
Farmers' Income: Trend and Strategies for Doubling

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ABSTRACT

The objectives of the paper are: to understand the pattern of income growth and diversification of the sources of income over time across different size classes and the states, and, to assess the possibility of doubling the farmers' income in six years and discuss the strategies for doubling the incomes. This paper addresses the issue of doubling farmers' income by 2022 as announced in this year's Union Budget in the light of the trends in farmers' income over last decade based on 59th and 70th round NSSO Situation Assessment Surveys. The data pertains to the years 2002-03 and 2012-13. The paper finds that doubling over 5 to 6 years in nominal terms is already happening while doubling the real incomes of farmers in six years is a formidable task though may not be altogether impossible if proper strategies are implemented. The strategies should be multi-pronged and address enhancing returns and reducing costs and making the incomes sustainable keeping in view the depleting natural resource base. Before anything else, we should have reliable data, periodically, on incomes for monitoring the progress. Income referred in this paper is net of production costs.

Keywords: Farmers' income, Doubling farmers' income

JEL: O4, Q18, Q13

INTRODUCTION

The proposal to double the income of farmers by 2022 as announced by the Honourable Finance Minister Shri Arun Jaitley during his budget speech on February 29, 2016 evoked mixed response. While a few scholars notably M.S. Swaminathan and K.J. Kurian maintained that it is possible to double the incomes most others like Ashok Gulati, Ashok V. Desai, Abhishek Waghmare, Devinder Sharma were sceptical about the possibility of doubling income. According to them, the major constraints for doubling of income are low and unrealisable Minimum Support Price (MSP), non-remunerative price in the market, low share of farmers in final price, poor penetration of crop insurance, high and increasing input cost, absence of market infrastructure and past record of modest growth compared to 12 per cent needed for doubling in nominal terms (20 to 30 per cent in real terms). The reaction on the proposal brings to fore certain questions: What should be the metric for measuring the progress and which is the baseline data for comparison? Should not the comparison be in real terms though the announcement did not specify? Do we have evidence of income growth in the past decades and if so, what does it tell us about the

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possibility of doubling incomes? What are the strategies needed for improving or doubling farmers' income?

This paper aims to address some of the above questions and presents the income patterns across agricultural households in the country. Thus, the objectives of the paper are: (1) To understand the pattern of income growth and diversification of the sources of income over time across different size classes and the states, and (2) To assess the possibility of doubling the farmers' income in six years and discuss the strategies for doubling the incomes

DATA AND METHODOLOGY

NSSO Situation Assessment Surveys in 59th and 70th Rounds formed the basis of data for this paper. The Surveys covered the years 2002-03 and 2012-13, respectively. The surveys are the only sources of direct estimates of income of the farmers. The first survey covered farmers and the second survey covered agricultural households covering households pursuing agriculture in a broader sense. In view of the differences in the sample coverage and the concepts used, these surveys are strictly not comparable. Since, there is no other source of farm income, we used the available data for this paper. Caution is needed, however, in interpreting the data and drawing conclusions.

Trends in the income over the decade were estimated using the two end points, namely 2002-03 and 2012-13. Compound growth rate (r) was computed using the formula: $r = \{1 - (Y_1/Y_0)^{1/10}\} * 100$. Y_1 and Y_0 are incomes obtained during 2012-13 and 2002-03, respectively. Real growth rate was obtained by adjusting for inflation, computed in terms of growth in GDP deflator. State-specific deflator was used to adjust growth rates at the state level.

Besides computing income growth over the decade, the extent of diversification of income was computed using Simpson's Index of Diversification which was measured as $(1 - \sum S_i^2)$, where S_i was the share of i -th source in total. Value of zero for the index means income coming from a single source and a value of one means total diversification.

The data for Andhra Pradesh, Telangana, Uttarakhand and Uttar Pradesh for the year 2012-13 were separately given. For comparability, they were aggregated using the number of households as the weights.

RESULTS AND DISCUSSION

Trend in Farmers' Income – All India

Time series estimates of income of farmers from different sources are hardly available. Cost of cultivation data gives crop-wise income details for several years and have been used to estimate farm incomes by Sen and Bhatia (2004). These estimates do not account for other sources of income such as from livestock and non-

farm business and cover only a few crops grown and that too for a not all the states. Gross domestic product (GDP) from agriculture is one possible source but unless we add income from other sources such as rural non-farm sector and wages, we will not get full picture. Whatever the efforts made so far by a few scholars suffer from shortcomings. Chand *et al.*, (2015) discussed and also computed farm income series for 30 years from 1983-84 to 2011-12 by netting out wage bill for hired labour from net domestic product (NDP) from agriculture and allied sectors. The income so derived did not include earnings from non-farm sector activities and salaries and were indirect estimates. Their estimates revealed that income in real terms was Rs.44688 per holding which increased from Rs.22603 during 1983-84 and Rs.34103 during 2004-05. In other words, the real income grew at the compounded rate of 3.94 per cent per annum during 2004-05 to 2011-12 which is the fastest compared to previous two decades. It took about 18 years for the income to double if income grew at the rate of 3.94 per cent. In nominal terms, however, it took just 5.55 years for income to double i.e., by 2010, from the 2004-05 level.

A few conclusions can be drawn based on the trends in farm income from 1983-84 till 2011-12: (1) The income earned by farmers net of input cost and wage bill has seen low and high growth paths in different periods; (2) The growth in farm income accelerated towards recent period ending 2011-12; (3) Decent growth in farm income requires high growth in output, favourable farm produce prices and some cultivators moving out of agriculture; (4) A high growth in agriculture can reduce income disparities and promote inclusive growth; (5) Low growth of farm income seems to have been associated with agrarian distress and number of suicides and the distress in recent years is likely due to poor growth in farm income post-2011-12; and, (6) More than half of farm households in the country would remain below poverty level unless they adopt high-income earning avenues and augmenting their incomes through non-farm activities (Chand *et al.*, 2015).

The major source of information on income of the farmers based on large sample survey is *Situation Assessment Survey (SAS)* by National Sample Survey Organisation (NSSO) conducted during 2002-03 for the first time and repeated during 2012-13. A few trends based on these surveys are given here under.

Table 1 reveals that the total income per an average agricultural holding improved to Rs.77112 during 2012-13 from Rs.25380 during 2002-03. That is, the income grew at a compounded annual rate of 11.75 per cent which is almost enough for doubling income in about 6 years. However, when measured in real terms, the income growth was 5.24 per cent and doubling of income would take almost 14 years at this rate. The growth rates increased though marginally as we move from lower marginal to large farm size categories. Hence, large farmers took less number of years to double their incomes compared to lower marginal farmers. Also, the increment in income during the year 2012-13 over that during 2002-03 increased as the farm holding size increased.

TABLE 1. INCOME OF FARMERS AND GROWTH DURING LAST DECADE

Size class of land holdings (hectares) (1)	Total annual income (Rs.) per agricultural holding		CAGR (per cent) (4)	Real CAGR (per cent) (5)	Doubling time	
	2002-03 (2)	2012-13 (3)			@nominal growth (6)	Doubling time @real growth (7)
	1. Landless < 0.01	16560			54732	12.70
2. Lower Marginal (0.01 - 0.40)	19596	49824	9.78	3.27	7.43	21.54
3. Upper Marginal (0.41 - 1.00)	21708	62964	11.24	4.73	6.51	15.01
4. Small (1.01 - 2.00)	29916	88176	11.42	4.91	6.41	14.47
5. Semi-Medium (2.01 - 4.00)	43068	128760	11.57	5.06	6.33	14.03
6. Medium (4.01 - 10.00)	68172	235644	13.20	6.69	5.59	10.70
7. Large (>10.00)	116004	496656	15.65	9.14	4.77	7.92
All sizes	25380	77112	11.75	5.24	6.24	13.56

Sources: Computed from NSSO (2005 and 2014). *Situation Assessment Survey*, Report No. 497(59/33/5) and 69(70/33/1).

The major source of income for the farmers is cultivation which accounted for about 46 to 48 per cent during both the years (Table 2). Major gain is in the share of income from animal farming from 4 per cent in 2002-03 to 12 per cent in 2012-13. Animal farming emerged as an important source of income by 2012-13 and, thus, can be a key driver for income growth (Chandrasekhar and Mehrotra, 2016). There was a decline in the share of wages as well as non-farm business between the years. As farm size increased the share of income from cultivation increased during both the years. Smaller the farm holding, diversified are the income sources. Remarkably, landless households diversified their income sources increasing the share of animal farming significantly from 5 per cent to 26 per cent.

TABLE 2. DIVERSIFICATION OF INCOME SOURCES OF FARMERS

Size class of land possessed (ha) (1)	Shares of income from different sources					Index of diversification (7)
	Wages/ salary (2)	Cultivation (3)	Livestock (4)	Non- farm business (5)	Total (6)	
	2012-13					
1. Landless < 0.01	64	1	26	10	100	0.52
2. Lower Marginal (0.01 - 0.40)	57	17	15	11	100	0.61
3. Upper Marginal (0.41 - 1.00)	38	41	12	9	100	0.66
4. Small (1.01 - 2.00)	24	57	11	8	100	0.60
5. Semi-Medium (2.01 - 4.00)	15	69	11	5	100	0.49
6. Medium (4.01 - 10.00)	10	78	8	4	100	0.38
7. Large (>10.00)	3	86	6	4	100	0.25
All sizes	32	48	12	8	100	0.65
2002-03						
1. Landless < 0.01	78	1	5	17	100	0.36
2. Lower Marginal (0.01 - 0.40)	60	18	6	17	100	0.58
3. Upper Marginal (0.41 - 1.00)	40	43	6	11	100	0.64
4. Small (1.01 - 2.00)	25	63	4	7	100	0.53
5. Semi-Medium (2.01 - 4.00)	18	75	2	6	100	0.41
6. Medium (4.01 - 10.00)	9	82	0	9	100	0.31
7. Large (>10.00)	6	86	1	7	100	0.25
All sizes	39	46	4	11	100	0.63

Source: Same as for Table 1.

Growth in Income: State Level

The growth rates in income of farm holdings across major states of the country varied from 6.71 per cent in West Bengal to 17.48 per cent in Haryana (Table 3). We used state-specific inflation measured by rate of change in state domestic product (SDP) deflator to convert nominal growth into real growth rates. The lowest real growth rate recorded was less than one per cent in Assam and the highest was 9.81 per cent for Madhya Pradesh. Income doubling time is 8 to 11 years for states like Assam, Bihar, J&K, Jharkhand and West Bengal. For all other states doubling time is around 6 years or less. However, in real terms, the doubling time is beyond 10 years except for Andhra Pradesh, Madhya Pradesh, Odisha and Rajasthan where it is possible to double real income within 10 years. In fact, one should go to district or agro climatic zonal level data to understand spatial variation in time taken for doubling incomes as the strategies designed keeping national or state level patterns would not hold good at disaggregated level.

TABLE 3. LEVEL OF INCOME OF FARM HOLDINGS (RS.) DOUBLING TIME (YEARS)

State (1)	Total annual income (Rs.)		Index of diversification		CAGR (per cent)		Doubling time in years @ given CAGR	
	2002-03 (2)	2012-13 (3)	2002-03 (4)	2012-13 (5)	Nominal (6)	Real (7)	Nominal (8)	Real (9)
Andhra Pradesh	19608	73392	0.626	0.637	14.11	7.19	5.25	9.99
Assam	37932	80340	0.575	0.543	7.79	0.88	9.24	79.34
Bihar	21720	42684	0.672	0.619	6.99	-0.33	10.26	***
Chhattisgarh	19416	62124	0.553	0.455	12.33	4.8	5.96	14.79
Gujarat	32208	95112	0.662	0.687	11.44	5.61	6.4	12.69
Haryana	34584	173208	0.516	0.610	17.48	2.24	4.3	31.28
Jammu & Kashmir	65856	152196	0.646	0.589	8.74	2.65	8.27	26.48
Jharkhand	24828	56652	0.619	0.687	8.6	2.94	8.4	23.93
Karnataka	31392	105984	0.598	0.587	12.94	5.71	5.7	12.48
Kerala	48048	142668	0.635	0.669	11.5	5.95	6.37	12
Madhya Pradesh	17160	74508	0.331	0.521	15.82	9.81	4.72	7.4
Maharashtra	29556	88620	0.618	0.624	11.61	5.66	6.31	12.58
Orissa	12744	59712	0.592	0.720	16.7	9.17	4.49	7.9
Punjab	59520	216708	0.579	0.558	13.79	6.66	5.36	10.75
Rajasthan	17976	88188	0.538	0.672	17.24	9.39	4.36	7.72
Tamil Nadu	24864	83760	0.602	0.704	12.91	6.68	5.71	10.72
Uttar Pradesh	19596	58944	0.607	0.593	11.64	4.72	6.3	15.02
West Bengal	24948	47760	0.658	0.624	6.71	-0.22	10.67	***
All India	25380	77112	0.626	0.646	11.76	5.2	6.24	13.56

Source: Same as for Table 1.

*** cannot be computed due to negative growth in income.

Sources of Income: State Level

The share of income of farm holdings from different sources indicated a lot of variation across the states in terms of composition and shifts in shares over the decade (Table 4). Income from cultivation of crops was the major source of income

in many states in both the years barring states like Kerala, Odisha, Rajasthan, Tamil Nadu and West Bengal where it was less than 40 per cent share in 2002-03 and three more states, viz., Gujarat, J & K, Jharkhand were added to this list by 2012-13 and Rajasthan was barred by recording a share of over 40 per cent. Chhattisgarh showed remarkable increase in share of income from cultivation between the reference years from 50 per cent to 65 per cent. It showed dismal contribution from animal farming and non-farm business in both the years. Kerala and West Bengal had good share of income from non-farm business in both the years.

TABLE 4. SHARES OF DIFFERENT SOURCES OF INCOME, STATE-WISE

State and code (1)	2002-03					2012-13				
	Wages (2)	Cultivation (3)	Livestock (4)	Non-farm business (5)	Total (6)	Wages (7)	Cultivation (8)	Livestock (9)	Non-farm business (10)	Total (11)
Andhra Pradesh (AP)	39	45	6	9	100	34	48	13	6	100
Assam (AS)	31	57	4	8	100	21	63	12	4	100
Bihar (BR)	27	47	15	11	100	37	48	8	7	100
Chhattisgarh (CG)	44	50	0	6	100	36	65	0	0	100
Gujarat (GJ)	34	43	17	5	100	34	37	24	5	100
Haryana (HR)	44	52	-8	12	100	24	55	18	3	100
Jammu & Kashmir (JK)	38	44	7	11	100	58	24	6	12	100
Jharkhand (JR)	45	41	4	10	100	39	31	25	5	100
Karnataka (KA)	40	48	5	6	100	30	56	7	7	100
Kerala (KL)	50	28	4	18	100	44	30	5	21	100
Madhya Pradesh (MP)	39	70	-16	7	100	21	65	12	2	100
Maharashtra (MH)	32	51	6	10	100	29	52	7	11	100
Odisha (OR)	54	32	2	13	100	34	28	26	11	100
Punjab (PJ)	29	57	5	9	100	26	60	9	4	100
Rajasthan (RJ)	62	24	0	14	100	34	43	13	10	100
Tamil Nadu (TN)	53	32	5	10	100	42	27	16	15	100
Uttar Pradesh (UP)	34	51	3	11	100	23	58	11	8	100
West Bengal (WB)	43	35	4	18	100	53	25	6	16	100
All India (IN)	39	46	4	11	100	32	48	12	8	100

The shift in shares of income from different sources across states are tabulated in Table 5. The shifts in share of cultivation and livestock in total income is either zero or negligible (0 ± 3) in 6 to 7 states out of 18. Prominent positive shift is in share of livestock in total income. The share increased by over 20 per cent points in Haryana, Jharkhand, Madhya Pradesh and Odisha. While Andhra Pradesh, Assam, Gujarat, Punjab, Tamil Nadu and Uttar Pradesh improved share of livestock by 3 to 10 per cent points, Rajasthan showed increase between 10 to 20 per cent points range. Important but disturbing trend is the decline in share of non-farm business. In 10 out of 18 states the share of non-farm business declined anywhere between 3 to 10 per

cent. Only Tamil Nadu showed an increase that too less than 10 per cent. Seven states did maintain their shares within in a smaller bandwidth. It seems most of the gains in livestock income share were offset by the losses in share of wage income. While 3 states (Bihar, J&K and West Bengal) gained in share of wage income and another 3 states (Gujarat, Maharashtra and Punjab) maintained the wage income share, remaining 12 states have reduced share of wage income— 6 states losing upto 10 per cent points, 5 losing between 10 to 20 per cent points and Rajasthan losing beyond 20 per cent points.

TABLE 5. DISTRIBUTION OF STATES ACCORDING TO DEGREE OF SHIFT IN SHARES OF SOURCES OF INCOME

Percent points change in share (1)	Income sources			
	Wages (2)	Cultivation (3)	Farming of animals (4)	Non-farm business (5)
< - 20	RJ	---	---	---
- 20 to - 10.01	HR, MP, OR, TN, UP	JK, WB	---	---
- 10 to - 3.01	AP, AS, CG, JR, KA, KL	GJ, JR, MP, TN	BR	AP, AS, BR, CG, HR, JR, MP, PJ, RJ, UP
Negligible change 0±3	GJ, MH, PJ	AP, BR, HR, KL, MH, OR, PJ	CG, JK, KA, KL, MH, WB	GJ, JK, KA, KL, MH, OR, WB
3.01 to 10	BR	AS, KA, UP	AP, AS, GJ, PJ, TN, UP	TN
10.01 to 20	JK, WB	CG, RJ	RJ	---
Above 20	---	---	HR, JR, MP, OR	---

Source: Constructed from Table 3 and adopted from Satyasai and Bharti (2016).

Note: Abbreviations of state names are as in Table 3.

Strategies for Achieving Doubling Farmers' Income

Doubling the income in six years, in real terms, is a formidable challenge and needs large scale revamping, reorientation and innovation in the initiatives. Income of a farmer can increase through: increase in gross income and/or reduction in costs. Farmer's income can increase through increasing total output and their prices. Increasing farm output can be only through enhancing productivity as there are limits to area expansion due to demand pressures on land from competing uses such as for industry and housing. It is not possible to continuously raise output prices artificially without stoking inflationary pressures and disturbing the inter-sectoral balance. As of now a very small proportion of the farm households is aware of minimum support prices (MSP) and still smaller proportion of those who are aware have actually realised MSP for their produce. Thus, even ensuring better price realisation would enhance incomes in the short run and for only a few. National Agricultural Market (NAM) may help in this. Diversifying production mix towards more remunerative enterprises and providing earning opportunities in non-farm sector are the two other sources of income growth.

Reducing production costs could be through lowering input use and/or reducing input prices. Reduction in costs is not possible through price-reduction route alone. Better option is by reducing input use through technology. Large scale adoption of practices such as System of Root Intensification (SRI), Low External Input use and Sustainable Agriculture (LEISA) and various other methods such as precision farming, organic farming, Natueco farming and so on is needed. Watershed Development, *Wadi* and Umbrella Programme on Natural Resource Management (UPNRM) promoted by NABARD are helpful in conserving natural resources and ensuring sustainability besides income augmentation and drought proofing.

Risk coping and mitigation through various mechanisms including insurance would also help indemnify loss of income. Apart from the traditionally known risks to farmers, climate change is an additional risk factor that can cause loss of farm income. Hence, investment in climate-proofing agriculture and tapping alternative sources of energy need to be scaled up. Access to good physical, economic/financial, social infrastructure such as marketing and processing facilities, godowns and cold storage capacity, banking network that can provide much needed capital, educational, medical facilities and training facilities for imparting skills that the market demands are important. For it would enhance the productive capacity on farms, help farmers realise better prices, reduce wastage, enhance shelf life, adopt better technology, meet capital needs and improve quality and quantity of livelihoods and improve employability on better terms.

Honourable Prime Minister has listed out seven strategies to help double the incomes of farmers. They are: (1) Big focus on irrigation with large budgets, with the aim of "per drop, more crop"; (2) Provision of quality seeds and nutrients based on soil health of each field; (3) Large investments in warehousing and cold chains to prevent post-harvest crop losses; (4) Promotion of value addition through food processing; (5) Creation of a national farm market and removing distortions; (6) Introduction of a new crop insurance scheme to mitigate risks at affordable cost; and, (7) Promotion of ancillary activities like poultry, beekeeping and fisheries. More strategies need to be built around natural resource management, social sector policies such as health and education. For, farmers' expenditure on health and education is substantial enough to topple his balance sheet (Satyasai, 2015).

SUMMARY AND CONCLUSIONS

Doubling real incomes of farmers in six years is a formidable task though may not be altogether impossible if proper strategies are implemented (Satyasai and Bharti, 2016). The strategies should be multi-pronged and should address enhancing returns and reducing costs and making the incomes sustainable keeping in view the depleting natural resource base. Before anything else, we should have reliable data, periodically, on incomes for monitoring the progress.

Income referred in this paper is net of production costs. Once we consider consumption expenditure, farmers have hardly any surplus left and marginal and small farmers have more serious deficit. Hence, we should frame policies to help improve farm incomes, if not doubling, on a continuing basis. Scaling up programmes like watershed, *wadi*, UPNRM and consolidation of the gains is important.

Farming is a skilled profession and hence, would need skilled and motivated people. Instead of forcing people into the profession, it may be worthwhile to create lucrative avenues for those who want to leave agriculture and incentives and skills to those who want to enter/continue this occupation. Skilling people for making them employable remuneratively in non-farm business activities within and outside rural areas has to be scaled up.

Awareness about opportunities available for commercialisation and diversification, better technologies, facilities, markets, insurance, climate change, government policies, etc. is very poor among farmers as of now. We may leverage huge stock of existing and retired technical and agricultural professional to spread such awareness.

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