

RESEARCH NOTE

Analysing Income Distribution Among Agricultural Households in India

Vachaspati Shukla^{1*}

ABSTRACT

The article examines income distribution among agricultural households in rural India, revealing that only a small proportion earn over Rs. 10,000 per month from farming. In states like Jharkhand, Odisha, and West Bengal, this proportion is as low as 1%, 2%, and 3%, respectively. Nationally, 77.6% of agricultural households earn a monthly farm income below the official poverty line. The study further highlights that farm income is highly concentrated, with the top 10% of earners receiving over 50% of total farm income. Including income from non-farm sources raises agricultural households' total income and reduces inequality. However, the overall disparity remains high, with many agricultural households in several states remaining poor. Nearly half of the agricultural households in India earn a total monthly income below the official poverty line, reaching as high as 76.7% in Jharkhand, 63.7% in Bihar, and 62.3% in Odisha.

Keywords: Farm income, agricultural households, income inequality, poverty, inter-state disparity

JEL codes: D31, I31, R11, Q12

I

INTRODUCTION

The paper examines the distribution of farm and total incomes among agricultural households across Indian states, shedding light on their economic conditions. Since farm incomes and farmers' welfare are central issues in India, understanding income distribution among agricultural households is essential. The Situation Assessment of Agricultural Households survey, conducted by the National Sample Survey Office (NSSO) under the Ministry of Statistics and Programme Implementation (MoSPI), prompted scholars to analyse income inequality among agricultural households (Birthal *et al.*, 2014; Ranganathan, 2015; Priscilla *et al.*, 2021; Das and Srivastava, 2021; Saini and Kaur, 2022). These studies focused on decomposing income inequality by source, which clarified how much each source contributes to overall inequality among agricultural households. However, these studies do not provide insights into the broader distribution of income—specifically, how concentrated it is or the relative economic status of agricultural households in the top and bottom strata of both farm and total income distribution. Therefore, the present study tries to fill this gap by analysing the distribution of farm and total income among agricultural households. Following this brief introduction, the paper's second section

¹Sardar Patel Institute of Economics and Social Research, Ahmedabad, Gujarat – 380 054.

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outlines the data and methodology adopted for conducting such a study. The third section discusses findings on inequality measures and highlights the inter-state variations. The last section summarises the findings.

II

DATA SOURCES AND METHODOLOGY

Data from the 77th round of the NSSO survey on the 'Situation Assessment of Agricultural Households' conducted between January and December 2019 is utilized for the present study. The survey defines an agricultural household as one that receives a value of produce exceeding Rs. 4000 from agricultural activities and has at least one member self-employed in agriculture, either in the principal status or secondary status, within the past 365 days. The survey provides detailed information on the income of agricultural households. It gathers information on wages earned, income from non-farm business, crop production, animal farming, pensions/remittances and rent from leasing out land.

The Gini coefficient widely used to measure income inequality ranges from 0 (perfect equality) to 1 (perfect inequality). While it helps to compare inequality over time and across regions, it does not show how income is distributed within different strata. On the other hand, percentile distribution divides a dataset into 100 equal parts, providing detailed insights into the income spread. For example, the 25th percentile represents the income level below which 25% of observations fall. A key inequality measure, the Decile Dispersion Ratio (or Inter-Decile Ratio), compares the average income level of the richest and poorest X per cent. Another approach analyses the share of income the top X per cent holds. These inequality measures provide detailed insights into the income distribution. Two of the most important books on inequality, Atkinson (2015) and Piketty (2015), adopt this approach for analysing inequality, focusing on distributional measures rather than average inequality. The above measures and the Gini coefficient are used in this study to assess income inequality in farm and total income distributions. The proportion of agricultural households with monthly incomes below the state-specific official poverty line (updated for 2018-19) is also calculated. The state-specific poverty line was derived by updating the 2011-12 poverty line (Rangarajan Committee) using the state-specific Consumer Price Index (Rural) provided by the National Sample Survey Office (NSSO), Ministry of Statistics and Programme Implementation (MoSPI), Government of India.

III

RESULTS AND DISCUSSION

Estimates indicate that 54% of rural households in India are classified as agricultural households, with Tamil Nadu having the lowest proportion at 26.6% and Rajasthan recording the highest at 74.6%. Among the 18 states shown in Figure 1, six states have over 60% of their rural households classified as agricultural, six states have

proportions varying between 50 and 60%, and in the remaining six states, less than 50% of the rural households are classified as agricultural households.

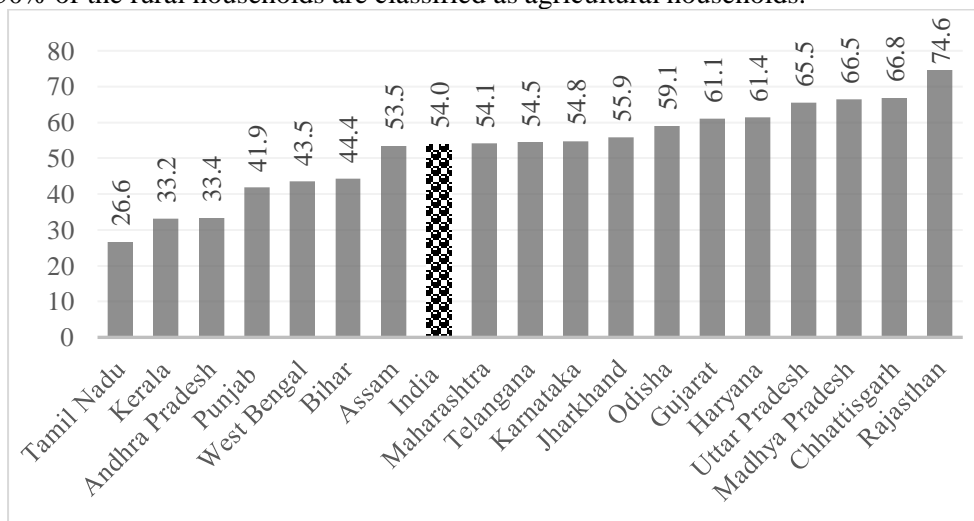


Figure 1. Proportion of Agricultural Households in Rural India Across States
Source: MoSPI (2019)

The percentile distribution of agricultural households' monthly and total farm incomes is quite revealing (Figure 2). Regarding monthly farm income, the 5th percentile is Rs. 0.00, indicating that 5% of agricultural households earn nothing or incur losses. The 90th percentile is Rs. 12,017, meaning 90% of agricultural households earn less than this amount. At the 27th percentile, monthly farm income crosses Rs. 1,000, with 27% of households earning less than Rs. 1,000 per month from farming. Similarly, 44% earn less than Rs. 2,000, 71% earn less than Rs. 5,000, and 87% earn below Rs. 10,000 per month. This paints a rather bleak picture, with only 13% of agricultural households earning more than Rs. 10,000 monthly from farming.

The distribution of total income amongst agricultural households reveals that 68% earn a monthly income of less than Rs. 10,000. In other words, only 32% of agricultural households earn a monthly income of more than Rs. 10,000. When solely farm income is examined, only 13% of agriculture households earn more than Rs. 10,000 per month. This reflects the importance of non-farm sources in enhancing the income level of agricultural households. Even after accounting for non-farm sources, many agriculture households live on very low total household income levels. Barely 39% of agriculture households earn less than Rs. 5000 per month, and 14% earn less than Rs. 2000 per month.

Therefore, the average monthly farm income (Rs. 5,380) and average total monthly income (Rs. 10,695) per agricultural household mask significant disparities,

with the percentile distribution revealing a large gap between the lowest and highest income classes.

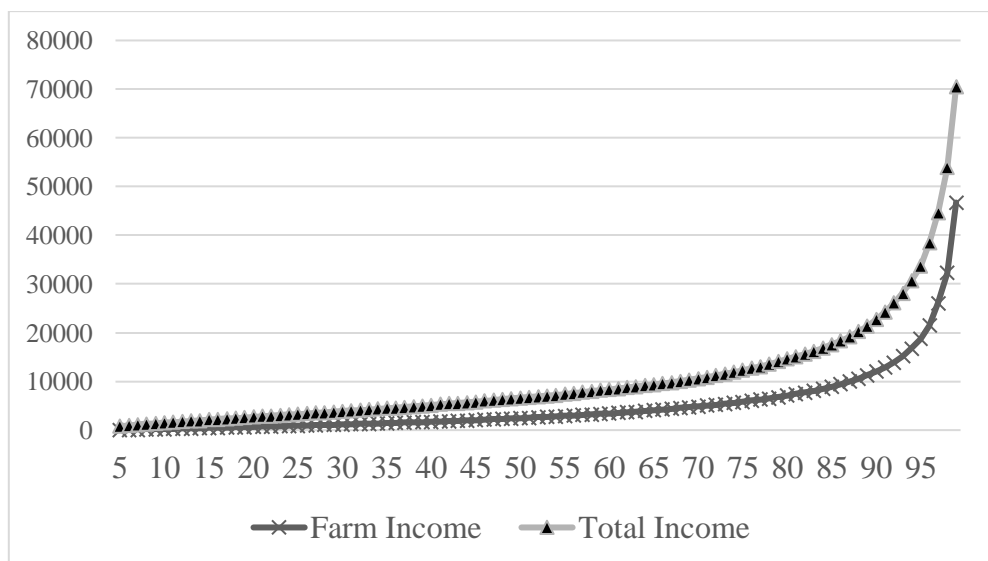


Figure 2: Percentile Distribution of Monthly Farm Income and Monthly Total Income of Agricultural Households in India

Source: MoSPI (2019)

Table 1 presents the mean monthly farm income of agricultural households across decile classes of the farm income distribution. The poorest 10% (D_1) in this distribution report a mean monthly farm income of Rs. -637. The second decile (D_2) has a mean monthly income of Rs. 514. The top 10% (D_{10}) receive 49.7% of the total farm income, with a mean monthly income per household of Rs. 26,681. The top 20% of households collectively capture over two-thirds of total farm income, averaging Rs. 17,995 monthly. These figures reveal a stark concentration of income at the top of the distribution. The bottom half of agricultural households account for only 8.5% of the total farm income, while the poorest 80% receive less than one-third. This income disparity underscores the unequal distribution of farm income, where a significant portion is held by the top 10% of farm income categories.

The inequality in monthly total income, encompassing both farm and non-farm sources, remains sharp. The mean monthly income of the lowest decile (D_1) stands at just Rs. 87. In comparison, the second decile (D_2) has a mean monthly income of Rs. 2,134, which, while higher than D_1 , is still minimal. In stark contrast, the wealthiest 10% (D_{10}) have a mean monthly income of Rs. 43,958, which is 20.6 times higher than D_2 's income, illustrating the concentration of income amongst the top 10% of households. Notably, the top 10% of households capture 41.1% of the total income,

and the top 20% collectively earn 57.8%, leaving only 42.2% for the bottom 80% of the households.

The Decile Dispersion Ratio (D_{10}/D_1 ratio) is commonly used to measure income inequality. It compares the incomes of top and bottom deciles. However, because the poorest decile (D_1) experiences negative farm returns, this ratio is irrelevant in the present context. On the other hand, the D_{10}/D_2 ratio is far more stable measure, which in this case is 20.6. This ratio indicates that households of the top 10% decile class earn, on average, 20.6 times more than those of the second-lowest 10% group, underscoring the extreme income disparity within agricultural households.

TABLE 1. AVERAGE MONTHLY FARM INCOME AND TOTAL INCOME (Rs.) PER AGRICULTURAL HOUSEHOLD FOR EACH DECILE CLASS AND ITS PROPORTIONAL DISTRIBUTION

Decile Class	Farm Income		Total Income	
	Mean	Proportion	Mean	Proportion
D ₁	-637	-1.2	87	0.1
D ₂	514	1.0	2134	2.0
D ₃	983	1.8	3300	3.1
D ₄	1525	2.8	4494	4.2
D ₅	2193	4.1	5861	5.5
D ₆	3047	5.5	7431	6.9
D ₇	4211	7.8	9401	8.8
D ₈	5975	11.1	12386	11.6
D ₉	9233	17.2	17896	16.7
D ₁₀	26756	49.7	43958	41.1
Total	5380	100	10695	100.0

Source: MoSPI (2019)

Inter-state analysis

To capture inter-state variations in income, we computed the percentile values of monthly farm and total incomes for each state. Given that each state variation in the above percentile level differs, we have focused on key income thresholds, i.e., Rs. 1,000, Rs. 2,000, Rs. 5,000, and Rs. 10,000, to simplify comparisons. This approach reveals the percentage of agricultural households in each state having monthly farm incomes below or above specified levels. It helps to identify income distribution patterns and disparities across states (Table 2).

A significant share of agricultural households earn monthly farm incomes below Rs. 1,000, with over 40% falling below this threshold in states such as Andhra Pradesh, Odisha, and West Bengal. Conversely, only a small fraction of agricultural households depict monthly farm incomes exceeding Rs. 10,000. In eight states, less than 10% of the households attain this income level, with Jharkhand, Odisha, and West Bengal having as few as 1%, 2%, and 3% of households, respectively, earning above Rs. 10,000 per month.

Examining the total monthly income of agricultural households reveals that only a small proportion earn less than Rs. 1,000, varying from 1% to 9% across the Indian states. Notably, a larger percentage of households earn a total income of over Rs. 10,000 per month compared to farm incomes. However, significant disparities persist across the states. For instance, nearly 10% of Jharkhand's agricultural households surpass this threshold compared to 74% in Punjab. Even after accounting for income from all sources, a substantial proportion of agricultural households continue to earn minimal total incomes. In states like Jharkhand, Odisha, West Bengal, Bihar, Uttar Pradesh, Chhattisgarh, and Madhya Pradesh, 75–90% of the agricultural households earn monthly incomes of less than Rs. 10,000.

The upper percentiles across all states show a heavy concentration of farm earnings. Andhra Pradesh exhibits the highest inequality, with the wealthiest 10% capturing 65.4% of the state's total farm income. States like Karnataka, Tamil Nadu, Maharashtra, and Kerala also demonstrate significant inequality, with the wealthiest 10% holding more than 50% of the farm incomes (Table 3).

TABLE 2. PERCENTILE DISTRIBUTION OF MONTHLY FARM INCOME AND TOTAL INCOME OF AGRICULTURAL HOUSEHOLDS IN INDIA

State (1)	Proportion of agriculture households with monthly income less than							
	Monthly Farm Income (Rs.)				Monthly total income (Rs.)			
	1,000 (2)	2,000 (3)	5,000 (4)	10,000 (5)	1,000 (6)	2,000 (7)	5,000 (8)	10,000 (9)
Andhra Pradesh	42	56	76	90	9	16	39	64
Assam	18	36	74	92	4	8	26	61
Bihar	19	37	72	92	8	18	48	79
Chhattisgarh	13	30	69	91	2	9	38	75
Gujarat	21	37	58	78	7	13	27	56
Haryana	23	29	46	63	3	3	12	30
Jharkhand	38	70	94	99	7	21	63	90
Karnataka	19	33	60	78	4	12	31	59
Kerala	31	52	73	87	3	7	15	29
Madhya Pradesh	22	36	67	85	5	13	45	75
Maharashtra	29	44	66	83	6	10	32	62
Odisha	46	69	90	98	9	22	59	88
Punjab	22	30	39	53	1	2	8	26
Rajasthan	23	37	60	81	6	10	29	57
Tamil Nadu	37	54	77	91	7	15	33	57
Telangana	23	39	65	84	4	10	34	66
Uttar Pradesh	25	44	73	89	8	17	46	76
West Bengal	47	69	91	97	9	20	51	80
Total	27	44	71	87	6	14	39	68

Source: MoSPI (2019)

Conversely, states like Jharkhand exhibit are more egalitarian, with the top 10% receiving 36% of the farm income, marking the lowest concentration observed. Bihar, Chhattisgarh, and Assam also depict relatively low inequality, with the wealthiest 10% on average capturing less than 40% of the farm income. In the remaining states, the top 10% of income groups receive between 40% and 55% of the farm income. This contrast highlights vast differences in farm income distribution across the states, with certain regions exhibiting extreme disparities that point to challenges in achieving economic equity within the agricultural sector. With respect to the Gini coefficient, Andhra Pradesh (0.896) exhibits the highest inequality in farm income distribution amongst states, while Jharkhand (0.497) shows the lowest. Most states fall within a narrower Gini range of 0.6-0.7. Only two states exceed a Gini coefficient of 0.7: Andhra Pradesh (0.896) and Kerala (0.711). Meanwhile, four states have Gini coefficients below 0.6, namely Jharkhand (0.497), Chhattisgarh (0.5), Bihar (0.515), and Assam (0.516). Notably, even in the state with the lowest Gini coefficient, it is close to 0.5, indicating an extremely high level of farm income inequality across the board. The Gini coefficient and the share of the top 10% in monthly farm income are closely aligned as inequality indicators. The Spearman correlation coefficient between these measures of 0.93 indicates a strong correlation.

It is widely observed that land ownership is the most important determinant of farm income, showing a strong correlation between the size of land owned and farm incomes (Das and Srivastava 2021; Sharma and Malik 2022). Given that, many agricultural households own small parcels of land. In contrast, only a few such households possess large holdings, and the concentration of farm income within a small group is expected. Estimates show that 70.4% of agricultural households own less than 1 hectare of land, 17.7% own between 1 and 2 hectares, and 11.4% own more than 2 hectares (MoSPI, 2021, p.47).

The high concentration of farm income among the top 10% of income groups has resulted in a significantly higher average monthly farm income per household than the average for all agricultural households. At the national level, the average monthly farm income per agricultural household is Rs. 5,380, while for the top 10%, it is Rs. 26,756. The average monthly farm income for the top 10% also varies across states, with Punjab having the highest at Rs. 75,835 and Jharkhand the lowest at Rs. 7,097. The wealthiest 10% of agricultural households in Punjab earn roughly 11 times more than the richest 10% in Jharkhand. Estimates show that 77.6% of agricultural households at the national level receive a monthly farm income below the income threshold equivalent to the updated official poverty line for the year 2018-19. This proportion exceeds 90% in Jharkhand and West Bengal, and in a total of eight states, it is above 80%.

TABLE 3. STATE-WISE INFORMATION ON AVERAGE MONTHLY FARM INCOME PER AGRICULTURAL HOUSEHOLD AND ITS DISTRIBUTION

State	Share in farm income		Average Monthly Farm Income Per Agriculture Households (Rs.)			Percentage of Agriculture households with monthly farm income less than the official poverty line	Gini coefficient
	top 20 %	top 10%	top 20%	top 10%	Total		
Andhra Pradesh	82.3	65.4	18,060	28,781	4,379	80.2	0.896
Assam	55.3	39	12,004	16,932	4,335	83.8	0.516
Bihar	54.2	37.1	11,808	16,161	4,357	83.3	0.515
Chhattisgarh	54.2	37.8	13,158	18,410	4,859	72.9	0.5
Gujarat	66.1	48	24,952	36,403	7,583	70.5	0.639
Haryana	68.3	49.1	42,796	61,936	12,578	58	0.686
Jharkhand	53.9	36.1	5,232	7,097	1,926	94.3	0.497
Karnataka	70.1	53.1	29,511	44,694	8,416	65.6	0.676
Kerala	70.3	50.2	16,127	23,118	4,606	76.3	0.711
Madhya Pradesh	62	44.1	17,225	24,502	5,558	71.9	0.603
Maharashtra	69	50.8	21,258	31,337	6,172	75.2	0.681
Odisha	62.6	43.3	6,144	8,475	1,967	89.4	0.631
Punjab	64.6	45.2	54,082	75,835	16,730	46.5	0.636
Rajasthan	63.8	44.8	20,360	28,671	6,373	73.6	0.651
Tamil Nadu	69.4	51	13,823	20,301	3,989	81.3	0.696
Telangana	63.5	44.3	17,678	24,636	5,569	67.7	0.633
Uttar Pradesh	62.3	45	14,294	20,623	4,592	80.2	0.602
West Bengal	64.2	46	6,374	9,130	1,987	91.9	0.659
India	66.9	49.7	17,995	26,756	5,380	77.6	0.664

Source: MoSPI (2019)

The total income of agricultural households is distributed less unequally than the farm income (Table 4). The share of the top 10% in total income is lower than farm income. Thus, non-farm sources not only raise the income of agricultural households but also make their distribution less unequal. The Gini coefficient for total income is substantially lower than that for farm income. These trends can be seen in all the states. Though considerably lower than farm income, the Gini coefficient for total income remains relatively high. At the national level, the Gini coefficient for total income is 0.546, indicating a significant level of inequality. The highest Gini coefficient can be observed in Andhra Pradesh (0.561), while the lowest is in Jharkhand (0.435). In seven states, the Gini coefficient exceeds 0.5, signalling a high level of inequality. Even in states with a Gini coefficient below 0.5, the values remain relatively high, ranging from 0.43 to 0.50.

The D_{10}/D_2 ratio indicates the highest income inequality in Karnataka, with a value of 24.1. This implies that the average monthly income of the wealthiest 10% agricultural households is 24 times higher than that of the second poorest decile class. Jharkhand and Telangana have the least inequality, with D_{10}/D_2 ratios of 9.8 and 11.6,

respectively. The Gini coefficient and the D_{10}/D_2 ratio of total income are highly correlated, with a Spearman correlation coefficient of 0.909.

Earning from non-farm sources increases the income of agricultural households and enhances equity. However, a large proportion of agricultural households at the national level (49.5 %) receive a total monthly income that is below the income equivalent to the updated official poverty line for the survey year. This proportion is as high as 76.7% in Jharkhand, 63.7% in Bihar, and 62.3% in Odisha. Altogether, in six states, more than 50% of agricultural households fall below this income threshold.

In income distribution, less disparity is typically preferred over more inequality. When contrasting poverty and inequality levels, we may not always appreciate the lower levels of inequality. For instance, Jharkhand and Odisha have the lowest inequality levels despite having exceptionally high rates of poverty. On the other hand, Andhra Pradesh, Tamil Nadu, Kerala, and Karnataka have relatively low poverty levels but relatively high levels of inequality. Both poverty and inequality are high in Gujarat, West Bengal, and Uttar Pradesh, while both are lower in Telangana and Punjab.

TABLE 4. STATE-WISE INFORMATION ON AVERAGE MONTHLY TOTAL INCOME PER AGRICULTURAL HOUSEHOLD AND ITS DISTRIBUTION

State	Share in Total Income		Average Monthly Total Income Per Agriculture households			Percentage Agriculture household with monthly total income less than official poverty line	Inequality Index	
	top 20%	top 10%	top 20 %	top 10%	Total		Gini	D_{10}/D_2
Andhra Pradesh	57	41	30,075	43,114	10,572	39.1	0.561	22.5
Assam	49.5	33.5	27,439	37,225	11,068	42.7	0.448	12.4
Bihar	53	36.7	20,179	27,963	7,621	63.7	0.493	16.2
Chhattisgarh	55.7	40	27,603	39,532	9,972	43.6	0.499	14.4
Gujarat	53.1	35.9	33,366	45,608	12,553	46	0.494	18.3
Haryana	51.5	33.8	62,371	81,723	24,074	20.9	0.48	14.2
Jharkhand	48.4	31.8	12,778	16,659	5,258	76.7	0.435	9.8
Karnataka	58	41.5	39,571	56,572	13,644	38.4	0.553	24.1
Kerala	49.4	32.9	52,932	70,679	21,531	16.7	0.47	14.6
Madhya Pradesh	53.5	37.3	22,463	31,498	8,390	53.3	0.493	15.1
Maharashtra	58.1	41.5	35,436	50,740	12,198	45.8	0.552	18.1
Odisha	50.2	33.9	14,031	18,937	5,585	62.3	0.471	12.5
Punjab	53.6	36	73,819	98,787	27,491	18.5	0.484	13
Rajasthan	56.5	39.7	38,314	54,289	13,462	45.4	0.531	18.4
Tamil Nadu	52.2	35	30,489	40,916	11,684	37.1	0.504	19.4
Telangana	49.1	32.6	23,866	31,709	9,737	37.8	0.449	11.6
Uttar Pradesh	57	40.5	24,071	34,142	8,440	57.9	0.542	19.1
West Bengal	54.1	36.5	19,037	25,867	7,012	55.9	0.511	17
India	57.8	41.1	30,927	43,958	10,695	49.5	0.546	20.6

Source: MoSPI (2019)

IV

CONCLUSIONS

The paper investigates the income distribution among agricultural households in rural India. It observes that many of these households earn very little from farming. Only 13% of agricultural households generate more than Rs. 10,000 per month from farming. In eight states, less than 10% of households reach this income level, with Jharkhand, Odisha, and West Bengal having as few as 1%, 2%, and 3% of households, respectively. Farm income is heavily concentrated in the hands of the top 10% of monthly farm income distribution. The top 10% receive more than 50% of total farm income. Estimates show that 77.6% of agricultural households at the national level receive a monthly farm income below the income threshold equivalent to the official poverty line. This proportion exceeds 90% in Jharkhand and West Bengal, and in a total of eight states, it is above 80%.

When non-farm income sources are considered, the proportion of agricultural households earning more than Rs. 10,000 per month rises to 32%. However, the total income remains low for a significant percentage of households, with 39% earning less than Rs. 5,000 per month and 14% earning below Rs. 2,000. The inclusion of income from non-farm sources helps to make the income distribution less uneven. The Gini coefficient of total income is considerably lower than that of farm income, indicating a more equal distribution. Nevertheless, significant disparities persist despite this improvement, with the wealthiest households earning substantially more than the poorest. Many agricultural households in several states remain poor even after accounting for non-farm income. Nearly half of agricultural households in India earn a total monthly income below the official poverty line, with this proportion reaching as high as 76.7% in Jharkhand, 63.7% in Bihar, and 62.3% in Odisha.

Crop diversification, adoption of innovations, and access to institutional credit can help enhance farm earnings for agricultural households (Sharma, 2023; Nandi, 2024; Basantaray *et al.*, 2024). However, given that a large proportion of agricultural households own very small plots of land and earn minimal income from farming, these measures may not significantly impact the households cultivating such land holdings. Agricultural households with a lower share of income from farming tend to rely heavily on wages and salaries (Sharma *et al.*, 2024), while income from non-farm businesses contributes little (MoSPI, 2021, p. 86). Improving farm income alone cannot enhance the overall well-being of agricultural households unless sufficient wage employment opportunities are created in rural areas.

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