

Inequalities among Agricultural Households: An Exploration Through Various Agricultural Surveys

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Abstract

While agriculture has grown impressively over the years, inequalities in access to resources and incomes remained high. The present paper attempted to capture the inequality across states, social groups, size class of land possessed with respect to various economic parameters concerning agricultural households using the data from the 70th and 77th round of NSSO's Situational Assessment Survey of agricultural household pertaining to agricultural year (AY) 2012-13 and 2018-19 respectively and NABARD All India Rural Financial Inclusion Survey (NAFIS) conducted for the reference period AY 2015-16. The paper has examined the changes with respect to parameters such as income, debt, access to credit, purpose of debt, etc. Our analysis in this paper shows that the outstanding debt as percentage of annual income increases as size class of land possessed increases and the same ratio as significantly increased from AY 2012-13 to AY 2018-19 across all size class of land except for HH possessing land less than 1 hectare. The level of indebtedness among agricultural HH has increased over the years across all size class of land but a huge variation in the level of indebtedness is seen across the states, with levels varying from 93.2% in Andhra Pradesh to 6% in Nagaland. The southern states lead the states where the average amount of loan per agriculture household is high. Increase in indebtedness can be attributed to increase in the reach of formal credit sources, whose share touched 69.6% in 2018-19 from 59.8 % in 2012-13. However, significant imbalance in the distribution of credit across size class of land is still evident and relatively higher dependence on informal source of credit by agricultural household possessing small land size can be seen. In terms of purpose for which this credit is used, a clear distinction can be seen among agricultural households belonging to different size class of land. Analysis reveals that agricultural household possessing large size of land, have high proportion of outstanding loan for combined expenditure in farm business (i.e capital and revenue expenditure) whereas agricultural household possessing smaller land have more than half (50%) of their loan for the purpose other than that for agriculture. On the income front, the average monthly income per agricultural household increased from Rs 6426 in the AY 2012-13 to Rs. 10,218 in AY 2018-19 registering a growth of 59%. But this rise in income was not uniform across the country, with smaller states like Bihar, Meghalaya, Mizoram, and Uttarakhand witnessing almost double the average monthly income since AY 2012-13. SC, ST and OBC agricultural households earn less compared to households under 'others'. Analysis of NAFIS data shows a wide range in monthly surplus (income-expenditure) per rural household across states. Punjab and Kerela topped the list with roughly Rs 4000 surplus, compared to states like Andhra Pradesh, Bihar, Jharkhand, Sikkim, and Uttar Pradesh with monthly surplus less than Rs 350. With an average monthly surplus as low as Rs 1413 at all India level reflects rural and agri household's high vulnerability to any unforeseen situations.

1. Introduction

Inequality refers to the phenomenon of unequal and/or unjust distribution of resources and opportunities among members of a given society. Inequality in access to resources results in inequality in incomes too. Indian agriculture is characterized by small land holdings. Income inequality is very high across farm size categories. According to Chakravarty 1987, “No sustainable improvement in the distribution of incomes is possible without reducing the ‘effective’ scarcity of land”. Continuing fragmentation of landholding has resulted in Income from wages and not the cultivation as one of the important sources for small and marginal farmers.

Apart from land distribution, access to credit can determine input use across farm size classes and thereby the income. Credit plays pivotal role in the agricultural production. Of all the sources of credit, institutional sources offer cheaper credit compared to the informal sources such as private money lenders, the difference in cost of credit between the two being more than two to three times. Thus, access to institutional sources of credit means lower costs and hence, higher net income. The empirical studies have highlighted that share of institutional credit has been rising over the years across states and size class of land. However, the persistence of money lenders in the rural credit market is still a major concern with small holders depending more on informal sources. Satyasai et al. (2017), have highlighted that small landholders and SC/ST households face disadvantages in terms of access to credit and the degree of institutionalization is lower for ST, SC and OBC households.

Thus, study of inequalities in resource access and incomes in the light of fresh evidence becomes important to understand the issue better. This paper seeks to examine inequality in credit access and incomes based on 77th round of NSO Situation Assessment Survey of agricultural households.

2. Data And Methodology

The data on income and credit distribution for the paper has been culled from NSO 77th round Situation Assessment Survey of Agricultural Households and All India Debt & Investment Survey. Inequalities across farm size categories and states are measured using Gini Coefficient and also heatmaps.

3. Indebtedness Level Across Farm Sizes & States

Low scale and low productivity characterise Indian agriculture. Around 86 % of the country's operational landholdings are less than 5 acres, while 68 % of farm households live on less than one acre. Furthermore, irrigation is unavailable to more than half of the land under agriculture. Surplus from unprofitable crop farming is insufficient to invest in modern agriculture, which necessitates the acquisition of farm machinery and the usage of purchased inputs such as seed, fertiliser, agri-chemicals, diesel, and hired labour. Hence, farmers avail loans to meet cultivation expenses (working capital), invest on farms and meet their consumption requirements. According to the NSSO's Situational Assessment Survey (SAS) 2019, indebted agricultural households decreased from 52 % in 2012-13 to 50.2 % in 2018-19. Despite a drop in the percentage of indebted agricultural households, the average outstanding loan among agricultural households climbed by 58 %, from Rs 47,000 to Rs 74,121. Among indebted agricultural households, 82.9% were landless, marginal and small farmers. NABARD's All India Rural Financial Inclusion Survey (NAFIS 2016-17) found that 52.5 % of agricultural households and 42.8 % of non-agricultural households were in debt at the time of the survey. As of the date of the survey, each agricultural household had an average outstanding loan of Rs. 1,04,602. Farmers' indebtedness is rising for a variety of reasons,

including increased access to institutional finance, agricultural mechanisation, and high-value agriculture. The cost of health care, education, social gatherings, and non-food items has increased, putting further financial pressure on farming families.

3.1. Indebtedness across farm size class categories

In 2018-19, the average farming household in India owed 60% of their annual income as debt. The ratio has not changed significantly during 2012-13 to 2018-19, but a closer examination of its distribution reveals that it has increased for all land sizes greater than 1 hectare, while decreasing for land sizes less than 1 hectare (Table 1). For example, for the size class (10.00+ hectare), the ratio nearly doubled (from 58.45 % in 2012-13 to 108.51 % in 2018-19), and for the size class (<0.01 hectare), the ratio nearly halved (from 56.82 % in 2012-13 to 20 % in 2018-19). This shows that large farmers witnessed a massive rise in debt, which is much more than small farmers. The indebtedness of large farmers rose significantly in comparison to their income. On the other hand, small and marginal farmers appear to be in a better situation regarding the level of debt. The average amount of outstanding loans per agricultural household increased with the rise in the possessed land's size class. Among small and marginal farmers owning less than 1 hectares, slightly less than 50% of the households were in debt.

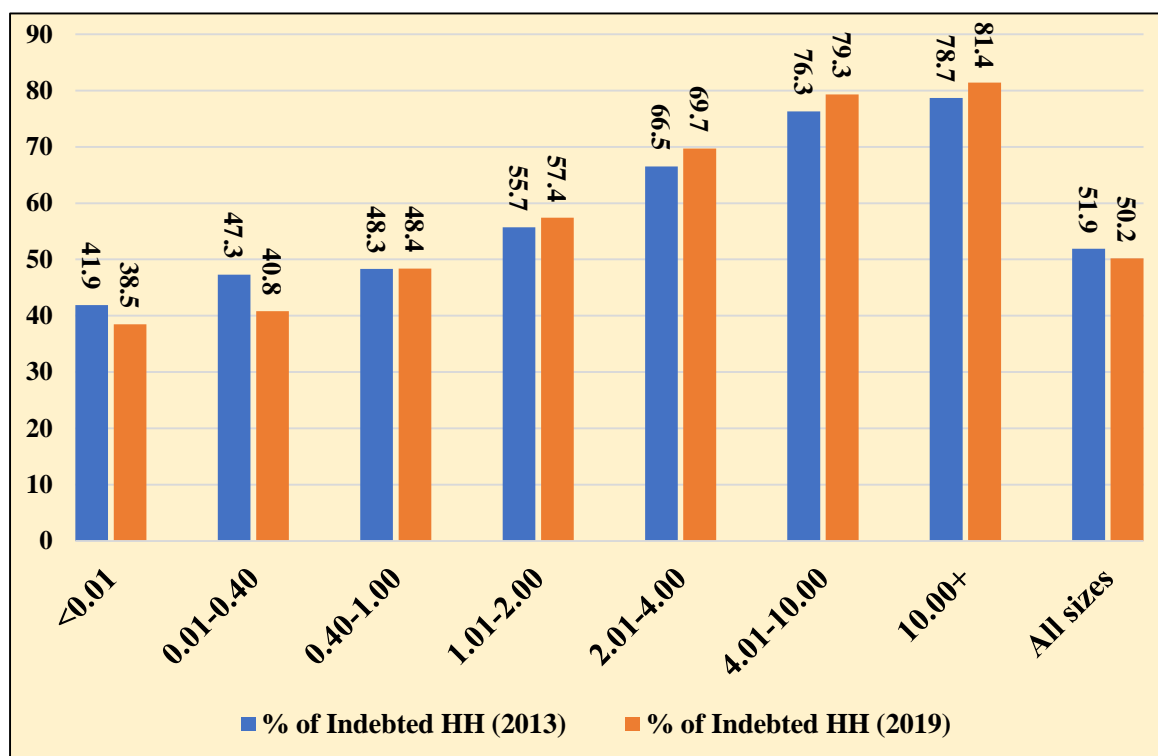
Table 1: Average debt as percentage of annual income across size class of land for the period AY 2012-13 and AY 2018-19

Size class of land possessed (ha.)	2012-13			2018-19			Increase in Debt (%) (8)	Increase in Income (%) (9)	Borrowing Propensity (8/9)
	Average Debt	Average Annual Income	Ratio (%)	Average Debt	Average Annual Income	Ratio (%)			
<0.01	31100	54732	56.82	26883	134448	20.00	-13.56	145.65	-0.09
0.01- 0.40	23900	49824	47.97	33220	90264	36.80	39.00	81.17	0.48
0.41-1.00	35400	62964	56.22	51933	102852	50.49	46.70	63.35	0.74
1.01-2.00	54800	88176	62.15	94498	137388	68.78	72.44	55.81	1.30
2.01-4.00	94900	128760	73.70	175009	197220	88.74	84.41	53.17	1.59
4.01-10.00	182700	235644	77.53	326766	339384	96.28	78.85	44.02	1.79
10.00+	290300	496656	58.45	791132	729096	108.51	172.52	46.80	3.69
all sizes	47000	77112	60.95	74121	122616	60.45	57.70	59.01	0.98
Gini Coefficient	0.4655	0.4524		0.5722	0.4049				

Source: Authors calculation on 70th and 77th round data of SAS.

During the period 2012-13 to 2018-19, the percentage rise in income and debt has stayed relatively consistent with each other when looked for "All sizes" category (57.7 % - for debt and 59 % for income). However, the distribution changed across farm size classes. For the first size class (<0.01 hectare) debt has declined between two time points. Hence, propensity to borrow (ratio of % change in debt to % change in income) was negative. For the next two classes (0.01-0.40 and 0.40 – 1.00 hectare) the growth in income outweighed the growth in debt during the period. Thus, the propensity to borrow is less than unity. Agri Households in the category of land size class > 1 hectare are clearly more leveraged than those in the other categories, with a borrowing propensity of more than one (Table 1). Large farmers (>10 hectares) added 173% to their credit burden between 2012-13 and 2018-19 than they could add to their income. Their borrowing propensity being 3.7. This has implications for debt servicing ability in case of agricultural losses.

The proportion of household indebted as also seen an increase over the years. For those with land size classes 'less than 0.01 hectare', '0.01-0.40 hectare', '0.40-1.00 hectare', '1.01-2.00 hectares', '2.01-4.00 hectares', '4.01-10.00 hectares', and more than 10.00 hectares', respectively, the proportion of indebted farm households in 2018-19 was 38.5 %, 40.8 %, 48.4 %, 57.4 %, 69.7 %, 79.3 % and 81.4 %. Except for the size classes < 0.01 and 0.01-0.40, which experienced drop of 3.4 and 6.5 percentage points respectively, there was a marginal upward movement in the proportion of agri household indebted as compared to 2012-13 in other size classes (Graph 1). Furthermore, the percentage of indebted agricultural HH increases as land size increases.



Source: - NSO's 70th and 77th rounds of SAS

Graph 1: Percentage of indebted agricultural household across size class of land

When it comes to the frequency with which agricultural households took out loans, those with more land were clearly more likely to have multiple loans. This could be due to the fact that these economically better-off households are more likely to take out loans since they have sufficient assets to serve as collateral for the loans. According to NABARD All India Rural Financial Inclusion Survey (NAFIS), there is higher proportion of households of land size (> 2.00 ha) in the category Two loans and 3-5 loans in the reference period (July 2015- June 2016). For Example, 15.4 and 7.5 % of households having more than 2.0 ha land took two loans and 3-5 loans respectively compared to 10.8 and 2.2 % of household belonging to land holding category (1.01-2.0 ha). The data in Table 2 on the distribution of agricultural households reporting multiple loans according to farm size classes show that the appetite for taking more loans is higher among above 2 hectare farm size classes with 23% households taking more than 2 loans.

Table 2: Distribution of agricultural households reporting any loan by number of loans taken by size class of land possessed (in %)

Category	No. of Loans taken during July,15 to June, 16			Total
	One Loan	Two Loans	3-5 Loans	
1	2	3	4	5
<0.01 ha	85.7	11.7	2.6	100.0
0.01-0.4 ha	83.0	14.3	2.7	100.0
1.01-2.0 ha	87.0	10.8	2.2	100.0
>2.0 ha	77.1	15.4	7.5	100.0
All Size Classes	83.2	13.4	3.4	100.0

Source: NAFIS, 2015-16

3.2. Indebtedness across states

The level of indebtedness also varied across the states, 93.2% in Andhra Pradesh and 91.0% in Telangana to 25.3 % in Jharkhand and 6 % in Nagaland. Andhra Pradesh had the highest average outstanding loan (Rs. 2,45,554), followed by Kerala (Rs. 2,42,482) and Punjab (Rs. 2,03,249). Agricultural households in 11 of the 28 states reported borrowing more than the national average, with at least eight having an average outstanding loan of more than Rs 1 lakh. All southern states on an average reported more than Rs 1 lakh in outstanding loans per household.

The distribution of indebtedness in 2018-19 have not changed much compared to that in 2012-13 at both the state and national level. The proportion of indebtedness has decreased by just 1.7 percentage points over 6 years at national level, while not much change in terms of proportion of households indebted was seen at the state level either. It can be noted that, in both time periods, southern states (*viz.* Kerala, Tamil Nadu, Andhra Pradesh, Telangana and Karnataka) remained at the top. The proportion of household indebted in Andhra Pradesh, Telangana, Kerala, Karnataka, Tamil Nadu are 93.2, 91.7, 69.9, 67.6, 65.1 respectively. Agri-household indebtedness is quite low in the NE States and Jharkhand. The same pattern is emerged in NSO's All-India Debt and Investment Survey (AIDIS) for 2018-19.

4. Access to Credit and it's Utilisation

Agricultural credit by providing necessary capital for meeting the ever-increasing demand for productivity and efficiency has played an important role in the development of the farm sector. Agriculture credit, though not a direct input for production, can help to raise farmers from low productivity trap by removing financial constraints and accelerating the adoption of new technologies. Over the years, the government of India's policies and interventions have yielded appreciable results in the field of agricultural credit. However, many reports have highlighted that dependence of farmers especially small and marginal farmers, tenant farmers, landless labourers and sharecroppers on non-institutional sources of credit is high even though the credit from these institutions is available at significantly higher rate of interest.

According to the NAFIS (2015-16), 30.3% of Agricultural Household borrowed only from Non-Institutional Sources while it was 9.2% who borrowed from both Institutional and Non-Institutional sources. The report further highlights that 28% (*i.e.*, Rs. 29,611) of loan taken by Agricultural Household comes from non-institutional sources, thus indicating a sizeable proportion of loan requirement met by non-institutional source. Lengthy application process,

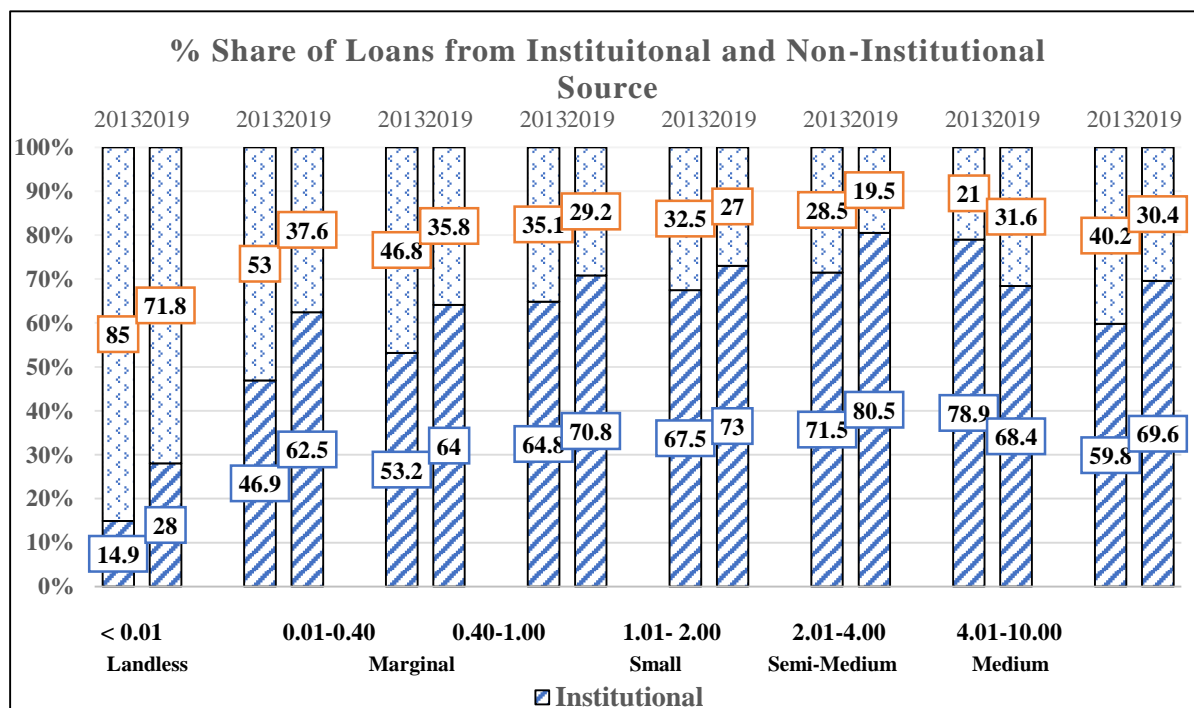
excessive collateral requirement and short loan term (maturity) were some of the reasons cited for not taking loan from institutional sources.

4.1. Inequality in access to credit across size class of land

Even though formal credit sources have expanded their reach and their proportion of agri credit has increased considerably year on year, the 77th round survey results show a major disparity in institutional loan distribution across the land size classes. It is clear that agri households with small land sizes have a larger reliance on informal sources of financing. Except in the case of the largest farms (>10.00+ hectare), SAS data demonstrate a link between farm size and access to institutional finance, with reliance on non-institutional loan sources such as money lenders and relatives growing as land holding decreases (Graph 2).

Institutional sources (SCBs, RRBs, Co-operative societies, co-operative banks, SHGs, and other institutional agencies) provided Rs 64 of the Rs 100 taken by agricultural households with land between 0.40 and 1.00 hectares, while institutional sources provided Rs 81 of the Rs 100 taken by the agricultural households with land between 4.01 and 10.00 hectares. The percentage of credit from institutional sources was 28 %, 62.5 %, 64 %, 70.8 %, 73 %, 80.5 %, and 68.4 %, respectively, for possessed land size classes 'less than 0.01 hectare', '0.01-0.40 hectare', '0.40-1.00 hectare', '1.01-2.00 hectares', '2.01-4.00 hectares', '4.01-10.00 hectares', and more than 10.00 hectares. There was a significant increase in percent increase of institutional credit among all size classes, with the exception of the size class greater than 10.00 hectares, which saw a 10.5 percentage point drop. (Graph 2: shows the percentage distribution of amount of outstanding loans by sources in 2018-19 compared to 2012-13 across size class of land).

Source: NSO's 70th and 77th rounds of SAS



Graph 2: Percentage distribution of Outstanding loan by source for each land size category

The KCC scheme, which was launched in 1998, has emerged as an innovative credit delivery mechanism for meeting farmers' credit needs at various stages in a timely and hassle-free manner. The scheme has become one of the major tools of government to bring more farmers under to the gamut of institutional credit. Over the year its reach has improved and has become successful in providing institutional credit to farmers at concessional rate of interest. The situational assessment survey conducted in 2018-19, have collected the information on percentage of agricultural household possessing KCC, throws relevant light on unequal access to credit. The data shows unequal access of KCC across size class of land and the proportion of households reporting KCC (penetration) increased significantly with increase in land sizes. For Example, 48.7% agri household possessing land (>10.00+ hectare) have access to KCC, while it is only 19.4% and 9.7% for Agri Household possessing land 0.41-1.00 and 0.01-0.40 ha. The lower proportion at the bottom end of the spectrum hints that these households may not be pursuing cultivation on a scale and hence their need for KCC and eligibility may be less. Still the difference in the proportion between small, semi-medium and large farmers is a matter of further study.

According to the All-India Debt and Rural Investment Survey (AIDIS), institutional sources alone are unable to meet the credit needs of cultivator households (All the households having area of land operated 0.002 hectares or more were considered as 'cultivator household'), and a considerable percentage of cultivator households rely on non-institutional sources for loans. In addition, the survey reveals a pattern of borrowing from institutional and non-institutional sources, depending on the purpose of loan. The majority of loans (64%) obtained from institutional sources by cultivator households were used for farm business and non-farm business (Table 3), although the possibility that these loans were not diverted for consumption purposes cannot be fully ruled out completely. However, data clearly demonstrates that the majority of loans (56%) obtained from non-institutional sources was spent on household expenditure, housing, others, etc. This clearly shows that farmer households have to rely substantially on non-institutional sources to carry out their daily activities.

Table 3: Rs. 1,000 breakup of amount of cash loan outstanding by purpose of loan for cultivator households

State/UT/ All India	Credit Agency	Purpose of loan	cultivator	
			per 1000 no. of households reporting cash loan outstanding	cash loan (Rs.) per Rs. 1000 of total cash loan outstanding
All-India	Institutional	capital expenditure in farm business	78	257
		revenue expenditure in farm business	122	309
		expenditure in farm business	197	566
		capital expenditure in non-farm business	9	51
		revenue expenditure in non-farm business	4	19
		expenditure in non-farm business	13	70
		expenditure on litigation	0	0

State/UT/ All India	Credit Agency	Purpose of loan	cultivator	
			per 1000 no. of households reporting cash loan outstanding	cash loan (Rs.) per Rs. 1000 of total cash loan outstanding
		repayment of debt	4	7
		financial investment expenditure	0	1
		for education	4	16
		for medical treatment	10	13
		for housing	23	177
		for other household expenditure	47	82
		Others	23	68
		All (incl. n.r.)	299	1,000
	Non- Institutional	capital expenditure in farm business	18	106
		revenue expenditure in farm business	27	162
		expenditure in farm business	43	267
		capital expenditure in non-farm business	3	32
		revenue expenditure in non-farm business	2	11
		expenditure in non-farm business	4	42
		expenditure on litigation	0	4
		repayment of debt	3	22
		financial investment expenditure	0	1
		for education	4	25
		for medical treatment	23	81
		for housing	24	155
		for other household expenditure	76	296
		others	22	106
	All (incl. n.r.)	190	1,000	

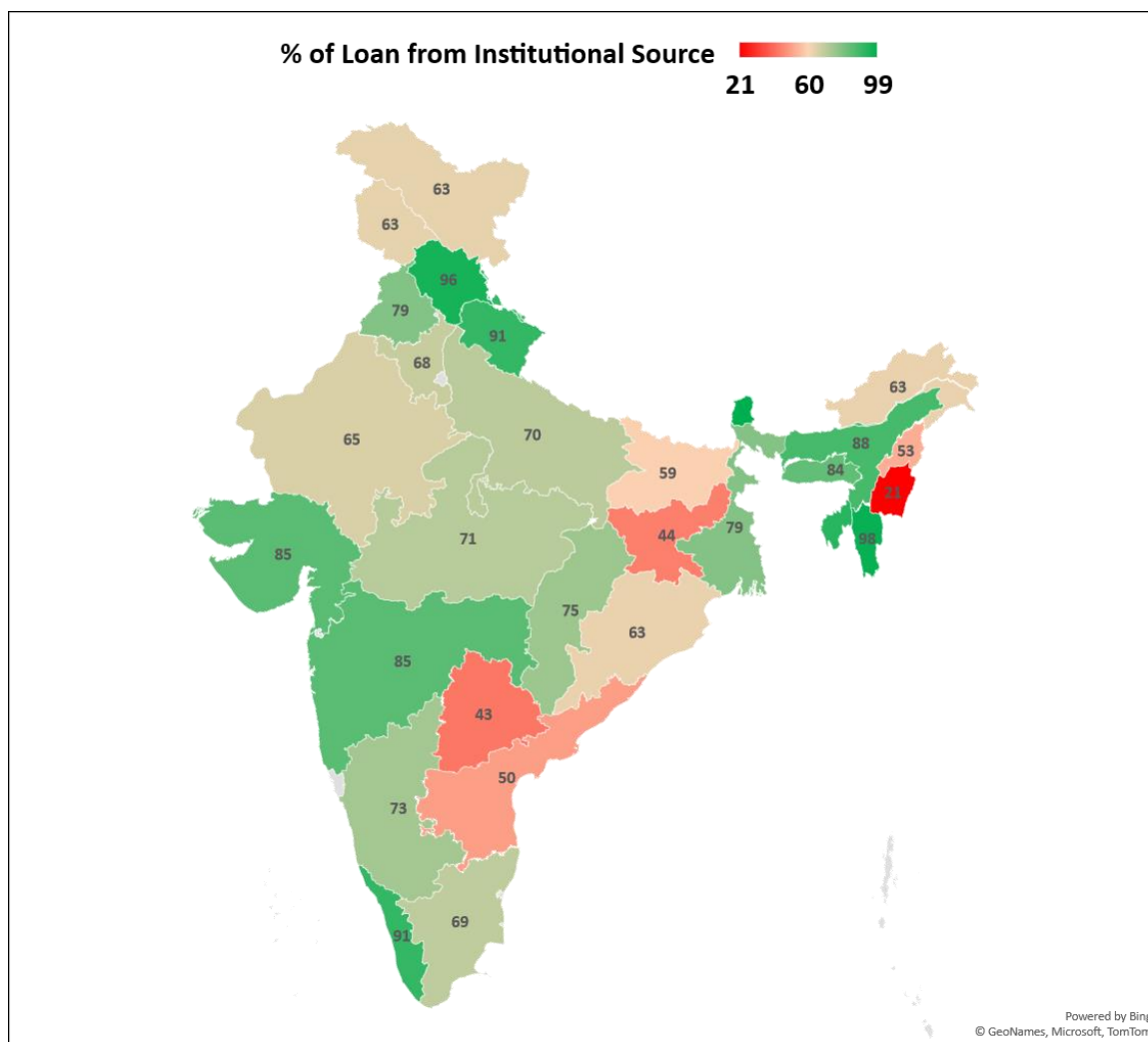
Source: AIDIS, NSO's 77th round

4.2. Inequality in access to credit across states

The SAS 2018-19 found significant heterogeneity in the percentage share of formal/institutional credit sources in rural credit across states. More than 80% of rural credit supply comes from formal/institutional sources in states like Kerala, Uttarakhand, Himachal Pradesh, and Maharashtra. Non-institutional sources (agricultural money lenders, professional money lenders, relatives and friends, and other non-institutional sources) accounts for 57 %, 50 %, and 56 % of rural credit in states such as Telangana, Andhra Pradesh, and Jharkhand, respectively.

Institutional credit sources account for 70% of all agri-credit in 2018-19, up from 59.8 % in 2012-13. Though the percentage of institutional credit has been increasing, the 77th round findings reveal some alarming facts: agricultural states such as Bihar, Jharkhand, Uttar Pradesh, Telangana and Andhra Pradesh have a share of institutional credit that is less than the national

average of 70%. These states have 59%, 44%, 70%, 43%, and 50% share respectively of institutional credit in total rural credit of state. This clearly shows that non-institutional sources of credit are still relevant in the agri-credit sector of major parts of the country. (Figure 1 shows the variation across the states wrt % share of formal/institutional credit in total rural credit).



Source: NSO's 77th round of SAS

Figure 1: Percentage share of formal/institutional credit in total rural credit state wise (2018-19)

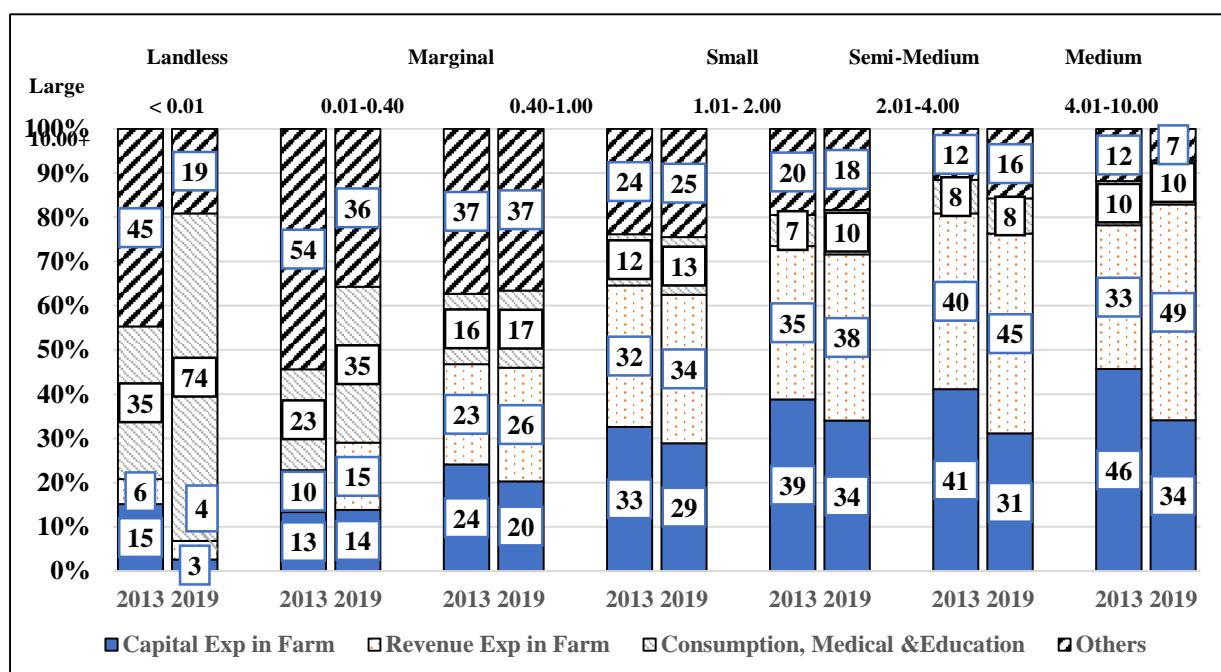
According to the Report of Internal Working Group to Review Agricultural Credit (RBI-2019). Some states receive substantially higher credit against their input cost requirements such as Andhra Pradesh (7.5 times), Kerala (6 times), Goa (5 times), Telangana, Tamil Nadu, and Uttarakhand (4 times), and Punjab (3 times). Jharkhand, NE states, West Bengal, Chhattisgarh, Bihar, Odisha, Maharashtra, Uttar Pradesh, and Rajasthan, on the other hand, are not receiving credit even to satisfy their input requirements. This illustrates the uneven distribution towards a few states and calls into question if the credit is being used for its intended purpose.

4.3. Purpose of the credit

The purpose of loan is defined as the event that prompted the households to take the loan. The purpose of loan taken by agricultural households belonging to different land size classes

shows a notable contrast. Furthermore, across size classes of land owned, there is a clear downward trend in loans acquired for non-farm businesses. For example, it is 5.7 % for land size class (0.01- 0.40) and just 1.6 % for class (10.00 and above). According to the data, agricultural households with land sizes of (0.01-0.40) and (0.40-1.00) have more than half of their loans (71 % and 54 % in 2018-19, respectively) for purposes other than farm business. (*viz.* non-farm business, for housing, marriages and ceremonies, education and medical, other consumption expenditure, others). As the size class of land possessed increases, the percentage of loans obtained for purposes other than farm business decreases (Refer Graph 3). Data shows that agri-households with large landholdings had a higher share of outstanding loans for combined farm expenditures, for example, it is 76 % for Agri HH with land between 4.00 and 10.00 ha and 83 % for Agri HH with land over 10 ha compared to just 47% and 63% for household possessing land between 0.40-1.00 ha and 1.00-2.00 ha respectively. This clearly shows that as the size class of land possessed increased from 'less than 0.01 hectare' to 'more than 10.00 hectares,' a higher proportion of outstanding loan was taken for agricultural purposes and a lower proportion for non-agricultural purposes.

Graph 3 clearly indicates how purpose of loan taken by agricultural households over the years have changed towards Revenue expenditure on Farm, Consumption, Medical and Education expenditure. This pattern of variation is seen not only across the size class of land but also across the length and breadth of the nation. In Kerala, 33% of loans were for housing while only 27% were for agricultural purpose. The expenditure on agriculture is less than the national average (57.5%) for states such as Bihar, Uttar Pradesh, Telangana, West Bengal, Odisha *etc.* Few states such as Gujarat (41.6%), Maharashtra (26.7%), Madhya Pradesh (33.4%), Punjab (35.2%) have large share in capital expenditure in farm business. In NE states, significant proportion of loan is taken for housing, non-farm business and for other consumption expenditure.



Source: NSO's 70th and 77th round SAS

Graph 3: Purpose of loan taken by agricultural households across size class of land in 2012-13 and 2018-19

5. Income Level and Composition

The average monthly income of an Indian farmer after deducting paid-out expenses reached Rs 10,218 in 2018-19, showing an increase of 59% since the previous SAS survey conducted in 2012-13. Nominal income has grown at an annual compounded growth rate (CAGR) of 8%. Monthly average income increased by 16% after adjusting for inflation, at a CAGR of 2.5% (Table 4). When net receipts are calculated after deducting both paid out and imputed expenses, the average monthly income fell to Rs. 8,337. According to NSS 70th round the average monthly income of agricultural households was Rs 6,426 during the period July 2012 to June 2013. Between 2002-03 and 2012-13, the compounded annual growth rate of average monthly income(nominal) of agricultural household was 11.8%, but it slowed to 8 % between 2012-13 and 2018-19(Table 5). In the 77th round of the survey, household income included rent from leasing out land, which was not included in 2012-13. In 2018-19, the average household income is Rs. 10,084 without such rent.

Under its surveys, the NSSO has worked to improve its assessment methodology over time. Only landowner farmers were evaluated in 2002-03, but this requirement was removed in the 2012-13 evaluation, making the two figures not comparable. Many changes were made in the 2018-19 survey, including (i) the addition of a new source of farmer income, namely "revenue from leasing out land," and (ii) "an assessment of pensions and remittances received by the farmer household." The former is included in the monthly income calculation, while the latter is not. In other words, 'revenue from leasing out land' was included in the estimates of agricultural household income for 2018-19 (NSSO's 77th round), while this head of income was not recorded in the 2012-13 SAS (NSSO's 70th round), making the two estimates non-comparable. The 'revenue earned from leasing of land' must be removed from the 2018-19 estimate to make the two estimates comparable.

Table 4: CAGR (Nominal & Real) of average monthly income of agricultural household for the period between 2012-13 and 2018-19 (CPI-AL: Base 2012-13)

Size class of land possessed (ha.)	Total income (2012-13)	Total income (2018-19) *	CAGR % (Nominal)	CAGR % (Real)
<0.01	4,561	10,950	15.72	10.1
0.01- 0.40	4,152	7,333	9.94	4.6
0.41-1.00	5,247	8,495	8.36	3.1
1.01-2.00	7,348	11,375	7.55	2.3
2.01-4.00	10,730	16,289	7.21	2.0
4.01-10.00	19,637	27,841	5.99	0.8
10.00+	41,388	60,177	6.44	1.2
all sizes	6,426	10,084	7.80	2.5

Source: Authors calculation on 70th and 77th rounds of SAS (* Income from rent is excluded)

5.1. Diversification of income

Income from wages or non-farm businesses may be earned by an agricultural household in addition to income from agriculture. In 2018-19, wages, cultivation, animal farming, and non-farm business had a share of 40%, 38%, 16%, and 6%, respectively. In 2012-13, these percentages were 32%, 48%, 12%, and 8%, respectively. This suggests that farming or crop production is contributing to total income of a household to lesser extent, relatively.

Between 2012-13 and 2018-19, the growth of income realised through crop cultivation slowed dramatically. Between 2012-13 and 2018-19, the annual growth in crop cultivation income was negative -1.5 %, compared to 4.2 % annual growth from 2002-03 to 2012-13 (CPI (AL)- Base 2012-13)). In absolute terms, nominal crop production or cultivation income per agricultural household was Rs 3,798 in 2018-19, up 23% from 2012-13. In real terms, however, it has fallen by 8.7%.

Table 5: CAGR (Nominal & Real) of sources of income for time period 2002-03 to 2012-13 and 2012-13 to 2018-19 (Real: CPI (AL)- Base 2012-13)

Particulars	AY 2002-03	AY 2012-13	AY 2018-19	CAGR (2002-03 to 2012-13) Nominal	CAGR (2002-03 to 2012- 13) Real	CAGR (2012-13 to 2018- 19) Nominal	CAGR (2012-13 to 2018- 19) Real
Income from wages	819	2071	4063	9.72	1.83	11.89	6.42
Net receipt from Crop production	969	3081	3798	12.26	4.19	3.55	-1.51
Net receipt from Farming of Animals	91	763	1582	23.69	14.79	12.92	7.41
Net Receipt from Non-Farm Business	236	512	641	8.05	0.28	3.82	-1.25
Total	2115	6426	10084	11.75	3.72	7.79	2.53

Source: Authors calculation on 70th and 77th rounds of SAS

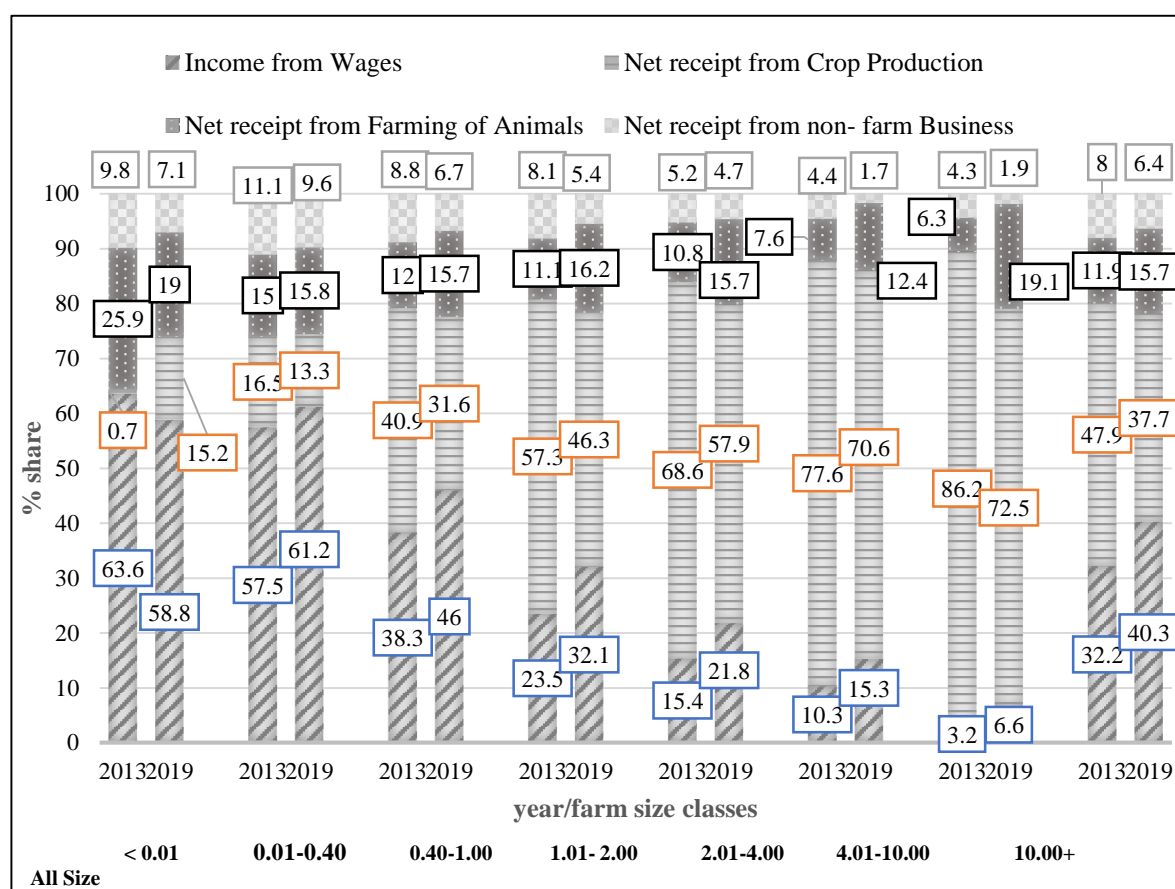
The period between AY 2012-13 and AY 2018-19, also saw erosion of income from non-farm business. In real terms, non-farm income has declined from Rs 512 per month to Rs 475 per month in 2018-19. The 59th, 70th and 77th round data clearly shows that revenue is mostly derived from wages and animal farming. Farmer's family sustained throughout the year from income primarily from livestock, as well as work on others' farms, MGNREGA, and other similar activities. Income from wages and net receipts from livestock witnessed a compounded annual growth rate of 6.4 % and 7.4 %, respectively, in real terms.

5.2. Income across farm size classes

NSO data from the 77th round points out huge disparity and variation in income and its composition across farm size classes (Graph 4). The distribution of income from different components varies significantly across the land size. Agricultural households owning land between 0.01 - 0.40 hectare earned more than half (60%) of their income from wages, it is 46% from wages for households owning land between (0.40-1.00 ha) compared to 6% of income from wages in case of agricultural household possessing land 10 hectares and above. Comparing with AY 2012-13, in AY 2018-19 the share of wages in income of all household size classes except for landless households have increased, showing the increasing dependence of agri households on wage labour to meet their financial needs.

Data would make it clear that when land size increases, the income share from net receipts of agricultural operations (crop production and animal farming) per agricultural household increases. It is 91 % for agri-households with land of 10 hectares and above, and 28 % for those with land of 0.01-0.40 hectares. The income disparity between agricultural

households with 0.40 to 1.00 hectares and agricultural households with 10 hectares & more is significant, with the latter's average monthly income being eight times that of the former compared to 10 times during 2012-13, the income gap seems to have narrowed (Table 4).



AY 2012-13 and 2018-19

Source: NSO's 70th and 77th round SAS

Graph 4: Percentage share in income activity wise across size class of land for period

The NSSO classifies farmer household income into seven categories based on land size holdings in hectares, namely (i) < 0.01, (ii) 0.01-0.4, (iii) 0.41-1, (iv) 1.01-2, (v) 2.01-4., (vi) 4.01—10, and (vii) 10 and above. For the landholding categories of <0.01, 0.01-0.4, 0.41-1, 1.01-2, 2.01-4, 4.01—10, and 10 hectares and above, the CAGRs of real incomes (deflated by CPI-AL) are 10.1 %, 4.6 %, 3.1 %, 2.3 %, 2.0 %, 0.8 %, and 1.2 %, respectively. According to the recent Agricultural Census, India has 14.65 crore agricultural households, of whom 10.03 crore belong to the first three categories—this equates to around 68 % of the farmer population. The first three groups have an average CAGR of 6 % in real terms (Base: CPI-AL 2012-13).

The SAS 2018-19 data show a decline in agricultural profitability overall, as well as a need to augment farm income with income from other sources. Given the apparent positive association between farm size and profitability per acre, it hints to a catastrophe for these farmers. Households in marginal farming earned up to Rs. 8,571, whereas large farms earned more than Rs. 60,000 per month.

In order to assess the income gap or income inequality, we calculated Gini coefficient of income across size class of land at state and at national level. At national level, it was found that the Gini Coefficient decreased from 0.4523 in 2012-13 to 0.4049 in 2018-19, showing that

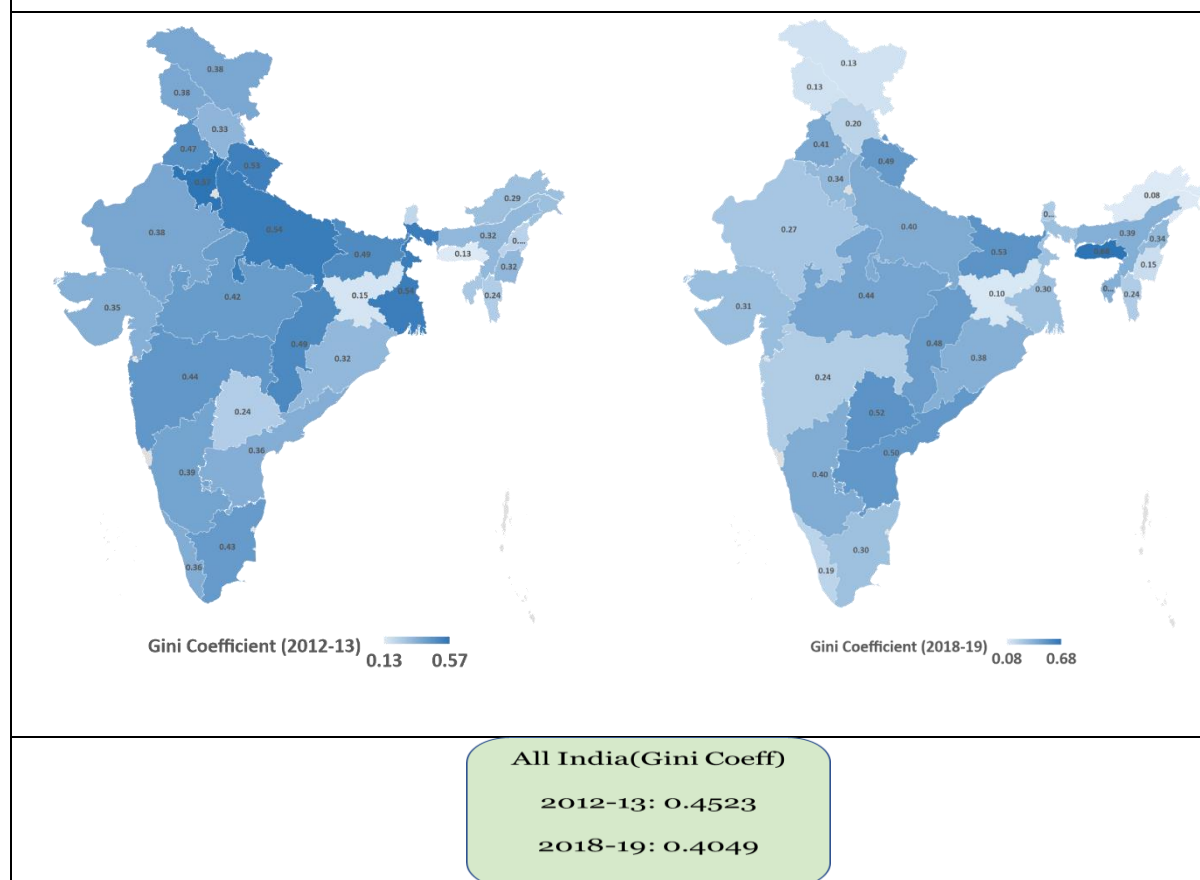
the inequality in income across size class of land at national level decreased. The decrease in inequality can be substantiated from the fact that the real income growth has been higher for agricultural households possessing smaller lands compared to those possessing larger lands between the 70th and 77th round of SAS. Between 2012-13 to 2018-19, majority of the states witnessed decreased in inequality resembling the national level picture. But for states like Andhra Pradesh, Assam, Telangana, Bihar, etc the Gini coefficient saw an increase, showing the rise in income inequality within the states across size class of land (See Table 6 and Figure 2).

Table 6: State wise value of Gini coefficient of income across size class of land for AY 2012-13 and AY 2018-19

	AY 2012-13	AY 2018-19
Andhra Pradesh	0.36	0.50
Arunachal Pradesh	0.29	0.08
Assam	0.32	0.39
Bihar	0.49	0.53
Chhattisgarh	0.49	0.48
Gujarat	0.35	0.31
Haryana	0.57	0.34
Himachal Pradesh	0.33	0.20
Jammu & Kashmir	0.38	0.13
Jharkhand	0.15	0.10
Karnataka	0.39	0.40
Kerala	0.36	0.19
Madhya Pradesh	0.42	0.44
Maharashtra	0.44	0.24
Manipur	0.32	0.15
Meghalaya	0.13	0.68
Mizoram	0.24	0.24
Nagaland	0.22	0.34
Odisha	0.32	0.38
Punjab	0.47	0.41
Rajasthan	0.38	0.27
Sikkim	0.20	0.24
Tamil Nadu	0.43	0.30
Telangana	0.24	0.52
Tripura	0.26	0.39
Uttarakhand	0.53	0.49
Uttar Pradesh	0.54	0.40
West Bengal	0.54	0.30
All India	0.45	0.40

Source: Authors calculation from 70th and 77th rounds of SAS

Figure 2: - State-wise Gini Coefficient of Income across size class of land for AY 2012-13 and AY 2018-19 (Source: - NSO 70th and 77th round SAS)



Gini coefficient was also calculated across all states for different size class of land. It was found that Gini coefficient decreased for size class of land <0.01 ha, 0.01-0.40 ha, 0.41-1.00 ha, 1.00-2.00 ha and 2.01-4.00 ha, showing that the inequality among the members of these class between states decreased. For size class of land 4.01-10.00 ha and > 10.00+ ha gini coefficient reached 0.5078 and 0.5754 from 0.2761 and 0.3117 respectively. Table 7 shows that inequality in income between states have decreased for small landholder as compared to large landholders which also enables us to say that the situation of small landholders is more or less same across the country compared to large land holders.

Table 7: Gini Coefficient across size class of land at all India level

Size Class of Land	Gini Coefficient (2012-13)	Gini Coefficient (2018-19)
<0.01	0.2970	0.2910
0.01- 0.40	0.3370	0.2604
0.41-1.00	0.3806	0.2196
1.01-2.00	0.2136	0.2012
2.01-4.00	0.2669	0.2546
4.01-10.00	0.2761	0.5078
10.00+	0.3117	0.5754

Source: Authors calculation from NSO's 77th round of SAS

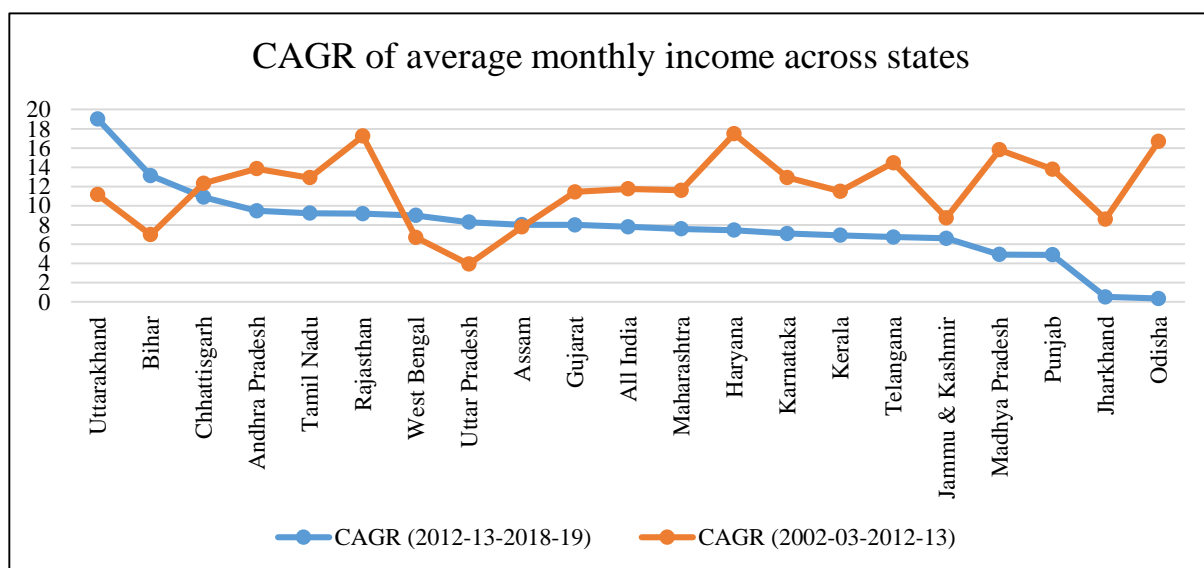
5.3. Income across states

The period between AY 2012-13 to AY 2018-19, witnessed non-uniform growth in average monthly income across the states. Between the 70th and 77th round, CAGR of average monthly income of Agricultural Households has slowed in most Indian states. Uttarakhand, Bihar, West Bengal, Uttar Pradesh and Assam were only exceptions, showing annual growth rates between 2012-13 and 2018-19 significantly higher than in 2002-03 and 2012-13.

Farmers' incomes in Odisha and Jharkhand grew at an impressive rate between 2002-03 and 2012-13, but after that, they have registered at slowest growth rate (Graph 5). Despite significant procurement of food grains at the minimum support price (MSP), incomes in Punjab and Madhya Pradesh grew at a slower rate between 2012-13 and 2018-19.

In terms of absolute value of income huge variation was seen across states, agricultural states like Bihar, Uttar Pradesh, Madhya Pradesh, Telangana, West Bengal and Chhattisgarh, saw incomes lagging behind the national average in 2018-19. Jharkhand and Odisha reported the lowest at Rs 4,895 and Rs 5,112 per month, respectively. Punjab and Haryana top in terms of average monthly farmer incomes among states, with income at Rs 26,701 and Rs 22,841, respectively. This came even though the growth rate of income of both the states slowed substantially during the period 2012-13 to 2018-19.

Only 12 states, three of which are from the North East, have an average monthly income (considering both the paid-out expenses and imputed expenses) of more over Rs 10,000, according to SAS estimates for 2018-19. The incomes of the remaining 16 states range between Rs. 4,013 and Rs. 9,995. Bihar, Jharkhand, Madhya Pradesh, Odisha, Telangana, Uttar Pradesh, and West Bengal, all of which being key agricultural states, have lower incomes than the national average.



Source: Authors calculation from 59th, 70th and 77th round of SAS

Graph 5: CAGR of average monthly income (nominal) of agricultural households statewise

While analysing the composition of state average monthly income during 2012-13 and 2018-19, income from agricultural activities (net receipts from cultivation and farming of animals) in total income have decreased significantly over the year. This pattern can be seen in

most of the states. For Example, Crop income share more than 50% in the monthly income can be seen in only five states. Majority of the states (16 out of 28) have share of crop income less than 40% of total monthly income. The seriousness of the problem can be gauged from the fact that there are 9 states which have crop income less than 25% of monthly income. When compared with previous round, Madhya Pradesh which accounted for highest (76.5%) of income from agricultural activities in 2012-13 saw a dip to 67.5% in 2018-19, similarly Assam, Telangana, Haryana, Punjab and Uttar Pradesh saw a dip from 74.8%, 72.9%, 72.8%, 69.3%, and 69% in 2012-13 to 41%, 59.8%, 57.4%, 63.8% and 57.7% respectively in 2018-19. This clearly suggests that sustainability of crop cultivation is a serious problem across most of the states and immediate attention at both ground and policy level is the need of hour.

Income from leasing-out land the information of which was collected in this round was found not as significant for many states but for agricultural households in Punjab and Haryana, where monthly lease rent contribution equalled to Rs. 2,652 and about Rs. 621, respectively. The Agricultural Households in Arunachal Pradesh showed zero earnings from this source.

NAFIS provided a different dimension by providing information on consumption expenditure of states which helped us to better understand the economic status of the rural households. Based on the analysis of this data a quadrant graph (Graph 6) is drawn on Income vs Surplus where surplus is calculated as Income minus (-) Consumption expenditure. The first quadrant which is in the top right-hand side of the figure, shows states having income and surplus above national average (average national monthly income of all Rural Households: Rs. 8,059 and average national surplus: Rs. 1,413) while the third quadrant which is at the bottom left position of the graph shows states having both income and surplus below national average.

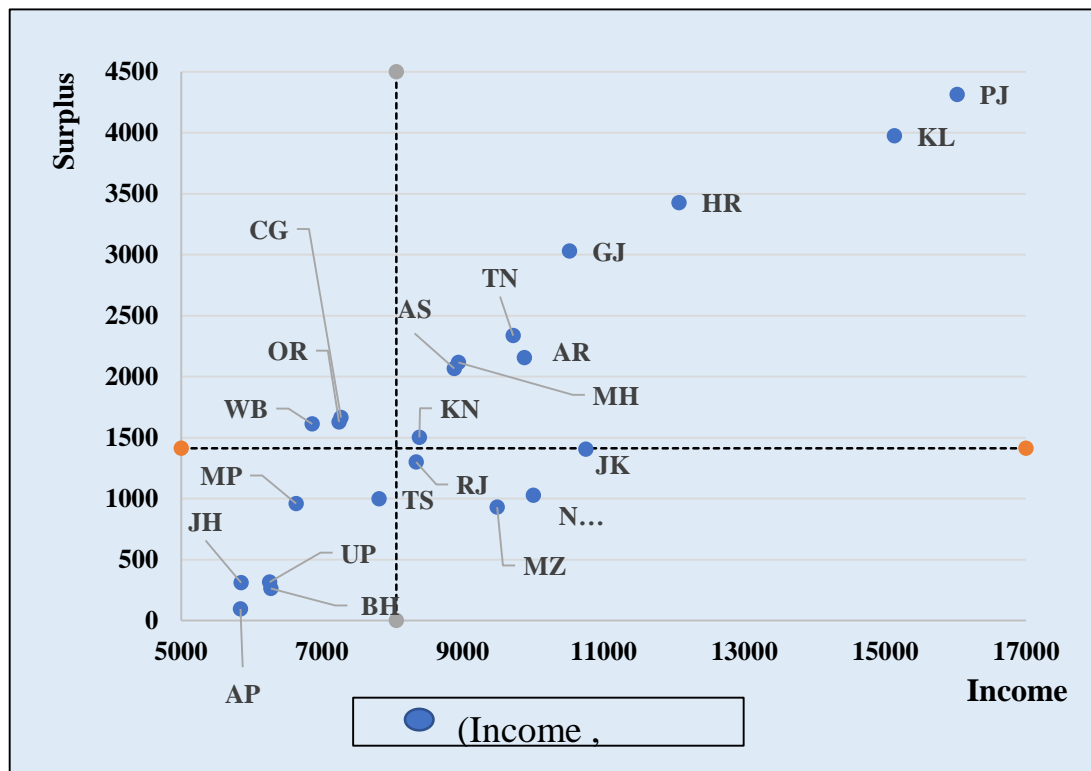
The graph shows, Punjab and Kerala at the positive extreme of the hierarchy with maximum reported surplus of roughly Rs. 4,000 per month as compared to states like Andhra Pradesh, Uttar Pradesh and Bihar showing monthly surplus less than Rs. 350 per household per month. The states such as Haryana, Himachal Pradesh and Gujarat have a sizeable amount of monthly surplus. NAFIS data also puts light on the average monthly income and consumption expenditure by size class of land possessed. Analysis of data suggests a positive correlation between size class of land possessed and surplus remaining after the monthly consumption expenditure has been subtracted from the income.

5.4. Income across social groups

Variation in income and its composition across various social group was seen during both the rounds of NSO's SAS. The Average Monthly Income (Rs) of SC, ST and OBC HH are less than that of HH belonging to category "Others" across all size class of land during both the survey round. In India, many surveys and studies have pointed out the unequal distribution of resources (i.e., land) across social groups. Though these reasons have remained at a core and is one of the driving factors leading to huge variation in income and its composition, but many recent studies have high lightened that the crop yield rates and agricultural land productivity differs across social groups when other things are kept constant. For both the rounds the average income of SC, ST and OBC were below national average and stood on an average 30% less than the income of category Others in both rounds (Table 8).

Close look in income composition shows SC, ST, OBC household more dependent on income from wages than Household belonging to category Others (Table 9). Households belonging to category Others earns 42% of their income from crop cultivation which is significantly higher from other categories 37.6(OBC), 25.2(SC), 34.4(ST). In terms of growth rate of income between the period 2012-13 to 2018-19, SC (10.22%) household growth rate

was the highest followed by Others (8.02%), OBC (7.74%) and ST (7.36%). Livestock has income source, doesn't show much variation across social groups, in fact its share in total income for OBC households is more than category Others, while that for SC and ST households, its share is on similar line when compared to category Others.



Source: NAFIS 2015-16

Graph 6: - State-wise income vs surplus of rural households for the period 2015-16

Table 8: Income (in Rs) social group across different size class of land for 2012-13 and 2018-19 (Source: - NSO's 70th and 77th round of SAS)

Farm-size, HA	ST		SC		OBC		Others		Overall	
	2012-13	2018-19	2012-13	2018-19	2012-13	2018-19	2012-13	2018-19	2012-13	2018-19
Landless (< 0.01)	6467	9451	4177	7840	4582	10611	3786	15865	4561	11204
Lower marginal (0.01 - 0.40)	4815	7487	3649	7177	4170	7127	4339	8675	4152	7522
Upper marginal (0.41 - 1.00)	4957	8030	4390	7559	5249	8573	6028	9704	5247	8571
Small (1.01 - 2.00)	6375	9336	6138	10182	7211	11338	8761	13706	7348	11449
Semi-medium (2.01 - 4.00)	8153	12214	7874	13307	10654	16733	12677	18573	10730	16435
Medium (4.01 - 10.00)	14270	23451	13074	23768	18904	22426	22384	38675	19637	28292
Large (>10.00)	100792	145517	24961	17763	35214	56205	46030	57700	41388	60758
All sizes	5864	8979	4539	8142	6378	9977	8059	12806	6426	10218
Income (CAGR)	7.35		10.22		7.74		8.02		8.03	

Table 9: Income composition of social groups for 2012-13 and 2018-19

Social Category	Wages/salaries		Crop cultivation		Livestock		Non-farm		Total	
	2012-13	2018-19	2012-13	2018-19	2012-13	2018-19	2012-13	2018-19	2012-13	2018-19
ST	38.98	50.6	43.72	34.4	14.34	11.7	2.97	3.0	100	100
SC	50.89	53.0	32.52	25.2	10.13	14.0	6.43	7.1	100	100
OBC	29.54	36.9	48.82	37.7	12.78	17.8	8.86	6.7	100	100
OC	26.52	33.8	54.05	42.6	10.24	14.2	9.19	6.6	100	100
All	32.23	39.8	47.95	37.2	11.87	15.5	7.97	6.3	100	100

Source: - NSO's 70th and 77th round of SAS

6. Conclusions

This paper studied patterns and inequalities in credit access and farmers' income based on NSO 70th and 77th round surveys and the following broad conclusions emerge there from:

- Outstanding debt as percentage of annual income increases as size class of land possessed increases. Agri Household in the top category of size class of land are more leveraged than those in the bottom category.
- Proportion of loan for Consumption, Medical and Educational purposes have seen an increase across all the land size category especially at the lower level of landholders/land size. The proportion of loan for agricultural purposes increases as land size increases.
- The growth in average monthly income have not been uniform across the states in the period between AY 2012-13 to AY 2018-19. While inequality at All India level seems to have declined, certain surprises at state level are there. Some states have reduced inequality against our expectations. And certain others shocked us with increased inequality.

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