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Do Farm Size and Social Group Affiliation Determine Credit Access and Income of Agricultural Households?

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Abstract

This paper has examined the pattern of income – in both level and composition, among farmers of different social groups and has assessed the access to credit across these groups in relation to their income levels using the data from reports of 70th round of NSSO Situation Assessment Survey of Agricultural Households pertaining to the year 2012-13. The income of landless and marginal farmers and of ST, SC and OBC households has been found lower than the all-India average of ₹ 6426 per month. The income is not sufficient to cover the consumption expenditure for SC and OBC households as also for landless and marginal farmers at all-India level as well as for households other than ST group. Cultivation has been found the major source of income for landless and lower-marginal farmers (up to 0.40 ha land) as also for all social groups, except the SC households. The access to credit has been low as merely 52 per cent of the households have reported outstanding debt during the survey. The smaller the farm size, the lesser is the access to credit. The access was found low for the ST households, while SC households had access on par with the country average. Of the loans taken, 60 per cent, overall, are from institutional sources and the degree of institutionalization is lower for ST, SC and OBC households. Within each social group, the landless and marginal farmers have received smaller loans compared to the average loan amount. The access to credit and share of formal credit in total are related in direct but non-linear relation which suggests that improving the share of formal credit is likely to increase the overall credit access. Also, a higher access to credit is likely associated with higher incomes. The paper concludes that small landholders and SC and ST households face disadvantages in terms of access to credit, that too from formal sources, activity mix, and income levels. Inclusive but differential strategies are needed to help them to double their incomes.

Key words: Agricultural households, indebtedness, institutional loans, access to credit, inclusive growth, social groups, farmers' income

JEL Classification: E51, D63, Q14

Introduction

The goal of doubling farmers' income by 2022, as announced in the Union Budget 2016, goes beyond focusing on agricultural output and food security and

reflects the agenda of 'giving back to our farmers a sense of income security'¹. A few strategies have also been identified for achieving the goal of doubling farmers' income by 2022, which are: soil testing and issuing of soil health cards, development of sufficient storage facilities, providing adequate irrigation facility through 'Per drop, more crop', promotion of organic farming and promotion of allied activities like bee keeping, fisheries, etc., development of e-national

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¹Budget Speech 2016, Feb 29.

agriculture market and introduction of a new crop insurance scheme. Several scholars reacted to the announcement and lot has been said and written on whether it is possible to double farmers' income and if yes, how (Birthal *et al.*, 2017; Chand, 2017; Desai, 2016; Gulati and Saisri 2016; Kurian, 2016; Satyasai, 2016; Satyasai and Bharti, 2016; Sharma, 2016; Swaminathan, 2016; Waghmare, 2016 to mention a few). Several seminars/conferences have deliberated on the issues and strategies for doubling farmers' income (ASSOCHAM, 2016; Pal *et al.*, 2016). Reports of the Committee on Doubling Farmers' Income formed by the Government of India which has so far released 4 volumes of its planned 14 volume report (GoI, 2017 a, b, c & d) are the latest ones on the topic.

While there has been discussion on doubling of farmers' income including among different farm-size categories, there is hardly any discussion on the incomes of different social groups of farmers in the literature. Needless to say, different social groups such as Schedule Castes (SCs), Scheduled Tribes (STs), Other Backward Castes (OBCs) and Other Castes households have different production conditions and access to resources that determine their income levels. Also, they have differential access to credit, especially institutional credit, which determines their ability to support their production operations through higher input-use and enhancing investment on their farms. For planning an inclusive growth, we need to understand the existing pattern of incomes and access to credit across the social groups.

In this context, this paper examines the (i) pattern of income – in both level and composition – among farmers of different social groups, (ii) access to credit across different social groups, and (iii) whether differential access to credit is reflected in income levels.

Data and Methodology

The NSSO Situation Assessment Survey in the 70th Round, especially the report on Income, Expenditure, Productive Assets and Indebtedness of Agricultural Households in India (Report No: 596:70/33/3), formed the basis for this paper. The survey has covered the year 2012-13 and is the only source of direct estimates of income of farmers. The survey, conducted in the rural areas of the country with its two visits, was spread over 4529 villages covering 35200 households. An agricultural household for the 70th Round survey was

defined as a household receiving value of produce more than ₹ 3000 from agricultural activities (e.g., cultivation of field crops, horticultural crops, fodder crops, plantations, animal husbandry, poultry, fishery, piggery, bee-keeping, vermiculture, sericulture, etc.) and having at least one member self-employed in the agriculture in either principal status or subsidiary status during past 365 days. The estimates of income used in this paper are for the agricultural year, July 2012 to June 2013, and other estimates are as usual at the end of agricultural year.

The agricultural households were classified into 7 different landholding classes: (1) Landless (< 0.01 ha), (2) Lower Marginal (0.01 - 0.40 ha), (3) Upper Marginal (0.41 - 1.00 ha), (4) Small (1.01 - 2.00 ha), (5) Semi-medium (2.01 - 4.00 ha), (6) Medium (4.01 - 10.00 ha) and (7) Large (>10.00 ha). The households were also classified into 4 social groups, viz. SC (Scheduled Castes), ST (Scheduled Tribes), OBC (Other Backward Classes) and OC households (consisting other caste-class households).

Results and Discussion

Trend in Farmers' Income: All India

Time series estimates of income of farmers from different sources are not available in the country. The cost of cultivation data, GDP from agriculture, etc. can help generate income estimates which have serious limitations to generate farmers' incomes (see Chand *et al.*, 2015; Satyasai, 2016 for details). Chand *et al.* (2015) have generated farm income series from 1983-84 till 2011-12, using National Income Accounts. They are indirect estimates and do not seem to account for multiple sources of income.

The main problem in this context is that we do not have reliable estimates of farmers' income, except from NSSO's Situation Assessment Survey of Farmers conducted in 2003 and the Situation Assessment Survey of Agricultural Households 2013. The results of these two surveys, however, are non-comparable (Kumar, 2016). In the absence of any other data, however, these surveys have been used for assessing the trends in farmers' income by several scholars (Satyasai, 2015).

Based on these surveys, Satyasai and Bharti (2016) and Satyasai (2016) have estimated that the income could double in six years from ₹ 25380 in 2002-03

Table 1. Income of farmers and growth during past decade, 2002-03 to 2012-13

Farm-size class (ha)	Total annual income per agricultural holding (₹)		CAGR (%)	Real CAGR (%)	Doubling time @ nominal growth 2002-03 (years)	Doubling time @ real growth 2012-13 (years)
	2002-03	2012-13				
Landless (< 0.01)	16560	54732	12.70	6.19	5.80	11.54
Lower marginal (0.01 - 0.40)	19596	49824	9.78	3.27	7.43	21.54
Upper marginal (0.41 - 1.00)	21708	62964	11.24	4.73	6.51	15.01
Small (1.01 - 2.00)	29916	88176	11.42	4.91	6.41	14.47
Semi-medium (2.01 - 4.00)	43068	128760	11.57	5.06	6.33	14.03
Medium (4.01 - 10.00)	68172	235644	13.20	6.69	5.59	10.70
Large (>10.00)	116004	496656	15.65	9.14	4.77	7.92
All sizes	25380	77112	11.75	5.24	6.24	13.56

Source: Satyasai (2016)

given the compound growth of 11.75 per cent in income from 2002-03 to 2012-13 (Table 1). However, the income growth in real terms (converted using Agri-GDP deflator) being 5.24 per cent per annum, doubling of income would take almost 14 years. The large farmers will take less number of years to double their incomes compared to lower marginal farmers. Also, the gap between income for the years 2012-13 and 2002-03 increased as the farmholding size increased.

Chandrasekhar and Mehrotra (2016) have used Consumer Price Index for Agricultural Labourers for comparing the data from the same surveys and have worked out that the all-India average monthly income increased by a factor of 1.34.

Diversification in Income Sources

Farmers get their incomes from four major sources, viz., crop cultivation, livestock, wages/salaries and non-farm sector activities. At all-India level, the net income from animal farming increased by 3.21-times, cultivation by 1.32-times, wages by 1.22-times, with no increase in income from non-farm activities (1.00 times). Also, there is evidence of doubling of average monthly income among farm households with over 10 ha land, with income of small farmers increasing by 1.52-times and of marginal farmers by 1.20-times only.

The major source of income for the farmers is cultivation which accounted for about 48 per cent during 2012-13 (Table 2). The animal farming, thus,

Table 2. Diversification of income sources of farmers

Land-size group (ha)	Shares of income from different sources (%)				Index of diversification*
	Wages/ Salary	Cultivation	Livestock	Non- farm sector	
Landless (< 0.01)	64	1	26	10	0.52
Lower marginal (0.01 - 0.40)	57	17	15	11	0.61
Upper marginal (0.41 - 1.00)	38	41	12	9	0.66
Small (1.01 - 2.00)	24	57	11	8	0.60
Semi-medium (2.01 - 4.00)	15	69	11	5	0.49
Medium (4.01 - 10.00)	10	78	8	4	0.38
Large (>10.00)	3	86	6	4	0.25
All sizes	32	48	12	8	0.65

Source: Computed from NSSO (2005 & 2014). Situation Assessment Survey, Report No. 69(70/33/1)

*Calculated using the expression: $1 - \sum p_i^2$ where p_i is the share of i^{th} component.

Table 3. Composition of income by sources, social group-wise: July 2012-June 2013

(Shares in %)

Social group	Share in income from				Total income/ month (₹) (=100)	Index of diversification
	Wages/ Salaries	Crop cultivation	Livestock	Non-farm sector		
ST	38.98	43.72	14.34	2.97	5864	0.64
SC	50.89	32.52	10.13	6.43	4539	0.62
OBC	29.54	48.82	12.78	8.86	6378	0.65
OC	26.52	54.05	10.24	9.19	8059	0.62
All groups	32.23	47.95	11.87	7.97	6426	0.65

can be a key driver for income growth (Chandrasekhar and Mehrotra, 2016). There was a decline in the share of wages as well as non-farm business between the years. As farm-size increased, the share of income from cultivation increased during both the years. The smaller the farm holding, the diversified are the income sources. Remarkably, landless households diversified their income sources increasing the share of animal farming significantly from 5 per cent to 26 per cent. The livestock farming emerged as an important source of income by 2012-13

The average monthly income from different sources per agricultural household for the agricultural year July 2012 - June 2013 for each farm-size class is given in Table 3. The average monthly income per agricultural household was estimated at ₹ 6426 of which nearly 60 per cent was generated from farm business (cultivation and farming of animals) and about 32 per cent was contributed by income from wages/salary employment. Among the social groups, cultivation has been the dominant source of income for OC (54%), OBC (49%) and ST (44%), while SC farmers depended on wages (51%) heavily.

Some interesting trends emerged when we examined income levels of different farm-size categories across social groups (Table 4). The landless and lower marginal farmers of ST group have higher incomes compared to average as well as other social groups. Among all other farm-size categories, OC and OBC households fared better compared to the average as well as other social groups. The monthly income as a multiple of household consumption expenditure is 1.03 for the country as a whole. That is, income was

just 3 per cent over the consumption level, leaving very little surplus. For ST households the income margin was relatively comfortable with 17 per cent surplus. The SC households as a group had deficit income and with considerable surplus for medium and large farmers and severe deficit for landless, lower and upper marginal farmers. The dispersion of income levels was smaller among SC households, followed by OBC farmers and was maximum among ST² and OC households.

Access to Institutional Credit among Social Groups

Table 5 gives proportion of agricultural households reporting outstanding loans during the survey. Overall, 51.9 per cent of the agricultural households reported outstanding debts and the proportion is very low at 33.8 per cent for ST group. As farm-size increased, the proportion of indebtedness also increased which means that smaller farmers have lower access to credit. The lowest proportion of indebtedness was among landless ST households and the highest was among large farm-size category of OC social group. Interestingly, each social group enjoyed a share in total households reporting outstanding loans commensurate with their share in total number of agricultural households, excepting ST households.

Getting access to institutional credit is more important than mere access to credit from any source as it would reduce the cost of credit. Thus, in Table 6 we examine the share of institutional loans in total across farm-size categories and social groups. Overall, 60 per cent of loans are from institutional sources. The farmers under the category of OC households showed

²The higher dispersion for ST farmers can be due to very high income for ST large farmers which appears to be an outlier.

Table4. Social group-wise total income

(₹)

Farm-size group (ha)	Social group of households				All group
	ST	SC	OBC	OC	
Landless (< 0.01)	6467 (1.28)	4177 (0.84)	4582 (0.88)	3786 (0.78)	4561 (0.89)
Lower marginal (0.01 - 0.40)	4815 (1.07)	3649 (0.74)	4170 (0.76)	4339 (0.71)	4152 (0.77)
Upper marginal (0.41 - 1.00)	4957 (1.03)	4390 (0.82)	5249 (0.86)	6028 (0.85)	5247 (0.87)
Small (1.01 - 2.00)	6375 (1.23)	6138 (1.09)	7211 (1.10)	8761 (1.17)	7348 (1.14)
Semi-medium (2.01 - 4.00)	8153 (1.36)	7874 (1.09)	10654 (1.40)	12677 (1.41)	10730 (1.38)
Medium (4.01 - 10.00)	14270 (1.89)	13074 (1.58)	18904 (2.14)	22384 (1.84)	19637 (1.94)
Large (>10.00)	100792 (6.37)	24961 (3.06)	35214 (2.38)	46030 (3.23)	41388 (2.86)
All sizes	5864 (1.17)	4539 (0.85)	6378 (1.02)	8059 (1.08)	6426 (1.03)
Ratio of maximum to minimum income within social group (Max-Min Ratio)	20.93	6.84	8.44	12.16	9.97

Note: Figures within the parentheses are multiples of income to consumption

Table 5. Social group-wise and farm size-wise proportion of indebted households

Farm-size group (ha)	Social group of households				All groups
	ST	SC	OBC	OC	
Landless (< 0.01)	18.6	45.9	45.8	33.0	42.0
Lower marginal (0.01 - 0.40)	29.6	46.8	50.5	49.0	47.3
Upper marginal (0.41 - 1.00)	31.6	52.8	53.2	47.0	48.3
Small (1.01 - 2.00)	34.7	60.9	61.9	56.7	55.6
Semi-medium (2.01 - 4.00)	47.6	72.1	71.3	67.3	66.8
Medium (4.01 - 10.00)	60.5	56.8	82.0	73.5	75.2
Large (>10.00)	85.4	80.0	77.3	89.2	83.4
All sizes	33.8	51.7	56.5	53.5	51.9
Share of agricultural households in total	13.41	16.34	45.43	24.83	100.00
Share of indebted agricultural households in total	8.74	16.27	49.43	25.56	100.00

a higher proportion of loans coming from the institutional sources while the other three categories had a relatively lower proportion of loans coming from the institutions, with OBC farmers being a shade better. The ST farmers have shown a better access to institutional sources which is not a soothing fact as their access as shown above, is limited to any source

of debt. However, medium and large farmers had a better access to the institutional credit. The share of institutional sources in loans is higher for small and semi-medium farmers and lower for farmers at the either end. Among OBC and OC households, the share of institutional credit showed a direct relation with farm-size.

Table 6. Social group-wise and Farm size-wise share of institutional loans

Farm-size group (ha)	Social group of households				All groups
	ST	SC	OBC	OC	
Landless (< 0.01)	61.0	25.0	8.0	54.2	14.9
Lower marginal (0.01 - 0.40)	23.5	50.1	43.3	54.6	46.9
Upper marginal (0.41 - 1.00)	53.0	51.3	49.7	63.5	53.2
Small (1.01 - 2.00)	53.8	60.4	63.1	70.3	64.8
Semi-medium (2.01 - 4.00)	62.4	56.8	66.3	71.2	67.5
Medium (4.01 - 10.00)	60.7	52.2	68.3	75.6	71.5
Large (>10.00)	100.0	44.7	75.7	80.2	78.9
All sizes	53.7	52.4	55.9	68.8	59.8

Table 7 depicts the average loan amount outstanding per agricultural household which expectedly showed a heavy skew towards larger farm-size classes in the overall as well for various social groups, except SC group where the pattern is different. As in the case of proportion of indebted households and share of institutional agencies in credit, the small and semi-medium farm-size classes have higher loan sizes per household. The dispersion across farm sizes too is the lowest as reflected by max-min ratio of 5.1 compared to 12.1 overall.

Though credit is not a direct input in farm production process, the access to it enables purchase of inputs and investment on farms that enhance and sustain production capacity. Figure 1 shows the relation between the access to credit (measured as proportion of households reporting outstanding debt) and the degree of inclusion (measured as share of institutional

sources in total loans) as well as relation between access to credit and monthly income. The data were pooled across farm-size classes and social groups. The results should be taken as indicative only as it is a simple graphical display without sophistication needed to measure the exact relation. The graph indicates that the extent of inclusion and access to credit are positively related. Possibly, we may enhance the access to credit by improving the role of formal financial institutions. Further, the improved access to credit is positively associated with higher levels of income upto some level. At the lower end of the scatter are smaller farm-size categories and mostly from the SC and ST social groups.

Indebtedness and Major Source of Income

While each of the indebted agricultural households had multiple sources of income, 3/5th of them reported

Table 7. Social group-wise and farm size-wise average amount of outstanding loan

('000 ₹/agricultural household)

Farm-size group (ha)	Social group				All groups
	ST	SC	OBC	OC	
Landless (< 0.01)	7.2	18.9	44.3	18.9	31.1
Lower marginal (0.01 - 0.40)	7.0	17.8	28.4	28.3	23.9
Upper marginal (0.41 - 1.00)	11.2	29.8	46.5	34.0	35.4
Small (1.01 - 2.00)	14.7	40.0	65.7	69.2	54.8
Semi-medium (2.01 - 4.00)	27.4	82.1	97.1	124.5	94.9
Medium (4.01 - 10.00)	67.9	90.4	171.3	230.9	182.7
Large (>10.00)	389.7	54.7	243.4	359.5	290.3
All sizes	14.1	28.4	54.4	63.3	47.0
Max-Min ratio	55.7	5.1	8.6	19.0	12.1

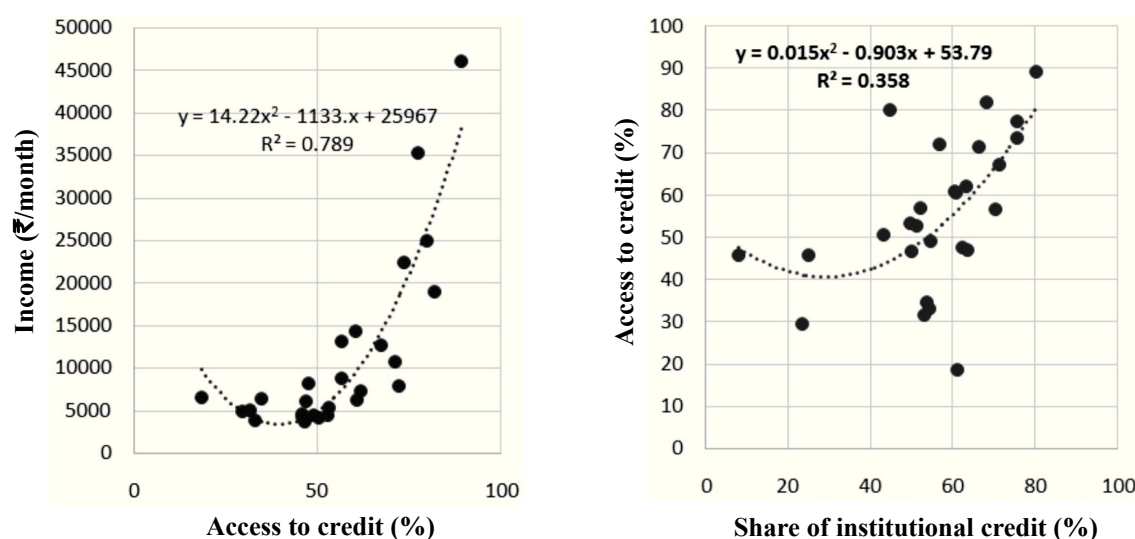


Figure 1. Relation between access to credit, share of institutional sources in total credit and income

cultivation as a major source of income (Table 8). Wage and salaries was reported as major income by another 23 per cent of the agricultural households. Over 1/3rd of SC households reported wages/salaries as a major income source, highest among all social groups, whereas 1/6th to 1/5th of agricultural households reported wages/salaries as a major income source. For only half of SC households, cultivation was the major source, whereas it was a major source for around 3/4th of ST and over 2/3rd of OC households.

Almost half of those indebted households who reported cultivation as a major source of income belong to OBC category, followed by OC category (27.80%). Among those indebted households who derive most

income from wages, SCs accounted for 1/4th and OBC for a little less than half (Table 9). The OBC households reporting debt had a dominant share in total whatever may be the major source of income, more prominently, among those who reported livestock as a major income provider.

The share of institutional credit in total credit has been computed for the indebted households reporting various activities as the major source of income and is reported in Table 10. These data have been displayed as radar graph in Figure 2 to show the pattern visually. In the overall scenario, the households dependent on pension and other agricultural activity as the major source of their income, reported highest share of

Table 8. Distribution of agricultural households reporting outstanding debt according to source of income and social group-wise

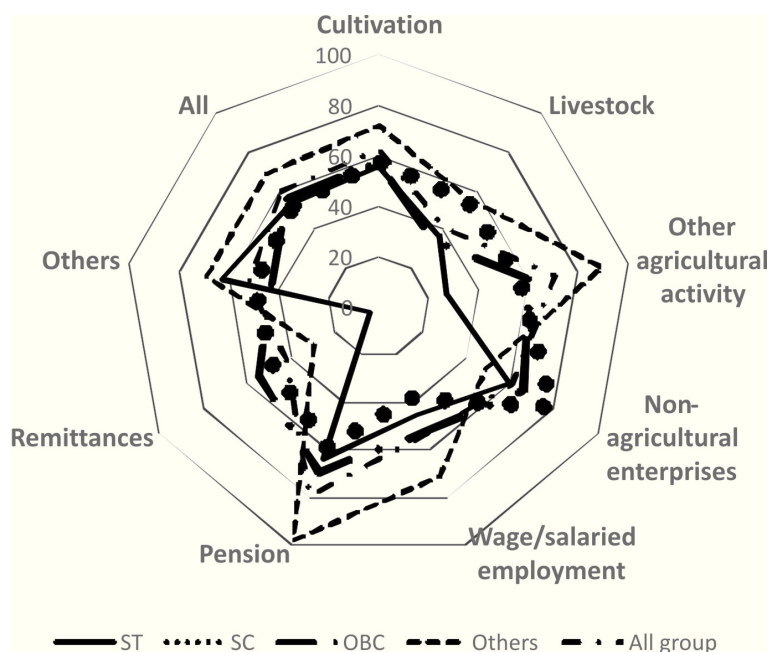
Source of income	Social group (%)				
	ST	SC	OBC	OC	All groups
Cultivation	73.27	50.30	62.89	68.82	63.27
Livestock	1.70	2.88	4.70	2.87	3.67
Other agricultural activity	0.42	1.23	1.36	1.56	1.31
Non-agricultural enterprises	1.48	4.98	4.92	6.38	5.00
Wage/salaried employment	22.39	35.85	22.07	15.98	22.78
Pension	0.09	0.78	0.66	0.83	0.67
Remittances	0.55	2.76	2.71	3.00	2.60
Others	0.10	1.21	0.69	0.57	0.69
All	100.00	100.00	100.00	100.00	100.00

Table 9. Distribution of agricultural households reporting outstanding debt according to social group and income source-wise

Social group	Source of income (%)								All sources
	Cultivation	Livestock	Other agricultural activity	Non-agricultural enterprises	Wage/salaried employment	Pension	Remittances	Others	
ST	10.12	4.04	2.81	2.59	8.59	1.11	1.85	1.3	8.74
SC	12.94	12.77	15.32	16.2	25.61	18.91	17.24	28.34	16.27
OBC	49.14	63.2	51.4	48.63	47.88	48.44	51.48	49.31	49.43
OC	27.8	19.99	30.47	32.57	17.92	31.54	29.42	21	25.56
All groups	100	100	100	100	100	100	100	100	100

Table 10. Social group-wise and income source-wise share of institutional agencies in loans

Source of income	Social group (%)				
	ST	SC	OBC	OC	All groups
Cultivation	55.5	57.6	57	71.7	62.3
Livestock	37.3	54.8	34.3	55.8	40.8
Other agricultural activity	27.6	56.9	61.1	89.9	70.9
Non-agricultural enterprises	59.9	79.3	66.2	48.9	61
Wage/salaried employment	45.3	38.3	52.8	71.2	53.8
Pension	63.9	59.1	69.4	98.3	79.6
Remittances	3.9	48	54.6	29.5	42
Others	62.7	49.8	43.3	68.9	52.2
All sources	53.7	52.4	55.9	68.8	59.8

**Figure 2. The share of institutional credit in total loan across social groups**

institutional agencies in their loans compared to 60 per cent share for the country as a whole. The households with cultivation as the major income source were found a little above the country average. Among the social groups, the OC and within the OC households with activities other than remittances and non-agricultural enterprises for their main income, had higher access to formal financial agencies. The households pursuing livestock as the major livelihood activity, seem to have a lower access, while livestock-rearing contributed majorly to the farmers' income and emerged a major source of income between 2002-03 and 2012-13 (Satyasai and Mehrotra, 2016).

Summary and Conclusions

The paper has examined the income pattern among farmers of different social groups and their access to credit from institutional sources. The income of landless and marginal farmers and of ST, SC and OBC households is less than the all-India average of ₹ 6426 per month. But, the income is not sufficient to cover the consumption expenditure for SC and OBC households as also for landless and marginal farmers at all-India level as well as for other than ST households. Cultivation has been found the major source of income for landless and lower marginal farmers (up to 0.40 ha land) as also for all social groups, except SC households. The SC households' major livelihood is from wages accounting for half of their income.

The access to credit has been found low as merely 52 per cent of the households-ranging from 42 per cent for landless to 83 per cent for large farmers, have reported outstanding debt during the survey. The smaller the farm size, the lesser is the access to credit. The access has been found low for ST households while SC households have access on par with the country average. Of the loans taken, 60 per cent, overall, are from the institutional sources and the degree of institutionalization is lower for ST, SC and OBC households. Needless to say, the ST and SC households received 30 per cent and 60 per cent smaller loans compared to all-India average of ₹ 47,000. Within each social group, the landless and marginal farmers received smaller loans compared to the average loan amount.

The access to credit and share of formal credit in the total are related in direct but non-linear relation,

which suggests that improving the share of formal credit is likely to increase the overall credit access. Also, a higher access to credit is likely associated with higher incomes. The OBC households account for a higher proportion for any given major income source, followed by OC households, except among those who depend more on wages where SC households are the second highest. The paper concludes that small landholders and SC and ST households face disadvantages in terms of access to credit, that too formal credit, activity mix, and levels of income. Inclusive and differential strategies are needed to help them to double their incomes.

References

- ASSOCHAM (The Associated Chambers of Commerce and Industry of India) (2016) *Outcome report of Interactive Sessions with Honourable Members of Parliament on Challenges in Doubling Farmers' Income*. New Delhi.
- Birthal, Pratap S., Negi Digvijay, S. and Roy, Devesh (2017) *Enhancing Farmers' Income: Who to Target and How?*. Policy Paper 30. ICAR – National Institute of Agricultural Economics and Policy Research, New Delhi.
- Chand, Ramesh, (2017) *Doubling Farmers Income: Rational, Strategy, Prospects and Action Plan*. NITI Ayog Policy Paper No. 1. National Institute for Transforming India, New Delhi.
- Chand, Ramesh, Saxena, Raka and Rana, Simmi (2015) Estimates and analysis of farm income in India, 1983-84 to 2011-12. *Economic and Political Weekly*, **50** (32): 140-145.
- Chandrasekhar, S. and Mehrotra, Nirupam (2006) Doubling farmers' incomes by 2022: What would it take? *Economic and Political Weekly*, 51 (18):10-13.
- Desai, A. V. (2016) Budget 2016: Jaitley's promise to double farmers' income in 5 years is next to impossible. *First Post*, March 2 (accessed on 25.4.2016).
- GoI (Government of India) (2017a) *March of Agriculture Since Independence*, Report of Committee on Doubling Farmers' Income, Volume I. Department of Agriculture, Cooperation and Farmers' Welfare, Ministry of Agriculture & Farmers' Welfare, New Delhi.
- GoI (Government of India) (2017b) *Post-production Agri-logistics: Maximising Gains for Farmer*. Report of Committee on Doubling Farmers' Income, Volume II, Department of Agriculture, Cooperation and Farmers' Welfare, Ministry of Agriculture & Farmers' Welfare, New Delhi.

- GoI (Government of India) (2017c) *Post-production Interventions: Agricultural Marketing*. Report of Committee on Doubling Farmers' Income, Volume III, Department of Agriculture, Cooperation and Farmers' Welfare, Ministry of Agriculture & Farmers' Welfare, New Delhi.
- GoI (Government of India) (2017d) *Status of Farmers' Income: Strategies for Accelerated Growth*. Report of Committee on Doubling Farmers' Income, Volume IV, Department of Agriculture, Cooperation and Farmers' Welfare, Ministry of Agriculture & Farmers' Welfare, New Delhi.
- Gulati, Ashok and Saini, Shweta (2016) From plate to plough: Raising farmers' income by 2022. *The Indian Express*, April 12.
- Kumar, Mohinder (2016) Concept of Farmer in NSSO's Situation Assessment Surveys of 2003 and 2013: Incomparability Issues and Implications, *Rural Pulse*, Issue XVI, July-Aug, NABARD, Mumbai.
- Kurian, K. J. (2016): One thought on "PM at Krishi Unnati Mela - Let us resolve to double farmers' income by 2022". March 25. <http://goo.gl/ZiGVau> (accessed on 25.3.2016).
- NSSO (National Sample Survey Office) (2012) *Income, Expenditure, Productive Assets and Indebtedness of Agricultural Households in India*. 70th Round, Ministry of Statistics and Programme Implementation, Government of India, New Delhi.
- Pal, Suresh, Joshi, P.K. and Kumar, Anjani (2016) *Strategy for Transformation of Indian Agriculture for Doubling Farmers Income and Improving Farmers Welfare*. Strategy Paper 3. National Academy of Agricultural Research Sciences, New Delhi.
- Satyasai, K.J.S. (2015) How Indian farmers borrow, produce and earn? Evidence from recent NSSO surveys. *Rural Pulse*, Issue VIII, March-April, NABARD, Mumbai
- Satyasai, K.J.S. (2016) Farmers' income: Trend and strategies. *Indian Journal of Agricultural Economics*. 71(3): 397-405.
- Satyasai, K.J.S. and Bharti, Sandhya (2016) Doubling farmers' income: A way forward. *Rural Pulse*, Issue XIV, March- April, NABARD, Mumbai
- Satyasai, K.J.S. and Mehrota, Nirupam (2016) *Enhancing farmers' income*: NABARD foundation seminar, New Delhi. 12 July 2016.
- Sen, Abhijit and Bhatia, M. S. (2004) *Cost of Cultivation and Farm Income, State of Indian Farmer: A Millennium Study*. Vol 14, Academic Foundation, in Association with Department of Agriculture and Cooperation, Ministry of Agriculture, New Delhi.
- Sharma, Devinder (2016) Hoping against hope, no signs of doubling farmers' income in the next five years. March 30. <http://goo.gl/2TKD61> (accessed on 25.4.2016).
- Swaminathan, M.S. (2016) How to double farmers' income. March 23. <http://goo.gl/gFTG1E> (accessed on 25.4.2016).
- Waghmare, Abhishek (2016) Why it is hard to double farmers' income by 2022. March 30. <http://goo.gl/mqZ27q> (accessed on 25.4.2016).