	0.193* (3.103)
Income from subsidiary occupations and non-farm income	-0.057* (4.616)	-0.104* (4.016)	-0.064* (2.673)
Proportion of dependents in the family	0.278* (2.797)	0.289** (2.146)	0.035ns (0.259)
Consumption expenditure	0.104* (2.860)	0.112ns (1.217)	0.070*** (1.637)
Expenditure on farm inputs, machinery and implements	0.148* (14.163)	0.076* (5.342)	0.122* (8.924)
<b>R<sup>2</sup></b>	<b>0.721</b>	<b>0.765</b>	<b>0.767</b>

**Source :** Field Survey, 2015-16.

**Note :** The figures given in brackets indicate percentages.

\*significant at one per cent \*\*significant at five per cent

\*\*\*significant at ten per cent ns: non-significant

### High Productivity Region

In the high productivity region, all the factors such as farm size, percentage of non-institutional debt, income from subsidiary occupations and non-farm income, consumption expenditure, proportion of dependents in the family, and expenditure on farm inputs, machinery and implements explain the variations in the

magnitude of indebtedness among the farm households. The regression coefficients for farm size, proportion of dependents in the family, and expenditure on farm inputs, machinery and implements are positive, and statistically significant at one per cent significance level. It describes that a positive relationship exists between the farm size and indebtedness, between proportion of dependents in the family and indebtedness, and between expenditure on farm inputs, machinery and implements and indebtedness. The regression coefficients for percentage of non-institutional debt, and consumption expenditure are also positive, and statistically significant at one per cent significance level. It reveals that indebtedness among farmers increases as the percentage of non-institutional debt and their consumption expenditure goes up. The regression coefficient for the factor called 'income from subsidiary occupations and non-farm income' is statistically significant at one per cent level of significance; and its negative value indicates that this factor has an inverse relationship with indebtedness. The value of  $R^2$  is 0.721 which reveals that all the factors have explained 72.1 per cent variation in the magnitude of indebtedness in the high productivity region.

### **Medium Productivity Region**

The estimates of regression coefficients indicate that the variations in the magnitude of indebtedness among the farm households are statistically explained by the factors such as farm size, percentage of non-institutional debt, income from subsidiary occupations and non-farm income, proportion of dependents in the family; and expenditure on farm inputs, machinery and implements. The regression coefficients for the factors such as farm size, percentage of non-institutional debt, and expenditure on farm inputs, machinery and implements are positive, and statistically significant at one per cent significance level. The regression coefficient for proportion of dependents in the family is positive, and statistically significant at five per cent level of significance. The regression coefficient for consumption expenditure is positive, and statistically non-significant. The regression coefficient for income from subsidiary occupations and non-farm income is negative, and statistically significant at one per cent significance level. It reveals that an inverse relationship exists between income from subsidiary occupations and non-farm income and indebtedness. The coefficient of determination ( $R^2$ ) is 0.765. It shows that the explanatory variables have explained 76.5 per cent variation in the magnitude of indebtedness among the farm households in the medium productivity region.

### **Low Productivity Region**

In the low productivity region, variations in the magnitude of indebtedness are statistically explained by the factors such as farm size, percentage of non-institutional debt, income from subsidiary occupations and non-farm income, consumption expenditure, and expenditure on farm inputs, machinery and implements. The regression coefficients for farm size, percentage of non-institutional debt, and expenditure on farm inputs, machinery and implements are positive, and statistically significant at one per cent significance level. It describes that there is a positive relationship between farm size and indebtedness, between percentage of non-institutional debt and indebtedness; and between expenditure on farm inputs, machinery and implements and indebtedness. The regression coefficient for consumption expenditure is positive, and statistically significant at ten per cent significance level. The positive value of regression coefficient for proportion of dependents in the family has explained that this factor is positively associated with indebtedness, but it is statistically non-significant. The explanatory variable called income from subsidiary occupations and non-farm income has contributed in decreasing indebtedness, and its regression coefficient is statistically significant at one per cent level of significance. The value of  $R^2$  is 0.767. It indicates that all these factors explain 76.7 per cent variation in the magnitude of indebtedness in the low productivity region.

## **4. Conclusions and Policy Implications**

The foregoing analysis reveals that a very large majority of farm households across all the regions fall under debt across all the regions. The percentage of indebted farm households is the highest (91.67) in the high, followed by low (89.39) and medium (78.95) productivity regions. The amount of debt per average farm household is the highest (₹ 620935.61) in the high productivity region and the lowest (₹ 373956.14) in the medium productivity region. The average amount of debt per owned acre and per operated acre is the highest in the high productivity region. The relative share of debt incurred from institutional sources is the highest (91.51 per cent) in the medium productivity region, and the lowest (71.67 per cent) in the low productivity region. The major proportion of the total debt, i.e., 47.92, 55.66, and 39.50 per cent respectively in the high, medium, and low productivity regions is incurred at the rate of interest ranging from 6 to 12 per cent. Farm households in the low productivity region have incurred the debt at relatively high interest rates. There is a need to take some

effective measures to overcome the problem of indebtedness across all the regions in rural Punjab. The government should ensure adequate and timely supply of agricultural inputs at the subsidized rates, and modern agricultural machinery/equipments at reasonable rent through the primary co-operative societies. There is a need to regulate and monitor the functioning of the non-institutional agencies particularly in the low productivity region to save the farmers from exploitation of commission agents. It is essential to provide crop insurance at reasonable premium to overcome the losses caused by the natural calamities, and the insurance premium must be paid by the government or the agricultural marketing board (Kaur et al., 2018). There is a need to regulate and fix fair or maximum rent of leased land under tenancy laws by state (one-third of produce or value thereof).

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