

ARE DISPARITIES IN INDIAN AGRICULTURE GROWING ?

Indian agriculture has witnessed tremendous changes during the last 3 decades following the adoption of green revolution technology during late 1960's. The green revolution technology was initially adopted on a large scale in the regions well endowed with irrigation. As this technology possessed vast potential for increase in productivity, it led to impressive growth in agricultural output in the regions where it was adopted. Because the spread of green revolution technology was highly skewed in favour of certain states and regions, this led to a high growth in agricultural output in selected regions while the other regions suffered from stagnancy or poor growth in agricultural output. Consequently, the first decade following green revolution is believed to have increased inter state disparities in development and incomes.

During the decade of 1980's efforts were made to spur agricultural growth in low productivity and stagnant states and regions. For this, special drives were launched to diffuse improved agricultural technology in hitherto under-developed states. New crop varieties, technologies and enterprises were developed for rainfed, dry-land and other ecological settings to improve agricultural productivity and income in such regions. Some studies have observed that these efforts have borne fruits and agricultural growth during the decade of 1980's has become broad based. It has been demonstrated based on specific crops or group of crops that agricultural growth has picked up in low productivity eastern states. Such indications have been used to create an impression that agriculturally underdeveloped states have progressed at a fast rate during 1980's and early 1990's (Sawant and Achutan 1995; Bhalla and Singh 1997) which is further interpreted to infer that regional differences in agriculture income and productivity across states have narrowed down after initial phase of green revolution.

However, conclusions about inter-state disparities in agricultural development based on single crop, group of crops or even crop sector can be misleading. There has been progressive diversification towards livestock production within agricultural sector which implies that exclusion of livestock sub sector while evaluating growth performance is not justifiable (Sawant 1997). Thus, inter state performance of agricultural sector should be analyzed based on state domestic product from the total agriculture.

Few attempts have been made in the recent years to look at inter- state variations over time in terms of performance of overall agriculture. It is found that in the short run states exhibit a tendency to converge to a single rate of growth but in the longer run there are two divergent patterns; states with better irrigation spread tend to converge to higher rate of growth whereas states with lower proportion of crop area under irrigation tend to converge to lower rate of growth (Bhide, Kalirajan and Shand 1998). Even this study does not comment on convergence or divergence in agricultural performance when all states are considered together.

Some studies based on total state domestic product have shown that the gap in per capita income between rich and poor states has continued to widen during the 1980's (Ghosh, Marjit and Neogi 1998). It becomes interesting to see how agricultural growth has contributed to growing gap between rich and poor states in the post green revolution period i.e. after 1980-81. Accordingly, we have examined the trend in agricultural productivity, output growth and regional divergence in per rural person and per hectare Net state Domestic Product (NSDP) from agriculture during the period 1980-81 to 1996-97. Inter-state divergence was measured using simple measure of coefficient of variation (CV).

Agriculture productivity and growth

Agricultural productivity per unit of land was below the national average in Rajasthan, Madhya Pradesh, Orissa, Gujarat, Maharashtra, and Karnataka during first 3 years of decade of 1980s at 1980-81 prices (Table 1). Per hectare NSDP agriculture was higher than the national average by 50 per cent or more in the states of Punjab, Kerala, Jammu and Kashmir and Assam. During the decade following 1980-81 agricultural productivity showed annual growth of 4 per cent or more in West Bengal, Punjab, Haryana and Rajasthan. Among low productivity states, Gujarat experienced a decline in agricultural productivity while Orissa experienced very small growth of the order of 1.1 per cent per year compared to the national average of 2.77 per cent. Out of 11 states having agricultural productivity higher than the country's average during early 1980's as many as 6 witnessed higher growth rate than national growth rate. This implies that these states in a 10 years period after 1980-81 moved further upward compared to country's average.

Growth in agricultural productivity for the country as a whole showed acceleration during the first 7 years of decade of 1990's over the decade of 1980's. However, there is lot of variation in productivity growth at state level, which varies from -2.2 per cent to 6.7 per cent. The sharpest decline is observed in the case of Bihar where productivity growth declined from 2.7 per cent per annum during 1980's to negative 2.20 per cent during the 1990's. Another state which witnessed negative growth during 90's is Orissa while growth rate in Assam was close to zero. West Bengal showed robust growth in both the periods exceeding 6 per cent which is highest among all states and is more than double the growth rate of the country. Similarly, agricultural productivity in Rajasthan in both the periods increased annually at the rate of about 4.15 per cent.

As a consequence of high growth rate, agricultural productivity in West Bengal in the recent period turns out to be the highest in the country. In contrast to this, Bihar, which had agricultural productivity 20 per cent higher than national average during early 1980's is now having agricultural productivity about 7 per cent lower than the national average. Agriculture productivity in Rajasthan and Madhya Pradesh despite high growth rate is still less than 60 per cent of national average. The states which showed sharp deceleration in growth in NSDP agriculture during 1990s compared to 1980s are Punjab, Assam, Haryana, Tamil Nadu, Bihar and Orissa. Agricultural growth got accelerated during 1980's in the states of Maharashtra, Andhra Pradesh, Gujarat, Kerala.

Table 1 :
Level and growth in NSDP ag/hectare at 1980-81 prices

States	NSDP Agri. Rs./hec		Growth rate %	
	Triennium ding 82-83	Triennium ending 1996-67	1980/81 to 1990/91	1990/91 to 1996/97
Andhra pradesh	3297	4915	2.36	4.50
Assam	4543	5250	1.70	0.20
Bihar	3677	4290	2.70	-2.20
Gujarat	2712	3405	-0.40	3.90
Haryana	4547	8242	4.60	2.70
Himachal Pradesh	4722	6802	3.20	3.00
Jammu & Kashmir	5635	7567	1.20	2.60
Kamataka	2475	3774	2.30	3.90
Kerala	5936	9703	2.50	4.70
Madhya Pradesh	1704	2713	3.20	3.00
Maharashtra	2091	3742	3.60	6.10
Orissa	2590	2544	1.10	-1.30
Punjab	5591	10093	5.00	3.00
Rajasthan	1453	2670	4.10	4.20
Tamil Nadu	3342	5716	3.90	2.00
Uttar Pradesh	4182	6110	2.90	2.20
West Bengal	4479	10664	6.00	6.70
All India	3037	4611	2.77	3.14

Inter-state variation in agricultural progress can also be seen from the variation in NSDP agriculture per rural person (Table 2). This includes variation due to agricultural productivity and land-man ratio. NSDP _ agriculture per rural person for the country as a whole was around Rs. 800 in the early 1980's. It increased at the rate of 1 per cent during 1980's and by 1.44 per cent per annum during first seven years of the decade of 1990's. Among states, agricultural income per rural person during early 1980s exceeded Rs. 1500 in Haryana and Punjab, whereas, it was below Rs 700 in the case of Bihar, Orissa, West Bengal, Kerala, Tamil Nadu and Himachal Pradesh. Growth rate in rural population exceeded the growth in NSDP agriculture in Gujarat, Assam, Jammu and Kashmir and Orissa during 1980-81 to 1990-91 which resulted in decline in per person agricultural income. Per capita agriculture income during the 90's declined annually at the rate of 5 per cent in Bihar, 3 per cent in Orissa about 2 per cent in Assam and about 1 per cent in Himachal Pradesh. In Uttar Pradesh per capita agriculture income showed negligible growth. Per capita agriculture income showed growth rate of 5 per cent in West Bengal and 4.8 per cent in Maharashtra during 1990-91 to 1996-97.

Table 2 :
Level and growth in NSDP agri./rural person at 1980-81 prices

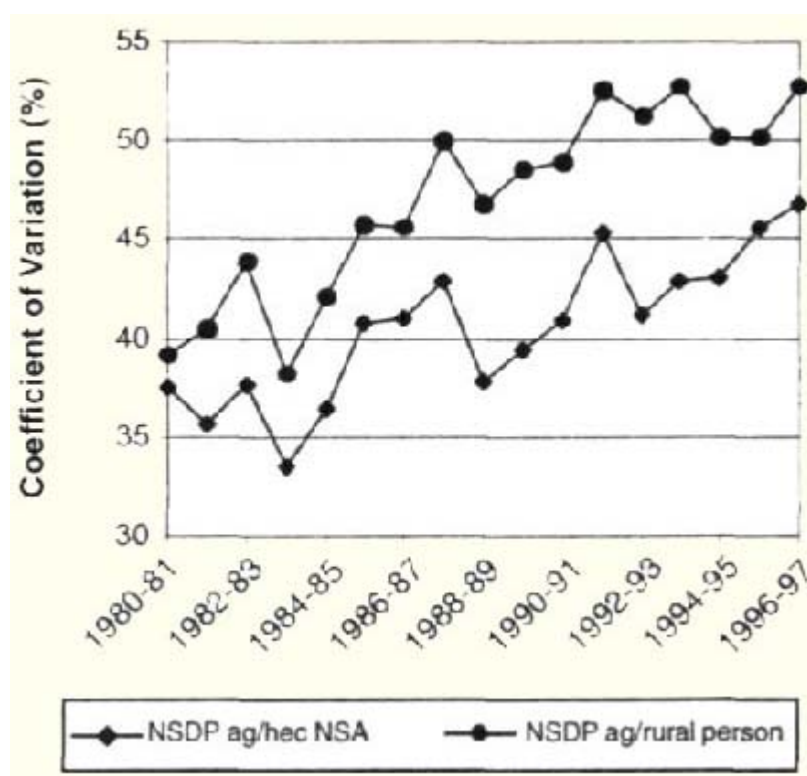
States	NSDP Ag/ person Rs.		Growth rate (%)	
	Triennium Ending 2-83	Triennium Ending 1996-97	1980/81 to 1990/91	1990/91 to 1996/97
Andhra Pradesh	866	962	060	160
Assam	734	643	-0.20	-1.90
Bihar	457	375	0.50	-5.20
Gujarat	1095	1103	-2.20	2.60
Haryana	1589	2103	2.30	0.50
Himachal Pradesh	671	758	1.60	-1.10
Jammu & Kashmir	838	850	-1.00	0.60
Karnataka	969	1211	080	280
Kerala	624	994	2.40	4.20
Madhya Pradesh	737	963	1.80	1.80
Maharashtra	917	1279	1.80	4.80
Orissa	665	539	-0.20	-3.10
Punjab	1902	2749	3.40	1.50
Rajasthan	795	1138	1.90	2.00
Tamil Nadu	582	860	2.20	1.50
Uttar Pradesh	776	852	0.80	0.10
West Bengal	604	1062	3.60	5.10
All India	797	952	0.99	1.44

During the recent triennium ending with year 1996-97, agriculture income per rural person was below Rs. 400 in Bihar compared to Rs. 952 for the whole country, at 1980-81 prices. Orissa and Assam turn out to be second and third from the bottom. Punjab and Haryana maintained first and second rank respectively with per capita income of Rs. 2749 and 2103. These results reveal that there is tremendous variation in per hectare and per person agricultural income across states. Also, different states are found to be moving on disparate growth path. Contrary to the claims about potential of east India, agricultural growth in this region except West Bengal is showing signs of stagnation and deterioration.

Regional disparities

Coefficient of variation in per hectare and per rural person NSDP agriculture among the major states for different years is shown in Figure 1. There is a clear rising trend in coefficient of variation in both agricultural productivity per unit area as well as agricultural income per rural person. Grouping the consecutive years in 5 year periods (Table 3) shows that regional disparities in agricultural productivity increased from 36 per cent during 1980-81 to 1984-85 to 40 per cent during later half of 1980's. During the 1990's regional divergence further increased to around 43 per cent.

Figure 1 :
Regional disparities in Indian agriculture



Per person NSDP agriculture showed similar trend but with higher magnitude. This is because inter state variation in agriculture productivity has been further sharpened due to inequality in land-man ratio. Per capita agriculture income across states varied by about 41 per cent during early 1980's (Table 3). The inequalities increased to the level of 47 per cent during second half of 1980's. Inter state variation in per person NSDP agriculture further increased to more than 51 per cent during the 1990's.

Table 3:
Regional disparities in Indian agriculture in different periods as revealed by coefficient of variation (%)

Average of the period	NSDP ag hectare	NSDP ag rural person
1980-81 to 1984-85	36.18	40.75
1985-86 to 1989-90	40.39	47.33
1990-91 to 1994-95	43.99	52.61
1992-93 to 1996-97	45.27	52.91

There is clear evidence that since 1980-81 regional divergence in agricultural productivity and income have grown and the gap between underdeveloped and developed, and, poor and rich states has continued to increase. This has happened despite special efforts made to reduce inter-state disparities by promoting level of agricultural development in underdeveloped states. There is a need to make more vigorous efforts on technological, institutional, and infrastructural fronts to raise productivity and to accelerate growth rate not only of crop sector but also of livestock and other sub sectors of agriculture in under developed states. Special and immediate focus is needed for eastern states namely Bihar, Orissa and Assam, hill regions and eastern Uttar Pradesh. There is no room for complacency on this score.

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