

# Estimates and Analysis of Farm Income in India, 1983–84 to 2011–12

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This paper presents estimates of farmers' incomes from agriculture over the past three decades. The income earned by farmers from agricultural activities after paying for input costs and the wages for hired labour has seen low to high growth in different periods during the last three decades. In none of the periods do farmers' income or profitability of farming show any squeeze. The pace of growth in farmers' income that began around 2004–05, which reduced the disparity in growth in incomes of farmers and non-farmers, could not be sustained after 2011–12. It looks like the growth in farm income after 2011–12 has plummeted to around 1%, and this is an important reason for the sudden rise in agrarian distress in recent years.

## 1 Backdrop

The most appropriate measure of farmers' well-being is the level of farm income. However, appropriate estimates of farm income are not available in most countries, including India. In the absence of this information, conclusions on the state of farmers and their income are drawn by alluding to policies or indicators that directly or indirectly affect agriculture and farmers' income, or, by using indicators that are proxies for farmers' income.

Some scholars observe a strong bias in policies against the sector (Lipton 1970, 1977) and some allege that markets tend to be biased against agriculture as the prices of primary commodities rise at a much slower rate than prices in the manufacturing sector (Singer 1950; Harvey et al 2010;<sup>1</sup> Sarkar 1994<sup>2</sup>). This phenomenon in India has been examined in a large number of studies, from time to time, using the terms of trade between agriculture and other sectors as an indicator of bias. Some studies find terms of trade remaining against agriculture (Kahlon and Tyagi 1980, 1983; Gulati and Rao 1994), and some find them in favour of agriculture (Misra and Hazell 1996; Misra 1998; Dholakia and Sapre 2013). The main reason behind this difference is the choice of study period. A thorough review of the literature shows that since 1950–51, the terms of trade for agriculture sometimes declined, sometimes increased, and did not show any trend in other periods. A more recent study (Dholakia and Sapre 2013), which shows that terms of trade for agriculture have fluctuated considerably over time and a consistent rise in favour of agriculture is seen after 2005–06, comes to the same conclusion.

The discrimination against agriculture is also sometimes seen in the disparity in per worker income in the agriculture and non-agriculture sectors—per worker income in the non-agriculture sector has reportedly risen at a much faster rate than per worker income in agriculture (Chand 2008). The reason for this has been a much higher decline in the share of agriculture in national income compared to the decline in the share of agricultural workforce in the total workforce of the country. Some studies have stretched this inference to conclude that farm income is very low (Narayanamoorthy 2006) and not rising, and this is said to be one of the reasons for rising agrarian distress and farmers abandoning farming. While all these may be true, they are not based on appropriate facts as there is no series on farm income available in the country. In the absence of actual estimates of farm income, indicators like the value of agricultural output, net domestic product (NDP) of

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the sector, income from selected crops, and some survey-based estimates have been used to draw inferences about the behaviour of farm income. However, these estimates or indicators are at best proxies and they are not truly representative of farm income in the Indian context, as discussed in Section 2.

A few attempts made by some scholars to prepare estimates of farm income in the past are based either on a sample of farmers or a segment of agriculture (Narayanamoorthy 2006; Sen and Bhatia 2004). Narayanamoorthy (2006) derived estimate of farmers' income from the cost and receipt data for crop cultivation reported in the National Sample Survey Office (NSSO) report on the Situation Assessment Survey (2005: 472). The study by Narayanamoorthy presents a very dismal picture of farm income as the annual net income (that is, farm business income) of a farmer household for the country as a whole was estimated to be only Rs 2,837 in 2002–03. This estimate of income was derived from cost and receipt data for crop cultivation reported in NSSO report on Situation Assessment Survey (2005: 472). A serious flaw in this study is that it deducts costs twice from the receipts, making the reported income one-fourth of the actual income of Rs 11,628. Besides, the study included only crop income and ignored income from livestock, though it was available in the same NSSO report. When income from livestock is added, per farm income increases to Rs 12,720.

Chand et al (2011) derived an estimate of farm income for one point of time from value-added in agriculture reported by the Central Statistics Office (CSO), by deducting the cost of hired labour, which was computed from CSO data using the same proportion between the cost of inputs and the wage bill as reported in the NSSO Situation Assessment Survey (2005). According to this study, the per hectare farm income for the country as a whole from 2007–08 to 2008–09 was Rs 33,267 per hectare, at 2004–05 prices. Based on this, the authors found that the income earned by 62% of farmers in India who own less than 0.80 hectares of cultivable land was lower than the poverty line during 2007–09. Sen and Bhatia (2004) estimated farm business income using data from the central government's Comprehensive Scheme for Studying the Cost of Cultivation of Principal Crops in India from 1981–82 to 1999–2000. They included farm business income both from crop cultivation and livestock. The authors concluded that the level of farm business income per farmer on an average was hardly sufficient to pay for essentials.

Though this was the first comprehensive step towards preparing estimates of farm income in the country, it has serious shortcoming and limitations. First, the cost of cultivation data is representative of crops or crop complexes in major growing states, but it does not cover the entire country or the entire agriculture sector. Even the productivity of sample crops reported in COC data show significant difference from state averages. COC data also does not cover horticultural crops and several minor crops that constituted 38% of the total value of the crop sector in 2011–12. Further, the importance of horticultural crops has been rising, and their productivity in India is more than four times that of other crops. Their exclusion makes a significant difference to the level and growth in farm

business income. Also, the data on income from the livestock sector is not appropriately captured in the cost of cultivation schedules, which do not intend to do so. Because of these reasons, farm business income derived from the COC data is not an adequate measure of actual farm business income in the country or a state. At best, these can be used as indicators of income from selected crops.

It is surprising that estimates of farm income are not prepared and published in the country by any official agency. What is more surprising, no study has estimated the level of farm income at the national and state level in the country. In the absence of this crucial information, pieces of information such as a higher rise in input prices compared to output prices, slow growth in output and value added, rise in wages, rising indebtedness, and the rising gap between farm harvest and retail prices are used as evidence to prove a decline in farm income. This paper fills this important gap by constructing a proper series of farm income that can be taken as a true measure of income accruing to farmers from agricultural production. The series covers three decades, beginning from 1983 and ending with 2011–12. The series should be useful to study trends and changes in farmers' income; the divergence between output growth and farm income; the changes in profitability of farm investments; and in examining the effect of various policies and other factors on farmers' income.

## 2 Estimation Procedure

Various studies in the past have alluded to the sectoral income (net value added or NDP) of agriculture as the income of farmers. However, sectoral income (income of the agriculture sector) does not accrue to farmers alone; it is, by definition, shared by hired farm labour and farmers. Thus, income derived by farmers from agriculture is not the same as income of the sector—a part of it goes as the wage bill in cash or in kind to labour hired for farm work. Further, the ratio of farm income to sectoral income will undergo changes with changes in the composition of farm labour, between family labour and hired labour, and the composition of the total cost of production between labour and other costs. This difference gets more pronounced when there is change in real wages. Because of these reasons, farm income and agricultural income are not only different, but also likely to follow different paths. Thus, value added in agriculture or NDP from the agriculture sector does not represent farm income.

The farm income was derived from gross domestic product (GDP) (agriculture and allied) by using the following approach.

$$\begin{aligned} \text{Farm income} &= \text{GDP agriculture and allied sectors,} \\ &\quad \text{less capital consumption, less wage} \\ &\quad \text{for hired labour employed in bill} \\ &\quad \text{agriculture} \\ &\quad \text{or} \\ &= \text{NDP agriculture and allied sectors} \\ &\quad \text{less wage bill for hired labour.} \end{aligned} \quad \left. \vphantom{\begin{aligned} \text{Farm income} &= \text{GDP agriculture and allied sectors,} \\ &\quad \text{less capital consumption, less wage} \\ &\quad \text{for hired labour employed in bill} \\ &\quad \text{agriculture} \\ &\quad \text{or} \\ &= \text{NDP agriculture and allied sectors} \\ &\quad \text{less wage bill for hired labour.} \end{aligned}} \right\} \text{Eqn (1)}$$

The wage bill for the agricultural (agriculture and allied) sector was computed by multiplying the number of hired

labourers employed in agriculture with per day agricultural wage earnings and the number of days of wage employment in a year in agriculture and allied activities. Data on the number of hired agricultural labourers, wage earnings and days of agricultural wage employment were obtained/estimated from

**Table 1: Input Use, Wage Bill, Output, and Related Variables Needed to Compute Farm Income, in Nominal Terms**

Year	Input (Rs crore)	Wage Bill (Rs crore)	Output (Rs crore)	Net Value Added (Rs crore)	Agricultural Labour (Number crore)	Cultivators (Number crore)	Wage Earning (Rs/labour/ day)	Farm Income (Rs crore)
1983–84	28,723	11,084	99,317	67,482	7.55	13.16	6.2	56,398
1987–88	39,689	17,245	1,36,501	91,882	7.84	13.20	9.5	74,638
1993–94	78,017	45,755	3,08,729	2,23,709	9.56	14.39	19.1	1,77,954
1999–2000	1,48,388	90,951	5,85,284	4,26,582	10.18	13.88	36.6	3,35,631
2004–05	1,92,094	93,130	7,43,552	5,27,289	9.27	16.61	42.6	4,34,160
2011–12	4,20,819	2,52,804	18,49,990	13,97,167	7.82	14.62	121.4	11,44,363

Source: Computed by the authors.

the published reports as well as unit record data at the household level available in various rounds of the NSSO on employment and underemployment. The hired labour consisted of casual labour plus regular labour in agriculture and allied operations in the usual status (principal and subsidiary). All-India information on days of wage employment in agriculture and allied activities was taken from the Rural Labour Enquiry Reports (RLER). Since the latest RLER available is for 2004–05, the data for 2011–12 was interpolated by multiplying it by the growth in days of wage employment between 2004–05 and 2011–12 estimated from the NSSO data, which is the basis for the RLER. The estimates of farm income are prepared for the years corresponding to six rounds of the NSSO on employment and unemployment—1983 (38th round), 1987–88 (43rd round), 1993–94 (50th round), 1999–2000 (55th round), 2004–05 (61st round), and 2011–12 (68th round).

Farm income obtained at current prices from equation (1) was deflated by the Consumer Price Index for Agricultural Labourers (CPIAL) to arrive at the real farm income. The data on the CPIAL was obtained from the website of the Reserve Bank of India and the office of the economic adviser. The farm income thus obtained was estimated per cultivator, per landholding, and per unit of net sown area.

### 3 Cost of Inputs, Wage Bill and Farm Income

Basic data for computing farm income is provided in Table 1 for all the years when quinquennium surveys were conducted by the NSSO on employment and unemployment in the last 30 years, except 2009–10. The year 2009–10 is not reported to be a normal year because of which another national survey was conducted in 2011–12, which is included in the study. Between 1983–84 and 2011–12, the use of inputs in agriculture at current prices increased 15 times and the wage bill increased 23 times, that is, one and a half times the increase in input cost. Thus, the total cost of agricultural production increased at a much higher rate (17 times) when the labour cost was included in it. During the same period (1983–84 and 2011–12), agricultural output at current prices multiplied 18.6 times. This is higher than the increase in input costs, but lower than the increase in wages paid for agricultural work. The increase in the

wage bill can result from any of the following: (i) increase in number of hired labourers, (ii) increase in wage earning per day, and (iii) increase in number of days of employment in a year. The increase in wage bill between 1983–84 and 2011–12 resulted mainly from the increase in the wage rate, as the number of hired labourers employed in agriculture increased by only 3.6% and duration of employment witnessed almost no change over a span of 30 years.

Farmers' income between 1983–84 and 2011–12 multiplied 20 times at nominal prices (Table 1). In the same period, the CPIAL, which is used to represent changes in prices in rural areas, increased 6.9 times (Table 2). Taking away the effect of inflation, real farm income increased by three times in the last 30 years. India's farmers earned Rs 2,11,000 crore from farming in 1983–84, at real prices with the base year of 2004–05. This increased to Rs 3,03,000 crore in 1993–94. The most recent estimate of farm income accruing to farmers in India is Rs 6,25,500 crore in real terms (Table 2).

**Table 2: Trend in Consumer Price Index of Agricultural Labour and Farm Income**

Year	Farm Income at Current Prices, Rs crore	CPIAL Base Year 2004–05	Farm Income Deflated by CPIAL, Rs crore
1983–84	56,398	26.61	2,11,919
1987–88	74,638	33.19	2,24,858
1993–94	1,77,954	58.57	3,03,814
1999–2000	3,35,631	90.00	3,72,923
2004–05	4,34,160	100.00	4,34,160
2011–12	11,44,363	182.94	6,25,536

Source: Computed by the authors.

Distribution of agricultural output valued at farm gate prices between inputs, wages and depreciation is presented in Table 3 (p 142). Expenditure on various inputs such as seeds, fertiliser, irrigation, plant protection, repair and maintenance, feed and other inputs constituted 29% of the value of agricultural output during 1983–84 and 1987–88. After this, their share dropped to 25.3% in 1993–94 and stayed at this level for the next decade. The share of input cost in value of output further declined to 22.75% during 2011–12. The share of wages paid to hired labour for agricultural work increased from 11% in 1983–84 to 15.5% by 1999–2000. The increase in labour employed in agriculture and the wage rate contributed to the increase in the wage share; while there was a very small decline in the days of wage employment in agriculture. After 1999–2000, the number of labourers employed in agriculture fell by 23% by 2011–12 and the number of days of employment also fell, though slightly, by 2.77%, leading to a fall in the share of wages in output. It is interesting that a small decline in the number of agricultural labourers between 1999–2000 and 2004–05 caused a 20% decline in the share of wage bill in output, whereas a large decline in the number of labourers after 2004–05 was accompanied by an almost 10% increase in the share of wages in output. This opposite effect of the shift in labour force from agriculture on the labour share in agricultural output implies that an initial shift of labour from agriculture may not raise the wage rate in agriculture. But it ultimately

leads to higher labour productivity and an increase in the wage rate, as is evident from the rise in the wage share in output after 2004–05 (Table 3). The share of various types of costs in agriculture, such as the cost of inputs, wages paid in cash and kind, and depreciation ruled above 43% in the 1980s and steadily declined in the next two decades. The cost share in output was lowest in 2011–12 compared to all the years after 1983–84. The wage bill of hired labour constituted 26% of the total cost of agriculture production in 1983–84. The share steadily increased to 36% by 1999–2000 as a result of an increase in the labour employed in agriculture and an increase in the wage rate. The share suffered a setback in the next five years, but recovered to almost the same level, mainly on account of an increase in wage rates—by 185% in seven years after 2004–05.

**Table 3: Distribution of Agricultural Output Over Input Costs, Wages, and Farm Income at Current Prices (%)**

Year	Input Share in Output	Wage Share in Output	Depreciation as Percentage of Output	Costs Share in Value of Output	Wage Share in Cost	Farmers' Income as Percentage of Net Value Added	Wage Bill as Percentage of Net Value Added
1983–84	28.92	11.16	3.13	43.21	25.82	83.58	16.42
1987–88	29.08	12.63	3.61	45.32	27.88	81.23	18.77
1993–94	25.27	14.82	2.27	42.36	34.99	79.55	20.45
1999–2000	25.36	15.47	2.08	42.91	36.06	78.68	21.32
2004–05	25.83	12.52	3.25	41.61	30.10	82.34	17.66
2011–12	22.75	13.67	1.73	38.14	35.83	81.91	18.09

Data on depreciation taken from National Accounts Statistics.

Source: Computed by the authors from Table 1.

Distribution of net value added in agriculture between cultivators and labourers shows that cultivators received 83.58% share and labourers received 16.4% share in 1983–84. In the next one and a half decades the share of cultivators followed a decline and that of labourers witnessed an increase of about 5 percentage points. After 1999–2000, cultivators' share increased.

A comparison of farmers' incomes with earnings of labour in agriculture shows that over a period of three decades, the share of labour in total agricultural income (value added in agriculture) saw a small increase and the share of farmers income' faced a small decline. At present (2012) 81.9% of total income generated in the agriculture sector in the country goes to cultivators and 18% to labourers.

#### 4 Various Dimensions of Farm Income

Over time, the number of farmers, number of holdings, number of farm family members engaged in agriculture (cultivators), and number of labourers has changed. Therefore, a clear idea about the level and increase in income of farmers and agricultural labourers can be obtained by looking at changes on a per cultivator, per farm holding and per labourer basis. These results, corresponding to the quinquennium survey years of the NSSO, from where labour data was taken, are presented in Table 4. The table also reports income at current prices and on a per hectare basis. Between 1983–84 and 2011–12, the farm income per cultivator deflated by CPIAL (base year 2004–05) rose 2.7 times, from Rs 16,103 to Rs 42,781. Farm income per holding doubled and per hectare of net sown area

**Table 4: Real and Current Farm Income: Per Cultivator, Per Farm and Per Unit of NSA and Wage Earnings of Agricultural Labour**

Year	Per Cultivator	Per Hectare Net Sown Area	Per Holding	Wage Earning Per Labourer
Real Income				
1983–84	16,103	14,798	22,603	5,513
1987–88	17,030	16,770	22,298	6,630
1993–94	21,110	21,345	27,147	8,168
1999–2000	26,875	26,437	31,325	9,931
2004–05	26,146	30,755	34,103	10,043
2011–12	42,781	44,176	44,688	17,662
Income at current prices				
2011–12	78,264	80,817	81,753	32,311

Real income at 2004–05 prices obtained by deflating current income by CPIAL (2004–05 Base).

Source: Computed by authors.

trebled. Wage earnings per labourer in the same period rose 3.2 times. In 2011–12, a member of a farming family engaged in agriculture earned an annual income of Rs 78,200 at current prices. One hectare of net cultivated area generated an income of Rs 80,800 to a farmer, which was only slightly lower than the income per holding.

#### Growth in Farm Income and Its Sources

The increase in farm income measured on the basis of different denominators showed a lot of variation in different periods (Table 5). Total farm income in real terms increased at the rate of 3.67% per year between 1983–84 and 1993–94. In the next 11 years (ending 2004–05), growth in total farm income slowed down to 3.30% per year but the number of cultivators increased by 15%. As a result, per cultivator income did not increase even by 2% per year. After 2004–05, the annual growth rate of the income of farmers accelerated to 5.36%. At the same time, the number of cultivators declined from 166 million in 2004–05 to 146 million in 2011–12. Thus, an impressive growth in output and sectoral income, combined with farm family members moving away from agriculture, resulted in an unprecedented annual growth of 7.3% in per cultivator income from farming.

**Table 5: Various Dimensions of Growth in Farm Income**

Period	Total	Per Cultivator	Per Holding	Per Hectare of Net Sown Area
1983–84 to 1993–94	3.67	2.74	1.85	3.73
1993–94 to 2004–05	3.30	1.96	2.10	3.38
2004–05 to 2011–12	5.36	7.29	3.94	5.31

Source: Computed by authors.

It is evident that the growth rate in real farm income of a cultivator is determined by growth in output; the rate of increase in input cost; changes in wage rates, the number of hired labourers and days of employment in a year; growth in prices of agricultural commodities at the farm level; and the level of inflation. The growth rate in each of these parameters during different periods is presented in Table 6 (p 143), which gives an idea about the sources of growth of farm income in different periods.

The first factor which goes into determining farm income is growth in output. From 1983–84 to 1993–94, output of the farm sector increased by 2.46% per year, the cost of inputs went up by 2% a year, and wage rates for agricultural labour

relative to the CPIAL grew at 3.46% a year. This decade also saw a more than 2% annual increase in the number of agricultural labourers hired and 0.58% annual increase in days of labour employment. The combined effect of increases in hired labour and wage rates resulted in 6.5% annual increase in the wage bill paid by producer-farmers. Total farm income in this decade increased at 3.7% while farm income per cultivator increased by 2.74%, as almost 1% of the increase in total farm income was offset by the increase in the number of cultivators. In the next decade, 1993-94 to 2004-05, the growth in output remained almost the same, but the growth in the wage bill was small compared to the previous decade. There was also less growth in the real prices of farm products, while the number of cultivators increased. The net result was poor growth of less than 2% a year in the farm income earned by a cultivator.

The third period, 2004-05 to 2011-12, saw much higher growth in output and in inputs. This period recorded a more than 6.5% annual increase in the real wage rate. However, the number of agricultural labourers declined by 2.4% per year, which moderated the increase in the wage bill to 5.8% per annum, as there was no significant change in the days of employment. Real prices of agricultural produce at the farm level increased more than 1% a year. The net effect on farm income has been a robust 5.36% rate of growth. What is unique about this period is a substantial decline in the number of cultivators, which raised growth in per cultivator farm income to 7.29%.

**Table 6: Growth in Different Variables Included in Computation of Farm Income**

Particular	1983-84 to 1993-94	1993-94 to 2004-05	2004-05 to 2011-12
Output at constant prices of year 2004-05	2.46	2.44	4.20
Cost of inputs at constant prices of year 2004-05	2.03	2.27	4.05
Wage rate deflated by CPIAL base year 2004-05	3.46	2.46	6.54
Number of labourers	2.39	-0.28	-2.40
Days of employment of hired labour	0.58	-0.59	0.06
Wage bill deflated by CPIAL	6.49	1.61	5.80
Ratio of farm gate prices to CPIAL	1.46	0.65	1.15
Farm income deflated by CPIAL	3.67	3.30	5.36
Number of cultivators	0.90	1.31	-1.80
Farm income per cultivator deflated by CPIAL	2.74	1.96	7.29

Source: Computed by authors.

It is inferred from the comparison of growth in different variables in the three periods that a decent growth in a farmer's income requires (i) reasonably high growth in output; (ii) favourable prices for farm produce; and (iii) a reduction in the number of cultivators. It is also inferred that high growth in output and farm income is accompanied by a high growth in wage earnings.

## 5 Farm Income, Agrarian Distress and Farm Poverty

It is important to examine the status of a farmer's income in relation to the incomes of other sections of society and also in relation to some threshold level such as the poverty line. It is often felt that disparity between farm income and non-farm income is rising (Chand 2008) and that those who work outside agriculture are progressing much faster than those who

work in it. It is also alleged that labour in agriculture is becoming more costly and eating into the net income of farmers. These factors are considered the reasons for rising distress among farmers in the country. This paper provides some empirical basis to look into these aspects (Table 7 and Figure 1).

**Table 7: Disparities in Agriculture and Non-agriculture Income**

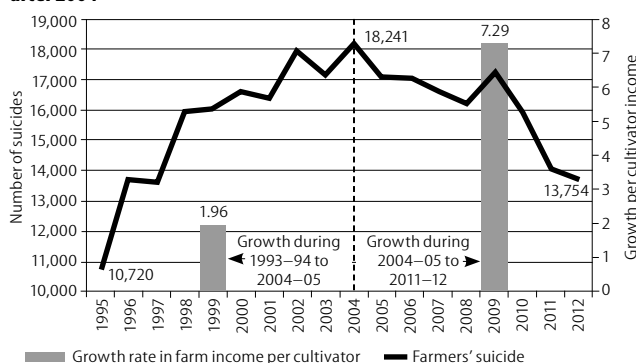
Year	Farm Income Per Cultivator (Rs) F	Wage Earning Per Agricultural Labourer (Rs) L	Income Per Non-agriculture Worker (Rs) N	Ratio L:F	Ratio N:F
1983-84	4,286	1,467	12,786	0.34	2.98
1987-88	5,653	2,201	18,036	0.39	3.19
1993-94	12,365	4,784	37,763	0.39	3.05
1999-2000	24,188	8,938	78,565	0.37	3.25
2004-05	26,146	10,043	1,06,688	0.38	4.08
2011-12	78,264	32,311	2,46,514	0.41	3.15

Source: Computed by the authors.

In 1983-84, a cultivator earned three times what a labourer earned. A non-agriculture worker earned three times the income earned by a farmer or his family members engaged in agriculture as their main activity. In the next five years, the income of a cultivator increased at a lower rate compared to the income earned by an agricultural labourer and a non-agriculture worker. Accordingly, there was a small decline in the disparity between farm income per cultivator and the income of a labourer. A cultivator continued to earn two and half times the income of a labourer in agriculture from 1987-88 to 2004-05. The disparity further fell by 2011-12 when the income of a cultivator declined to 2.4 times the wage earnings of a labourer. The disparity in income of a cultivator and a non-agricultural worker increased from 1:3 to 1:4 between 1983-84 and 2004-05. After this, the disparity in farm and non-farm income declined to 1:3.15; and a non-agricultural worker earned 3.15 times the income of a cultivator in 2011-12. Acceleration in growth of agricultural output and a decline in the number of cultivators from 2004-05 to 2011-12 arrested and reversed the rising disparity in the incomes of farmers and non-farmers. This period also witnessed a decline, albeit small, in the wide disparity between the incomes of agricultural labourers and non-agricultural workers. Therefore, the accelerated agricultural growth from 2004-05 to 2011-12 can be termed pro-poor and inclusive.

It is concluded from Table 7 that in the two decades after 1983-84, the growth in income of farmers and agricultural

**Figure 1: Trend in Farmers' Suicides and Growth in Farm Income before and after 2004**

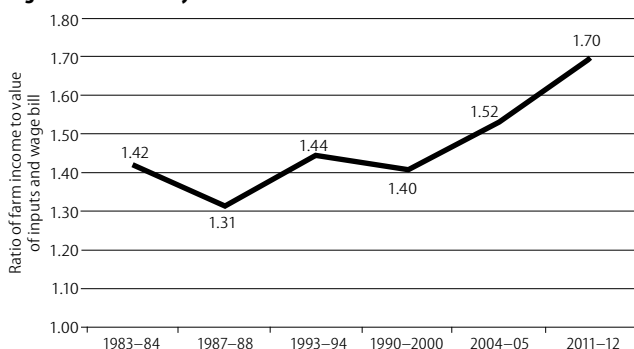


Source: Table 5; National Crime Records Bureau.

labourer could not keep pace with the growth in income earned by non-agriculture workers. However, recent years have seen some narrowing of gap in the income earned by those who are engaged in agricultural activities and those who are engaged in non-agricultural occupations. Between farmer and agricultural labourer, the development process has benefited the latter a little more, but there still remains a large gap between the incomes of a cultivator and an agricultural labourer.

To see the effect of growth of farmers' income on agrarian distress, the paper examined trends in farmers' suicides in the country. As can be seen from Figure 1, the number of farmers' suicides from 1995 to 2005 increased from 10,700 to 18,200—an increase of 70% in 11 years. The growth rate in per farmer income in this period was a mere 1.96%, which was the lowest in the last three decades. After 2004, the growth rate in per cultivator farm income accelerated to 7.29% and the number of farmers' suicides dropped to 13,700 by 2012. This indicates that the low growth rate in farm income was associated with an increase in farmers' distress, and high growth rate is associated with a decline in agrarian distress.

**Figure 2: Profitability of Farm Sector**



Source: Computed by the authors from Table 1.

A comparison of the income of a farmer with the poverty line for rural India shows that the average income of a farmer household dependent on agriculture is only 58% above the poverty line based on the Tendulkar methodology<sup>3</sup> (Planning Commission 2013). The average farm income per farm household is estimated to be Rs 77,230, while the poverty line for a family of five members in rural areas is Rs 48,960. This also implies that a farmer having landholding below 0.63 hectares will not earn enough income from agriculture even to keep his family out of poverty. In other words, about 53% of farm households in India will be living in poverty if they do not have earnings from non-farm sources.

## 6 Profitability of Farming

Farmers often complain of a decline in profitability from farming. The results presented in the previous sections show that the total profit from farm income did not decline during the study period. However, the more appropriate indicator of the profitability of investment is in terms of income in relation to investments. This has been worked out as the ratio of farm income to total value of all agricultural inputs and the wage bill paid to hired labour, all at current prices. The results are presented in Figure 2. One rupee invested in farming generated a

net farm income of Rs 1.42 in 1983–84 and the situation did not change till 1999–2000. A small breakthrough in the rate of profit was seen in 2004–05 when Re 1 spent by a farmer in agriculture generated a farm income of Rs 1.52. The latest data reveals that one rupee invested in farming yields a net income of Rs 1.70 to farmers. These results do not indicate any squeeze in the profitability of farming, measured by the income of farmer per rupee cost, including hired labour, and profitability showed a surge after 1999–2000.

## 7 Post-2011–12 Scenario

India had unseasonal rains in March and April 2015 after an adverse monsoon in 2014. While the poor monsoon caused a decline in the kharif output, prolonged and heavy unseasonal rains and hail damaged wheat and other rabi crops in many parts of the country when they were ready for harvest. Two consecutive seasons of poor harvest and apprehensions about the Land Acquisition Bill have led to a spate of protests by farmers on the neglect of agriculture and the injustice to them. This has again brought the issue of farmers' distress to the centre stage, though there have been signs of improvement since the mid-2000s. It is ironical that a country that boasted of record production, a large export surplus and other achievements in agriculture a year ago (2013–14) is suddenly haunted by farmers' distress and suicides attributed to low and stagnant farm income. These recent developments make it pertinent for this paper to examine if things in the farm sector went terribly wrong after 2011–12, a year when farmers' income was showing reasonably impressive growth.

As mentioned in Section 4, the level and growth in farm income is determined by the growth in agriculture value added, which includes productivity and output, changes in real prices of agricultural commodities, the wage rate of agricultural labour, and changes in the number of cultivators. The value added in agriculture shows a growth of 1.19% in 2013–14 and 3.8% in 2013–14. As per the advance estimates of GDP for 2014–15 released by the CSO, the gross value added in agriculture and allied sectors was expected to increase by 1.1% in 2014–15. However, this growth rate will drop when crop losses due to the freak weather in recent months are factored in. Though the exact extent of damage is not yet known, according to newspaper reports, states have reported a total loss to crops of Rs 6,677 crore. This loss will pull down the growth in value added in the agriculture sector from the anticipated 1.1% to 0.79% in 2014–15. Thus, the average growth in value added or GDP agriculture during the three years after 2011–12 drops to 1.93%, which is less than half the growth rate achieved from 2004–05 to 2011–12. Excluding 2002–03, this is the lowest growth in GDP agriculture in any three consecutive years since 1991–92. The reasons for this decline are obvious. The use of productivity-enhancing inputs has dropped sharply in the last three years. Between 2011–12 and 2013–14, consumption of NPK fertiliser declined from 27.7 million tonnes to 24.48 million tonnes and production of breeder seeds and foundation seeds declined from 1,45,000 tonnes to 99,700 tonnes.

The second factor in calculation of farm income is the change in the real prices of agricultural commodities. This

presents a mixed picture. The index of wholesale prices shows that even after 2011–12, wholesale agricultural prices increased at a faster rate than non-agricultural prices. However, the CPIAL, which is considered a relevant deflator for farm income, shows a higher increase than the increase in the wholesale price index (WPI) for agricultural commodities and farm gate prices. As producers, farmers get wholesale prices, and as consumers, they pay retail or consumer prices. The WPI for agriculture and farm gate price index deflated by the CPIAL shows a negative growth of around 1% per year from 2011–12 to 2014–15. Thus the value added in agriculture deflated by the CPIAL increased by about 1% a year after 2011–12. If the increase in wage bill paid by farmers followed a similar increase as the other costs of production, real farm income (as deflated by the CPIAL) would have increased by about 1% per year post-2011–12. This growth rate is just one-fifth of the growth rate in farm income from 2004–05 to 2011–12. Surely, such a low growth in farm income is a strong factor responsible for the increase in distress among farmers.

## 8 Conclusions

The income earned by farmers from agricultural activities after paying for input costs and the wages for hired labour has seen low to high growth in different periods during the last three decades. In none of the periods do farmers' income or profitability of farming show any squeeze. The share of farm income in the net value added of agriculture followed a decline during 1983–84 to 1999–2000 and recovered thereafter to the level of 1983–84. The recent data shows that total income of agriculture sector in the country is distributed between cultivators and

labourers in the ratio of 82:18. Farm income per cultivator increased by 2.74% a year from 1983–84 to 1993–94 and dropped to below 2% in the next decade. From 2004–05 to 2011–12, per cultivator farm income increased by 7.3% a year. The study found that decent growth in a farmer's income requires high growth in output, favourable prices for farm produce, and some cultivators moving away from agriculture.

The high growth in output and farm income was accompanied by a high growth in wage earnings. In the two decades after 1983–84, the growth in farmers' and agricultural labourers' incomes could not keep pace with the growth in income of non-agriculture workers. However, recent years have seen some narrowing of the gap. A high growth in farm income is found to reduce income disparities and promote inclusive growth.

A low growth rate in farm income is associated with an increase in agrarian distress as the number of farmers' suicides increased during the phase of low growth and decreased when farm income increased at a higher rate. A comparison of the income of a farmer with the poverty line for rural India shows that the average income of a farmer household dependent entirely on agriculture is only 58% above the poverty line and about 53% of farm households in India will be living under the poverty if they do not adopt high income-generating farm activities or earn some income from non-farm sources.

The pace of growth in farmers' income that begun around 2004–05, which reduced the disparity in growth in incomes of farmers and non-farmers, could not be sustained after 2011–12. It looks like the growth in farm income post-2011–12 has plummeted to around 1%, and this is an important reason for the sudden rise in agrarian distress in the recent years.

## NOTES

- 1 They employed a unique data set and new time-series techniques to re-examine the existence of trends in relative primary commodity prices, and found that in the very long run, a secular and deteriorating trend is seen for a significant proportion of primary commodities.
- 2 The author applied "unit root" econometric techniques on the Grilli-Yang series and concluded that a secular decline in the terms of trade of primary commodities vis-à-vis manufactured commodities is not a myth, but reality.
- 3 As per the Tendulkar methodology, the poverty line has been expressed in terms of average monthly per capita expenditure (MPCE) based on a mixed reference period for rural and urban areas. The poverty line for 2011–12 for rural and urban areas based on the MPCE is estimated at Rs 816 and Rs 1,000, respectively. Thus, for a family of five, the poverty line in rural areas in terms of annual consumption expenditure turns out to be Rs 48,960.

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