

Is Doubling Farmers Income an Achievable by 2022-23 ? Empirical Evidence from Recent Trends

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ABSTRACT: In view of farmers distress, the government of India in 2015-16 has set a goal to double the farmers income by 2022-23. The aim of the goal is to promote farmer welfare and to bring parity between income of farmers and non-farm workers. The challenge of the study was to estimate empirical evidence to assess the possibility of doubling the farmers income in Indian context.

This paper examined the current trends in overall GDP and agricultural GDP at both current and constant prices over the past three decades and also analyzed incremental increase for the period under consideration (1993-94 to 2019-20). The agricultural GDP was considered as a composite indicator to reflect the level of farmers income as other sources of farm income such as nonfarm income is not systematically available. The study primarily assessed the growth trends in overall GDP and agricultural GDP and brought out the possibilities of doubling the farmers income in the seven years of period (2015-16 to 2022-23) as targeted by the government of India. The results showed that the registered growth of less than 4 per cent in agricultural GDP is not adequate to double the farmers income and it seems to be a remote possibility.

Keywords: Agricultural GDP, Incremental increase, Income, Growth.

INTRODUCTION

Agriculture supports the basic livelihood of 495 million citizens and 100.7 million households in India directly (NABARD, 2017). Though the green revolution success made India surplus in food production at aggregate level and net exporter of food grains, it also made the agriculture high input intensive. The economic impact of raise in input prices and uneconomic holdings led to stagnation in income levels of farmers and made the farming non-profitable. The past strategies of governments were also focused on rising output and improving food security. The agrarian distress caused in 1990's turned quite serious in some years and witnessed a sharp increase in the number of farmer suicides during 1995 to 2004. This period also coincided with the sharp decline in growth rate of agricultural output (Chand and Parappurathu 2012).

During early 1980s, farm income per cultivator was just 34 per cent of income of a non-farm worker. After economic reform in India, in 1993-94 relative income of the farmers worsened and reached one-fourth of

income of non-agricultural worker (Chand, 2017). There was improvement during 2004-05 to 2011-12, but no change over the 1983-84 level. Again from 2012-13 to 2015-16 witnessed deterioration in relative income of farmers. The NSSO 68th round data on consumption expenditure survey for the year 2011-12 revealed that more than one fifth of rural households with self -employment in agriculture as their principal occupation were having income less than the poverty line. Unless farmers' income increases substantially, distress cannot be tackled.

In view of the above context the government of India has set a goal in 2015-16 to double the farmers income by 2022-23. The goal aimed at promoting farmers welfare, reduce agrarian distress and to bring parity between income of farmers and those working in non-agricultural professions. The goal of doubling farmers income has been viewed as impossible and unrealistic by some experts as it requires growth rate of 14.86 per cent per year for five years which had not even achieved once in the history of Indian agriculture

(Gulati and Saini 2016). Similarly, it requires 10.4 per cent of average compound growth rate in agricultural sector to double farmer income in seven years i.e., from 2015-16 to 2022-23. As presented in table 1 the average growth in either agricultural or overall GDP (at constant prices) has never been touched double digit in any decade after 1990s. In particular agricultural GDP has not even been registered more than 5 per cent growth during any decade after 1990's.

The composition of farmers income comprises of income accrued from various sources (a. crop income, b. income from livestock, fisheries and dairy, c. income from agricultural wages and d. income from non-farm activities). There are hardly any data sources that can give time series estimates of income of farmers from all these sources. Sen and Bhatia (2004) estimated farmers income using the cost of cultivation data which reflects only crop income. At aggregate level time series data on gross value added of crops, livestock's, fisheries, dairy and farm forestry is available in the form of agricultural GDP. Therefore, agricultural GDP at national level may be considered as a composite indicator to represent the average farmers income in India. However, the GDP from agriculture is only one possible source though it is not comprehensive (Sathyasai and Bharti, 2016). Therefore, the current study used agricultural GDP as a composite indicator to understand the trends in farmers income.

The principal objective of this study is to estimate empirical evidence to assess the possibility of doubling the farmers income in any seven years in Indian context.

MATERIALS AND METHODS

Data pertaining to overall GDP and agricultural GDP has been collected both at current and constant prices from 1993-94 to 2019-20. Constant prices data is available in different base year periods (1993-94, 1999-00, 2004-05 and 2011-12) which makes the comparison among the different time period difficult. Therefore, the constant prices data has been converted into a single base year series of 1993-94 using splicing technique.

A. Splicing technique

The splicing techniques was used for conversion of different base year data into single base year. The procedure of splicing technique is as follows

If we have two time series data with overlapping observation, one with base year X and other with Y, then to change the base year of X to Y

$$\text{Value } Y_{t+1} = \text{Value } X_{t+1} * \left[\frac{\text{Value of } Y_t}{\text{Value of } X_t} \right]$$

Where Y_{t+1} = Estimated value of base year Y for the time period t+1

X_{t+1} = Value of the base year X of the time period t+1

Y_t = Value of the time series with base year Y of time period t

X_t = Value of the time series with base year X of time period t

In other words, value of new series equals the old series multiplied by the ratio of series.

B. Estimation of sources of incremental increases

Incremental increases in the selected indicators (agricultural GDP, GDP) between two points of period was estimated and sources of these incremental increase were also worked out by sub-periods (1993-94 to 2000-01, 2000-01 to 2007-08, 2007-08 to 2014-15 and 2014-15 to 2019-20).

The following formula has been used to estimate the share of sub-periods in the total incremental increase in the selected indicator between base year (1993-94) and terminal year (2019-20).

1. $PI_i = Y_{iT} - Y_{it}$
2. $PI_i = P_1 Y_{iT} - P_1 Y_{it}, P_2 Y_{iT} - P_2 Y_{it}, \dots, P_n Y_{iT} - P_n Y_{it}$
3. Therefore, share of $P_n I_i = \frac{P_n Y_{iT} - P_n Y_{it}}{PI_i}$

Where,

PI_i = Incremental increase in i^{th} indicator/variable between base year and terminal year during the period P (1993-94 to 2019-20)

Y_{iT} = Quantity of i^{th} indicator/variable during the terminal year (2019-20)

Y_{it} = Quantity of i^{th} indicator/variable during base year (1993-94)

$P_1 Y_{iT}$ = Quantity of i^{th} variable/indicator during terminal year of the period 1

$P_1 Y_{it}$ = Quantity of i^{th} variable/indicator during base year of the period 1

$P_2 Y_{iT}$ = Quantity of i^{th} variable/indicator during terminal year of the period 2

$P_2 Y_{it}$ = Quantity of i^{th} variable/indicator during base year of the period 2

$P_n Y_{iT}$ = Quantity of i^{th} variable/indicator during terminal year of the period n

$P_n Y_{it}$ = Quantity of i^{th} variable/indicator during base year of the period n

RESULTS AND DISCUSSION

The trends in overall GDP and agricultural GDP both at current and constant prices and the contribution of different time periods to incremental increase were analysed for the period under study (1993-94 to 2019-20) and same were reported.

Table 1: Compound annual growth rate of overall GDP vis-à-vis agricultural GDP of India, 1993-94 to 2019-20 (at 1993-94 constant prices).

Period	India	
	GDP	Ag. GDP
1993-94 to 2003-04	6.53	2.22
2004-05 to 2013-14	9.31	4.79
2014-15 to 2019-20	7.24	3.77
1993-94 to 2019-20	8.15	3.75

Source: Authors estimate based on the time series data

Table 1 presents decade wise compound growth rate of overall and agricultural GDP at 1993-94 constant prices. It is clear from the table 1 that the decade of 2004-05 to 2013-14 was found to be the best period with highest average compound growth rate of 9.31 per cent per year in overall GDP. The recent past of 6 years i.e., from 2014-15 to 2019-20 (pre corona period) has also witnessed significant compound growth rate in overall GDP at about 7.24 per cent per year. It is not out

of the context to mention that the Central Statistical Office (CSO) has modified GDP estimation procedure during 2015-16 and the new series of GDP estimates were published. It has been noticed that under the modified GDP estimation method informal sector output estimation witnessed significant changes which was not the case until 2014-15 (Nagaraj and Srinivasan 2016). As a result of it, new series of GDP estimates from 2015-16 are over estimated by 3.5-5.5 per cent which were heavily criticised by several economist like Nagaraj (2016); Subrahmanyam (2019). Therefore, the compound growth rate of GDP shown in the table 1 for the period 2014-15 to 2019-20 are based on the official GDP estimates using modified estimation method which were not really comparable with GDP growth rate of previous two decades (1993-94 to 2013-14). If had the previous GDP estimation procedure was followed for the period 2014-15 to 2019-20, the compound growth rates of overall GDP in last six years would have been much lower than what is reported in Table 1.

The average compound growth rate of agricultural GDP which is considered as a composite indicator of farmers income was highest during the period 2004-05 to 2013-

14 (4.8 % per year). The special focus given to agricultural sector soon after new government came into power during 2004 in terms of increased investment in agricultural infrastructure through Rastriya Krishi Vikas Yojana (RKVY), initiation of National Agricultural Policy (NAP) with an objective of achieving a high and sustainable growth in farming by implementing various policies related to agricultural development and also increased flow of institutional credit to the farmers contributed immensely to agricultural growth during this decade. Similarly, agricultural GDP at constant prices has grown at least 3.7 per cent per year during 2014-15 to 2019-20. However, this growth rate is highly inadequate to double the farmers income by 2022-23, as targeted by the government of India in 2015-16. Any number that is to be doubled in any 7 years period should increase at compound growth rate of 10.5 per cent per year (Chand, 2017) but the actual registered average growth rate in the first five years (2015-16 to 2019-20) was less than 4 per cent per year. Under these circumstances the achievement of doubling farmers income by 2022-23 seems to be far away from the reality.

Table 2: Percentage (%) increase in agriculture GDP per every seven years in India, 1993-94 to 2020-21.

Sr. No.	Period	Current Prices	Constant Prices (1993-94)
1.	1993-1994 to 1999-2000	84.30	19.31
2.	2000-2001 to 2006-2007	60.81	26.04
3.	2007-2008 to 2013-2014	130.28	33.61
4.	2014-2015 to 2020-2021	67.94	27.01

Source: authors estimate based on time series data

Table 3: Percentage (%) increase in India's GDP per every seven years during 1993-94 to 2020-21.

Sr. No.	Period	Current Prices	Constant Prices (1993-94)
1	1993-1994 to 1999-2000	129.10	55.02
2	2000-2001 to 2006-2007	105.32	66.63
3	2007-2008 to 2013-2014	143.12	69.20
4	2014-2015 to 2020-2021	61.79	31.58

Source: authors estimate based on time series data

Further the percentage increase in overall GDP and agricultural GDP at current and constant prices (1993-94) between every seven years during the period 1993-94 to 2020-21 were examined to understand the level of increase in GDP in the previous time periods (Table 2 and 3). Accordingly, the changes (%) in overall GDP and agricultural GDP for four periods of seven years each (1993-94 to 1999-2000, 2000-01 to 2006-07, 2007-08 to 2013-14 and 2020-21) were computed to understand how GDP and agricultural GDP grown in each seven years over the past three decades. In the first seven years period (1993-94 to 1999-2000), the agricultural GDP has increased by only 19.31 per cent at constant prices although it was 84.30 per cent at current prices. The highest percentage increase was achieved during 2007-08 to 2013-14 (33.61%) among four time periods of seven years each in three decades of period under the study. In the same period agricultural GDP at current prices was more than

doubles due to significant growth during this period because of special emphasis given to agricultural sector. The percentage increase in agricultural GDP at constant prices in the recent past seven years (2014-15 to 2020-21) was only 27.01 per cent as against the targeted 100 per cent. During the same period at current prices agricultural GDP has not been doubled. Similar trend has been observed in overall GDP growth. The long-term trends in agricultural GDP (Fig. 1) clearly shows that at current prices GDP has been doubled during 2007-08 to 2013-14. Further it may be noted from Fig. 1 that agricultural GDP at constant prices during the year 2019-20 was about Rs. 6.23 lakh crores, rose from 3.12 lakh crores in 2003-04. This imply that it took about 17 years to double the agricultural GDP at constant prices by 2019-20. Thus, the long-term trend in agricultural GDP clearly points out that it can't be doubled in real terms during any seven years of period. The incremental increase in agricultural GDP at constant prices between 1993-94 to 2019-20 was 3.85

lakh crores. Out of this incremental increase the maximum share was contributed by the best performed period of 2007-08 to 2014-15 followed by the recent period (Fig. 2).

As the agricultural GDP in this study considered as an indicator of farmers income, the other sources of aggregate farmers income other than gross value added (GDP) such as income from non-farm sources were not considered in this study. Therefore, the trends in the

agricultural GDP does not reflect the actual trend of farmers income. However gross value added in agriculture (crops, livestock, dairy and fisheries etc.) constitutes major share of farmers income. It is also reported that the non-farm income sources were also not sizable in rural India (Vatta and Budhiraja, 2020). Under these trends it may be concluded that farmers income in the recent past seven years have not been doubled but grown only by less than 30 per cent.

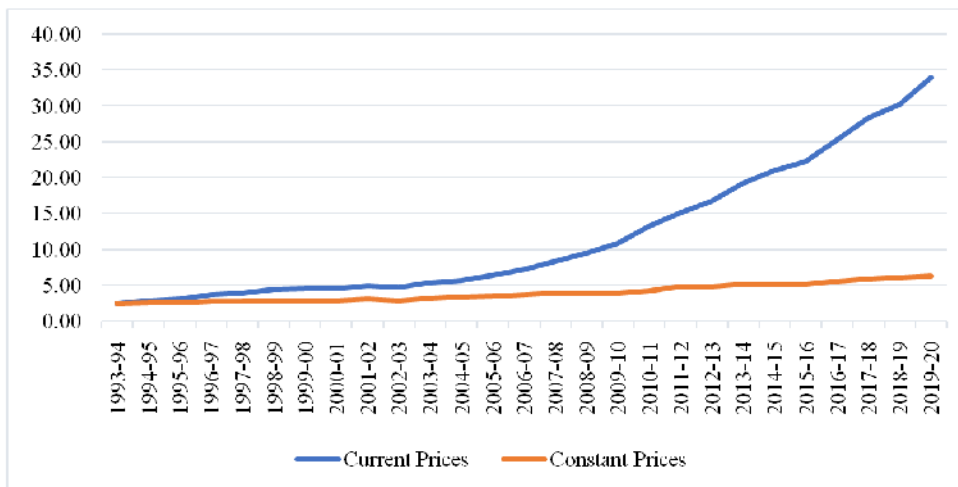


Fig. 1. Trends in agricultural GDP of India at current and constant prices (Rs. lakh crores)

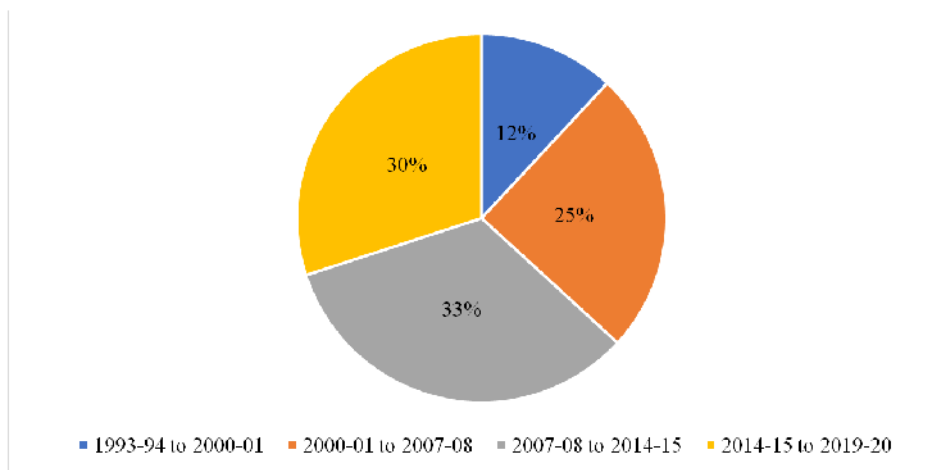


Fig. 2. Share of different time periods in incremental increase of agricultural GDP in India at 1993-94 constant prices from 1993-94 to 2019-20.

CONCLUSIONS

The average compound growth rate of agricultural GDP (1993-94 constant prices) was highest during the period 2004-05 to 2013-14 compared to the other time periods in the three decades. The special focus in terms of substantial public and private investment in agriculture and increased flow of institutional credit contributed to the impressive growth during this period. Despite the highest growth rate in this decade, the percentage increase in agricultural GDP (at constant prices) in seven years of period of the decade i.e., from 2007-08 to 2013-14 was 33.61 per cent only. In the recent past

seven years (2014-15 to 2019-20) the agricultural GDP at constant prices has grown only by 27 per cent which is far below than doubling the farmers income by 2022-23. Further it is observed that it took 17 years to double agricultural GDP between 2003-04 to 2019-20. Therefore, the registered growth of less than 4 per cent in agricultural GDP is inadequate to double the farmers income in any seven years period. Under these situations the possibility of doubling farmers income by 2022-23 seems to be highly unlikely. The growth rate registered in the Indian context is very much less than

what is required to double the farmers income and it is far away from the reality.

FUTURE SCOPE

As it is mentioned in the study the aim of doubling farmers is far away from the reality. The government should come up with a more comprehensive policy initiative to bring it to the reality. The precondition for such transformation is that the government should emphasize on growth of productive agriculture and non-farm sector having linkage with agriculture.

Conflict of Interest. None.

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