

GREEN REVOLUTION AND ECONOMIC DISPARITY: AN OVERVIEW

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ABSTRACT

As an important macro-economic parameter, income distribution has significant impact on various other social and economic variables. As witnessed elsewhere too, the disparities are bound to be effected with the economic growth. Likewise, Green Revolution in Punjab had significantly impacted inequalities within farm sector. The resourceful farmers gained more; the landless labour shared the minimum benefits due to increased seasonality in operations, mechanization and in-migration of labour from other states. Gains to middlemen classes were even gigantic while funding for oncoming research and development is seriously suffering.

Key words: Income distribution, mechanization and economic disparity

JEL Classification: D31, O15

INTRODUCTION

The pillars of growth of modern agriculture can broadly be termed as 5 I's namely innovations, information, incentives, infrastructure and institutional support. For instance, innovations (HYVs, fertilizer use, plant protection, mechanization) brought out through the well set up research system have to be translated in the field through suitable and effective extension methods and information techniques. The essential elements are the timely supply of adequate and quality physical farm inputs including credit from various institutional sources to avoid farmers' exploitation.

To further encourage/discourage the use of critical inputs, various forms of policy incentives including subsidies to streamline the production and MSP market systems assume high importance. The infrastructure support such as transport, storage, establishment of regulated markets, processing for ensuring remunerative price to the farmers and investment in human capital are imperative to bring about substantial improvement in the agricultural production. To meet the requirements of the consumers, a variety of food products considering the taste of the consumers, health standards and pocket as well, value addition in post-harvest technology has

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become still more important for which market developments by the private and public sectors are necessarily required.

Existing Levels of Disparity

Global scene

The fruit of growth becomes sweeter if it is percolated to all sections of society and even equitably reaching more to the vulnerable groups rather than to remain confined to specific higher strata. In practical sense, such occurrence of exactly equitable gains is a rare phenomenon. The resource base, opportunities and capability of every individual to capture such benefits vary widely resulting in disproportionate gains of growth process.

Any disturbance in income distribution has impact on aggregate consumption pattern, saving, investment and production system and ultimately social welfare. Widening gaps between haves and have-nots may cause serious imbalances creating social tension, economic inefficiencies and at the same times even political turmoil. The capacity to absorb shocks of economic skewness may vary from one society to another. A society with vast majority grappling with food security issues gets shaken while the one having entire population satisfying the minimum needs of life has more tolerance.

In the context of the issue of income distribution, Kuznets suggested two hypotheses. Firstly, the faster initial economic growth leads to higher and higher inequality in income. The basic contention was that as the economy takes off, the rentier class is bound to gain faster than the labour class due to its wider resource base, higher mobility and growing human labour unemployment resulting from mechanization. Secondly, as the farm sector grows, the disparity in the economy is reduced because agricultural sector is generally lagging behind as by nature, its rate of growth is slower as compared to growth in secondary and tertiary sectors.

The global scene is witnessing fast economic polarization which is obvious from the facts as under:

- ‘Since 1960, wealth in world got multiplied eight times but shared by the richest’
- ‘Wealth of world 200 richest got more than doubled in four years and is more than that of half of the population’ and
- ‘In 1990 it was estimated that \$1.5 trillion per day is stuffed in stock market (the greatest casino)’.

These statements are further evidenced by comparison of income distributions of different economies. For example, at global level, developed nations have less dependence on agricultural sector and to contain higher Gini ratio (as measure of inequality) they have to take stringent measures. As shown in Table 1, developed economies in spite of strong measures have higher income disparity.

Table 1: Inequality in some global economies, 2007-08

Country	Gini Ratio
USA	0.408
China	0.415
Argentina	0.500
South Africa	0.578
Pakistan	0.312
India	0.368
Sri Lanka	0.411
Bangladesh	0.310

Source: World Bank Report, 2010

Inter-sectoral Disparities

Similarly, the states of India having more dependence on agriculture sector are more egalitarian in nature. Punjab state witnessed fast growth in farm sector; the inter-sectoral economic gap is the narrowest when compared with other states.

Agriculture by nature has slow growth due to various reasons, typically due to seasonality aspect. Based on percentage of population engaged in agriculture and their contribution to national income in various states of the country, ratio of per capita income in non-farm sector to that of farm sector was estimated. As presented in Table 2, the ratio showing disparity in favour of non-farm sector was as high as more than 18/1 (an average non-farm family was earning income equal to 18 times the income of an average farm family) in Chhattisgarh and Jharkhand states and as low as less than 2/1 in Punjab and Kerala.

Table 2: Inter-regional disparity between farm and non-farm sectors in India, 2008-09

(Per capita average)			
State	Non-farm income/Farm income	State	Non-farm income/Farm income
Chhattisgarh	18.5	Jharkhand	18.2
Pondicherry	12.1	Bihar	11.3
Maharashtra	10.8	Himachal Pradesh	9.8
Mizoram	9.6	Meghalaya	8.0
Uttarakhand	7.5	Tamil Nadu	7.1
Karnataka and Rajasthan	6.9	Madhya Pradesh and Orissa	6.7
Sikkim	6.3	Nagaland and Uttar Pradesh	5.1
Andhra Pradesh	4.8	Arunachal Pradesh	4.6
Gujarat and Goa	4.5	Haryana and Tripura	4.0
Manipur	3.5	J & K and West Bengal	3.0
Assam	2.9	Kerala	1.8
Punjab	1.2		

The relative growth of different sectors and changing marginal productivity of factors could be the sole reasons for such inter-state economic disparities. It does not account for the black money otherwise distribution could be still more skewed.

Agricultural Growth and Disparity in Gains

Inter-regional Gains

Within the Punjab state, Green Revolution was analyzed by various researchers and brought out that gains varied widely between different set of rural households.

- Relative profitability of enterprises changed causing inter-regional variations in gain. For example, the average yield of rice increased by more than 300 percent, and of wheat gain was about 250 percent, yield of cotton went up by 116 percent and sugarcane and potato much lesser than all these crops (Table 4).
- As a result, market and industrial development having impact on human employment and value addition also varied from area to area.

Table 3: Yield increase in different crops in Punjab

Crop	Productivity (Kgha ⁻¹)		Percent increase in 2009-10 over 1965-66
	1965-66	2009-10	
Rice	1000	4010	301
Wheat	1236	4307	248
Cotton	311	673	116
Sugarcane	3455	6172	79
Potato	16123	25464	58

Inter-personal Gains

Within farmers

- Within farm sector, some strong evidences about the inequalities are supported by various research studies (Singh, 1977, 1991)
- The technology was neutral to scale due to which gain was in proportion to farm size. But variation in farm size widened the economic gap.
- Larger farmers were faster in technology adoption and thus initially gained more.

Landless labour

The proportional gain of landless labour was much lower because the labour employment

- Positive effect: expansion of area under cultivation (38 lakh ha in 1965-66 to 42 lakh in 2009-10), increase in Cropping intensity (129 to 190 per cent), higher area under labour intensive crops etc.
- Negative effect: Mechanization of farm operations; use of herbicides; higher seasonality due to monoculture (Kurtosis increased from -0.31 in 1960-61 to

0.52 in 2004-05); employment and wage rate of local labour declined due to inflow of labour from other states.

- The net effect (as presented in Table 4) was decline in labour use in terms of hours/ha from 961 to 402, in the case of wheat from 559 to 188 but increase in case of cotton from 666 to 803 from 1974-75 to 2007-08 showing CGR of -1.76, -2.01 and +0.62 percent respectively.
- Skilled labour gained in cases they upgraded their skills to cater to the services of new technology. The status of other landless labour deteriorated still further.

Table 4: Crop-wise employment in Punjab

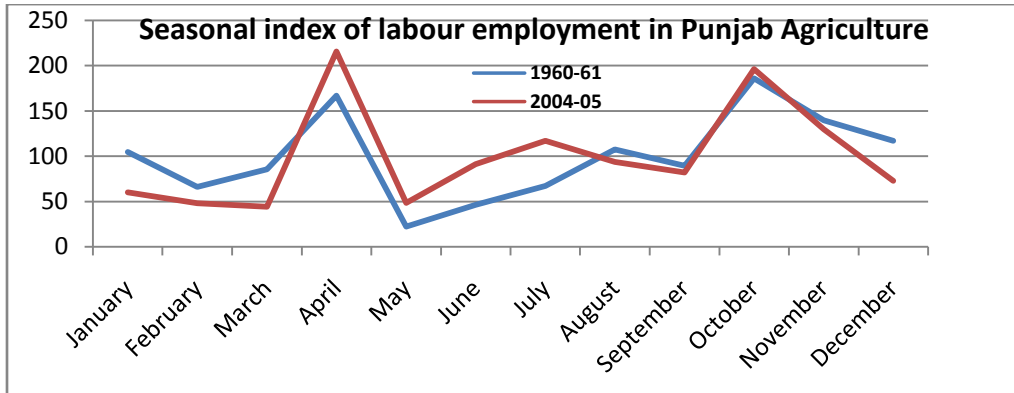
Year	(Man hoursha ⁻¹)		
	Rice	Wheat	Cotton
1974-75	961	559	666
1981-82	858	384	779
1990-91	610	367	783
2000-01	445	271	704
2007-08	402	188	803
CGR (%)	-1.76	-2.01	0.62

Source: Comprehensive scheme of Cost of Cultivation of crops in Punjab.

Table 5: Seasonal Index of Labour use in Punjab Agriculture

Month	1960-61	2004-05
January	104.9	60.3
February	66.2	48.2
March	85.8	44.3
April	167.1	215.6
May	22.3	48.7
June	46.5	91.2
July	67.4	117.1
August	107.6	93.9
September	89.4	82.1
October	186.1	196.1
November	139.8	129.7
December	117.1	72.9
Total	1200.00	1200.00
Kurtosis	-0.3097	0.5212

Source: Singh and Singh (2006)



Effect on other classes

1. Arhtiyas and State market agencies gained by way of increase in commission resulting from
 - Higher market arrivals
 - Higher prices of food products
 - Higher percent commission due to political lobby
2. National consumers got better access to cheaper food.
3. Industrial growth lost balance due to shift in cropping pattern causing investment and disinvestments simultaneously.
4. National & International traders benefitted due to higher marketed surplus for domestic markets and global trade.
5. Research institutions were hard hit due to surpluses in farm commodities.

Other fall-outs

Some other fall-outs of growth were:

- ❖ Unmanageable food grain surpluses resulting in spoilage
- ❖ Environmental degradation in terms of natural resources such as water, soil, energy, food quality, biodiversity etc.
- ❖ Declining work culture owing to good times with higher preference for leisure than work in the light of available cheaper labour and comfortable economic position.
- ❖ Wasteful expenditures including sumptuous social ceremonies & drug addiction
- ❖ Crime rate increased
- ❖ Emergence of large scale slum residential areas
- ❖ Deterioration in education level

Way out to Ease the Situation

- Green revolution made the rural masses sluggish rather than making further effort for second green revolution. Non-farm sectors should have developed faster to absorb the labour force displaced from farm sector as well as growing population. At least agro-based industries and associated market development should have been targeted.
- The subsidy in proportion to land base goes to larger farmers but should be targeted to small farmers and landless labour. State has 62 percent farmers less than 4 hectare farm size but only 28 percent of cultivated area. (Stat Abstract, Punjab, 2012).
- The stagnating high potential agriculture should shift to second Green Revolution and low potential should be geared up with critical inputs to meet the food security of the country.
- Effective income support for BPL families.

CONCLUSIONS

The income distribution is an important economic parameter impacting various macro-economic variables. The disparities are bound to be there more in developed countries. Even across the states of India, growth in agriculture reduced the inter-sectoral inequalities. Within the farm sector, larger farmers gained more and the landless labour shared the minimum benefits of Green Revolution due to increased seasonality in operations, mechanization and in-migration of labour from other states. Gains to some other classes were also enormous while funding for oncoming research is lacking for which suitable policy thrusts are required.

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