Chapter - 6

PRODUCTIVITY AND POVERTY: A DISTRICT LEVEL ANALYSIS
6.1 Introduction:

Poverty is one of the central problems of economics. A large number of people in the world live on less than $1 a day – almost one in five, amounting to over a billion people. If the poverty line is raised to $2 a day, over half the world’s population is poor (Banerjee et al., 2006). The concept of poverty is multi-dimensional (viz: income poverty and non-income poverty). It covers not only levels of income and consumption, but also health and education, vulnerability and risk; and marginalisation and exclusion of the poor from the mainstream of the society. According to Dreze and Sen (1995) India’s performance in terms of non-income indicators (eg, education and health) was not satisfactory. Although progress has been made in poverty reduction both income and non-income poverty, the pace of reduction in poverty however, has been, slow (Dev, 2010). The consumption measures represent material standards of living; they however also correlate closely with wider notions of capabilities and well-being. The poor are frequently malnourished, illiterate, and prone to sickness, unemployment, alcoholism, and depression. They are excluded from many markets and social groups, and are vulnerable to natural disasters (Banerjee et al., 2006). Poverty also limits awareness of the rights and ability to access legal institutions to protect those rights. Poverty is a tragedy not only for the individuals concerned but also for the world at large, being intimately linked with some of the most pressing social and political problems of our time: crime violence, broken families, loss of communities, public health crisis, overpopulation, environmental degradation, corruption, poor governance, and ethnic conflict (Banerjee et al., 2006).

A poverty line demarcates the poor from the non-poor. It is identified as the minimum required consumption level of food, clothing, shelter, transport and healthcare (Nayyar, 2005). There are three distinct measures of poverty used by most studies, based on Foster-Greer-Thorbecke (1984) poverty measure for a given population. First, the headcount index defined as the percentage of the population who live in households with a per capita consumption below the poverty line. Second, the poverty-gap index defined by the mean distance below the poverty line expressed as a proportion of that line. This measure reflects not only the incidence of poverty, but also its depth. Third, the squared poverty-gap index defined as the mean of the
squared proportionate poverty-gaps. Unlike the other two measures, it reflects the severity of poverty: as it is sensitive to inequality amongst the poor.

The Government of India’s official poverty estimates are based on the results of regular consumer expenditure surveys by the National Sample Survey Organization (NSSO). Larger surveys which in principle take place every five years and focus on consumers’ expenditures are used by the Planning Commission to calculate the official poverty statistics. Such surveys were conducted in 1983 (the 38th Round of the NSS), 1987–88 (the 43rd Round), 1993–94 (the 50th Round), in 1999–2000 (the 55th Round), 2004-05 (the 60th Round) and most recently, 2009-10 (66th Round). The poverty estimates published by the Planning Commission count the number of people living in households whose monthly per capita total expenditure is less than the poverty line for the sector and the state in which they live. These poverty lines are updated over time using the Indian system of state by state price indices, which are estimated separately for rural households, the consumer price index for agricultural labourers (CPIAL) and urban households, the consumer price index for industrial workers (CPIIW) (Deaton and Kozel, 2005).

Srinivasan (2007) documented the various attempts to provide “poverty line” prior to independence. The earliest effort to prepare poverty line was made by Dadabhai Naoroji in his book “Poverty and Un-British Rule in India” he estimated a subsistence-based poverty line at 1867-68 prices. Naoroji defined subsistence as “what is necessary for the bare wants of a human being, to keep him in ordinary good health and decency”. Using the diet prescribed to “supply the necessary ingredients for the emigrant coolies during their voyage living in a state of quietude” he came up with a subsistence costs based poverty line, varying from Rs 16 to Rs 35 per capita per year in various regions of India. The second poverty line Srinivasan refers to is in the note for the guidance of subcommittees of the National Planning Committee (NPC) of 1938. The note was prepared by the committee’s secretary, K. T. Shah stating that “the fundamental aim [of planning] is to ensure an adequate standard of living for the masses…. . Estimates of economists in different parts of India put down this irreducible minimum at figures varying from Rs 15 to Rs 20 per capita per month in the present value of the rupee” (IIAPR, 1988). The third poverty line that Srinivasan traced was the Bombay Plan of Thakurdas et al., (1944), which was a per capita income of Rs 75 at prices that prevailed prior to the outbreak of the Second
World War. Since these prices were likely to have been the same as the prices of 1938 implicit in the poverty line of NPC therefore the poverty line of the authors of the Bombay Plan was much more modest than that of the NPC.

Estimates of poverty in India are typically based on a normative minimum calorie intake. The calorie norms were fixed at 2,400 calories per person per day for rural areas and 2,100 calories per person per day for urban areas by the Task Force constituted by the Planning Commission in 1979 (Palmer and Sen, 2001). Based on these norms, poverty lines for rural and urban areas were determined for the 28th round of NSS consumer expenditure data for the year 1973-74. These came out to be Rs 49.09 per capita monthly expenditure (pcme) in rural areas and Rs 56.64 (pcme) in urban areas. Using the headcount ratios as a measure of poverty, the incidence of poverty was estimated to be 56.4 per cent in rural areas and 49 per cent in urban areas in 1973-74.

A Working Group appointed by Planning Commission recommended a poverty line in 1962, set at a minimum level of expenditure of Rs 20 per day for rural areas and Rs 25 per day for urban areas at 1960-61 prices below which households would not be able to meet basic requirements for living. This minimum per capita expenditure was determined taking into account the requirements of balanced food and in the case of urban areas some provision of housing expenditure. However, the expenditures on health and education were not considered as they were expected to be provided by the state (Dandekar, 1996). Dandekar and Rath, (1971) provided the first systematic assessment of the incidence of poverty based on the NSS data for 1960-61 using a cut-off level of expenditure that was adequate to provide 2250 (kilo calories) per capita per day both in rural and urban areas. The calorie consumption was estimated based on the consumption of various food items for different expenditure groups and the expenditure cut-off or poverty line was determined accordingly.

In 1977, Planning Commission constituted a Task Force, which submitted its report in 1979 and on the basis of a systematic study of nutritional requirements recommended poverty lines separately for rural and urban areas at national level. Based on observed consumer behaviour in 1973-74, it was estimated that, on an average, consumer expenditure of Rs. 49.63 per capita per month was associated with a calorie intake of 2400 per capita per day in rural areas and correspondingly Rs. 56.76 per capita per month with a calorie intake of 2100 per capita per day in urban
areas. The poverty line for subsequent years was estimated by adjusting it to the base year (1973-74) for inflation. Subsequently, in 1989, Planning Commission constituted an Expert Group to review the methodology used for the assessment of poverty. It recommended continuation of calorie based consumption expenditure as a cut-off to determine the proportion of population below the poverty line, disaggregation of national level poverty lines into state-specific poverty lines and then updating the poverty lines using the Consumer Price Index (CPI) for Industrial Workers in urban areas and CPI for Agricultural Labour for rural areas. Based on above criteria, Planning Commission estimated poverty lines separately for rural and urban areas. The Head Count Ratio (HCR) estimated on this basis became key indicator of the level of poverty in the country. In 2004-05 poverty line was set at Rs.356.30 per capita per month for rural and Rs.538.60 per capita per month for urban areas.

There were different views on the accuracy of poverty estimates. The issues raised were that the consumption patterns underlying the rural and urban Poverty Line Baskets (PLBs) remained tied down to those observed more than three decades ago in 1973-74 and hence had become out-dated. The use of a minimum adequate level of nutrition as a key criterion for defining the poverty line has come under criticism both with respect to the level at which the norm has been fixed and also for the inadequacy of the expenditure level of households at which these norms were likely to be met in providing a minimum standard of living a society may desire for its citizens. Although private expenditure on education and health was covered in the base year 1973-74, no account was taken of either the increase in the proportion of these in total expenditure over time or of their proper representation in available price indices (GOI, 2009). It is now increasingly accepted that the poverty line is unrealistically low and that the numbers in poverty would be far larger if the poverty line was more realistic (India Chronic Poverty Report, 2011). Therefore planning commission set up an expert group in 2009, headed by Prof S.D. Tendulkar to suggest new poverty estimates and a new poverty line.

The all India rural headcount ratio for 2004-05, using the new procedure was found to be 41.8 per cent in comparison with 28.3 per cent using old methodology. Further poverty estimates were also calculated for the year 1993-94 using the new methodology. According to this estimate poverty at all India level in 1993-94 was
50.\% in rural areas, 31.8 per cent in urban areas. Poverty for the entire country was estimated at 45.3 per cent compared to the 1993-94 official estimates of 37.2 per cent: rural, 32.6 per cent urban and 36.0 per cent combined. Even though the new methodology gives a higher estimate of rural headcount ratio at the all- India level for 2004-05, the extent of poverty reduction in comparable percentage point decline between 1993-94 and 2004-05 was not different from that inferred using old methodology.

6.2: Poverty Trends in India

Poverty in India is widespread as more of the world’s income poor live in India than any other country. According to planning commission of India estimates for the year 2009-10, 29.8 per cent Indians live below the country’s national poverty line. World Bank (2010) put the figures at 32.7 per cent as per the international poverty line of US $ 1.25 per day. One in three malnourished children worldwide is found in India, whilst 42 per cent of the nation's children fewer than five years of age are underweight. Also a total of 58 per cent of children under the age of five were stunted (Google, 2012). Therefore what happens to poverty in India is quantitatively important to the world's overall progress in fighting poverty.

India has made substantial advancements in reducing poverty after independence in 1947 (Tables 6.1 and 6.2). There have been two distinct phases of poverty reduction in India, the first phase starting from the beginning of planning to mid-1970s. This period was characterised by wide year to year variations but no significant trend. In this phase large proportions of the population remained below the poverty line. The rural poor, which accounted for about three-fourths of the country’s poor, had increased in number from 182 million in 1956-57 to 261 million in 1973-74. There was a substantial increase in the poverty ratio in the drought years of 1965-66 and 1966-67; the percentage of rural population living in poverty rose from 47 per cent in the preceding year to 56 per cent in the drought years and the absolute number increased by 34 million (Radhakrishna & Ray, 2005). The failure to reduce the magnitude of poverty could be attributed to the overall slow growth rate of the economy during this phase which hovered around 3.5\% till middle of 70’s and was characterised as “Hindu Rate” of growth. It could also be attributed to the poor performance of agricultural growth. Agricultural production per rural person,
agricultural wages, and food price inflation were found to be the major factors underly ing the variations in the percentage of rural poverty (Ahluwalia, 1978).

During the second phase since mid-1970’s the country achieved substantial reduction in the incidence of poverty. Persons living in poverty declined from a half to one quarter of the population (Table 6.1) this could be attributed to overall improvement in the growth rate of Indian economy as opposed to “Hindu Rate”. Further many poverty alleviation programmes like “Food for Work” were started around the same time i.e., during 1970’s. Even in the second phase the decline in poverty was not smooth; poverty increased during the early years of the 1990s before it witnessed substantial decline in the later years that is 1999-2000. Yet, 260 million persons lived in poverty, a level which could be considered similar to that in the early 1970’s (Radhakrishna & Ray, 2005).

Table 6.1: Incidence of Poverty in India

<table>
<thead>
<tr>
<th>Years</th>
<th>Poverty Ratio (%)</th>
<th>Number of Poor (Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rural</td>
<td>Urban</td>
</tr>
<tr>
<td>1956-57</td>
<td>54.1</td>
<td>-</td>
</tr>
<tr>
<td>1957-58</td>
<td>50.2</td>
<td>-</td>
</tr>
<tr>
<td>1958-59</td>
<td>46.5</td>
<td>-</td>
</tr>
<tr>
<td>1959-60</td>
<td>44.4</td>
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<tr>
<td>1960-61</td>
<td>38.9</td>
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<tr>
<td>1961-62</td>
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<td>39.4</td>
</tr>
<tr>
<td>1963-64</td>
<td>44.5</td>
<td>42.5</td>
</tr>
<tr>
<td>1964-65</td>
<td>46.8</td>
<td>45.7</td>
</tr>
<tr>
<td>1965-66</td>
<td>47.4</td>
<td>46.4</td>
</tr>
<tr>
<td>1966-67</td>
<td>56.6</td>
<td>48.4</td>
</tr>
<tr>
<td>1967-68</td>
<td>56.5</td>
<td>48.3</td>
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<td>1968-69</td>
<td>51.0</td>
<td>45.5</td>
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<tr>
<td>1969-70</td>
<td>49.2</td>
<td>44.4</td>
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<td>1970-71</td>
<td>47.5</td>
<td>41.5</td>
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<td>1972-73</td>
<td>49.4</td>
<td>44.6</td>
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<td>1977-78</td>
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<td>1987-88</td>
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<tr>
<td>1993-94</td>
<td>37.3</td>
<td>32.4</td>
</tr>
<tr>
<td>1999-00</td>
<td>27.1</td>
<td>23.6</td>
</tr>
<tr>
<td>2004-05</td>
<td>28.3</td>
<td>25.7</td>
</tr>
</tbody>
</table>

Notes: - Information not available.
A Not strictly comparable due to methodological changes in the 55th NSS Round
Table 6.2: Percentage and Number of Poor Estimated* by Expert Group 2009 (Tendulkar Methodology)

<table>
<thead>
<tr>
<th>Years</th>
<th>Poverty Ratio (%)</th>
<th>Number of Poor (Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rural</td>
<td>Urban</td>
</tr>
<tr>
<td>1993-94</td>
<td>50.1</td>
<td>31.8</td>
</tr>
<tr>
<td>2004-05</td>
<td>41.8</td>
<td>25.7</td>
</tr>
<tr>
<td>2009-10</td>
<td>33.8</td>
<td>20.9</td>
</tr>
</tbody>
</table>

Poverty Estimates
Source: Planning Commission Estimates, Data Book for DCH; 22nd April, 2013

The new poverty lines and poverty estimates are based on the new reference basket and new price indices. These values are not comparable to the earlier announced official headcount ratios using the earlier official poverty lines and outdated price indices. The all India rural headcount ratio using the recommended procedure during the year 2004-05 was 41.8 per cent in comparison with 28.3 per cent using the earlier methodology. In the light of the new methodology poverty levels need to be re-estimated for previous years. Table 6.2 shows a broad two point comparison of changes in head count ratios. Poverty in 1993-94 was 50.1 per cent in rural areas, 31.8 per cent in urban areas and 45.3 per cent in the country as a whole as compared to the 1993-94 official estimates of 37.2 per cent rural, 32.6 per cent urban and 36.0 per cent combined. That is, even though the suggested new methodology gives a higher estimate of rural headcount ratio at the all India level for 2004-05, the extent of poverty reduction in comparable percentage point declined between 1993-94 and 2004-05 is not different from that inferred using the old methodology. For the year 2009-10 the poverty estimates stand at 33.8 per cent for rural areas 20.9 per cent for urban areas and 29.8 per cent for the country as a whole (Table 6.2).

Table 6.3: Annual Average Decline in Poverty from 1993-94 to 2009-10

<table>
<thead>
<tr>
<th></th>
<th>Poverty Ratio (%)</th>
<th>Number of Poor (Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rural</td>
<td>Urban</td>
</tr>
<tr>
<td>2004-05 from 1993-94 by expert group 2009</td>
<td>0.75</td>
<td>0.55</td>
</tr>
<tr>
<td>2004-05 from 1993-94 by expert group 1993</td>
<td>0.82</td>
<td>0.61</td>
</tr>
<tr>
<td>2009-10 from 2004-05 by expert group 2009</td>
<td>1.60</td>
<td>0.96</td>
</tr>
</tbody>
</table>

Source: Planning Commission.gov.in
Table 6.3 gives the details of annual average decline of poverty during the reform period. The decade of 90s is generally considered as a lost decade for poverty reduction (Sen and Himanshu, 2004). Poverty is indeed lower now than before the economic reforms of 1991. This was less in 2004-05 than in either 1987-88 or 1993-94 in both rural and urban areas of every major state in the country, except possibly the urban areas of Chhattisgarh and Orissa (Himanshu, 2007 & Dev and Ravi, 2007). The extent of decline in the post-reform period in poverty is not higher compared to the pre reform period (Dev and Ravi, 2007). This confirms that the somewhat faster post-reform GDP growth has not been accompanied by more rapid poverty reduction. It has, in fact, been accompanied by an increase in inequality (Himanshu, 2007).

There has been substantial poverty reduction during 1999-2005; this accounts for the overwhelming part of the total reduction during 1993-2005 and implies very little poverty reduction during 1993-2000. This is surprising given that 1999-2005 periods witnessed the lowest growth in agriculture. Factors such as low relative food prices, higher growth in employment, particularly in the non-farm sector, might have been responsible for higher reduction in poverty during the said period that is 1999-2005 (Dev and Ravi, 2007).

The all-India (HCR) Head Count Ratio has declined by 7.3 percentage points from 37.2 per cent in 2004-05 to 29.8 per cent in 2009-10, with rural poverty declining by 8.0 percentage points from 41.8 per cent to 33.8 per cent and urban poverty declining by 4.8 percentage points from 25.7 per cent to 20.9 per cent (GOI, 2012). The significant reductions in poverty levels can be correlated to high economic growth rates. Between 2005 and 2010, the country’s GDP grew at an average rate of 8.5 per cent and the poverty rate (the proportion of the population below the poverty line) registered an average annual decline of 1.48 per cent. The percentage of the country’s population living below the poverty line declined from 37 per cent in 2004-05 to 22 per cent in 2011-12, according to NSSO data. Rural poverty has declined faster than urban poverty during this period. Encouraging as those gains are, the country still counts nearly 26.89 crore poor among its citizens. According to the data, the total number of people below the poverty line in the country is 26.89 crore as against 40.73 crore in 2004-05. In rural areas, the number has reduced from 32.58 crore to 21.72 crore.
Though there was not much progress in poverty reduction during most part of the post reform period however of late substantial gains have been achieved since 1999-2000 and the speed further increased during 2004-05 and 2009-10. However inequality increased significantly in the post-reform period as compared to the earlier decade (Dev and Ravi, 2007). Higher inclusive growth that increases agriculture and non-farm sector growth, and a reduction in regional, rural-urban and social disparities are important for a faster reduction in poverty. Human development is equally important for poverty alleviation. Therefore, policies that increase growth and equity have to be followed simultaneously. Low relative food prices seem to be another important variable that reduces income poverty. In this context, the recent increase in food prices is a concern for the poor and very poor. There is also a need for focused intervention on the 115 million hard core poor (Dev and Ravi, 2007).

6.3: Profiling Poor

6.3.1: Regional Patterns of Poverty

The regional differences in poverty reduction are substantial in India (Appendix-13 and Fig. 6.1). Appendix-13 shows head count ratio of poverty for major states, incidence of poverty varies largely across states. On the one end of the spectrum lie states like Himachal Pradesh and Jammu and Kashmir where poverty ratio lies within a single digit, while Orissa and Bihar lie at the other end with above 50 per cent of the population remaining below the poverty line in Bihar and around 40 per cent is the extent of people living below poverty line in Orissa. Assam has experienced an increase in the proportion of below poverty line population from 34.4 per cent during 2004-05 to 37.9 per cent during 2009-10. Of the two poorest states Bihar and Orissa latter has witnessed a substantial reduction in poverty between the two NSSO thick rounds from 57.2 per cent in (2004-05) to 37.0 per cent in (2009-10) of about 20 percentage points while Bihar has a negligible achievement between the two rounds. Six states Bihar, Jharkhand, Madhya Pradesh Maharashtra, Orissa and Uttar Pradesh have a higher proportion of poor population than all India average. Poverty in Himachal Pradesh, Madhya Pradesh, Maharashtra, Orissa, Tamil Nadu, Karnataka and Uttarakhand has declined by about 10 percentage points and more. Some of the bigger states such as Bihar, Chhattisgarh and Uttar Pradesh have shown only marginal decline in poverty ratio, particularly in rural areas.
The interstate variations in rural poverty reduction can be attributed to a variety of reasons. Some states like Kerala are high on human development while others like Bihar and Orissa have performed badly. For instance during 1957-90, variations in rural poverty reduction across states were attributed to the variations in their agricultural productivity improvement (Datt and Ravallion, 1997). In addition, initial endowments of physical infrastructure and human resource did contribute to interstate variations in performance (Radhakrishna & Ray, 2005). States such as Andhra Pradesh, Kerala, and West Bengal, which had high rural poverty ratios in the first phase, managed to lower their poverty ratios in the second phase. Andhra Pradesh had benefited from green revolution, and Kerala and west Bengal which had implemented land reforms experienced significant reductions in the rural poverty ratio (Radhakrishna & Ray, 2005). Agricultural incomes is important not only for rural but also urban poverty reduction (Sen, 1996).The poor performance of Bihar and Orissa in terms of growth can be attributed to the low level of input use especially of fertiliser and credit, the weak input delivery system, lack of research and development, lack of appropriate extension services (Bhalla and Singh, 1997). Scarcity of water due to lower precipitation and lack of other perennial sources of water as causing backwardness of parts of Maharashtra, Andhra Pradesh and Karnataka (Kurian, 2000).

Fig 6.1: Percentage of All India and State Wise Poverty in India

![Percentage of All India and State Wise Poverty in India](source: planning commission.gov.in)
6.3.2: Poverty Ratios for Social Groups among Religious Groups and Occupational Categories

Incidence of poverty varied widely across social groups. High incidence of poverty prevailed among the scheduled tribe and scheduled caste population, which have suffered from social and economic exclusion for centuries in India (Radhakrishna & Panda, 2006). In rural areas, Scheduled Tribes exhibit the highest level of poverty (47.4 per cent), followed by Scheduled Castes (SCs), (42.3 per cent), and Other Backward Castes (OBC), (31.9 per cent), against 33.8 per cent for all classes. In urban areas, SCs have HCR of 34.1 per cent followed by STs (30.4 per cent) and OBC (24.3 per cent) against 20.9 per cent for all classes. In rural Bihar and Chhattisgarh, nearly two-third of SCs and STs are poor, whereas in states such as Manipur, Orissa and Uttar Pradesh the poverty ratio for these groups is more than half. Among the religious groups Sikhs have lowest HCR in rural areas (11.9 per cent) whereas in urban areas, Christians have the lowest proportion (12.9 per cent) of poor. In rural areas, the HCR for Muslims is very high in states such as Assam (53.6 per cent), Uttar Pradesh (44.4 per cent), West Bengal (34.4 per cent) and Gujarat (31.4 per cent). In urban areas poverty ratio at all India level is highest for Muslims (33.9 per cent). Similarly, for urban areas the poverty ratio is high for Muslims in states such as Rajasthan (29.5 per cent), Uttar Pradesh (49.5 per cent), Gujarat (42.4 per cent), Bihar (56.5 per cent) and West Bengal (34.9 per cent).

The occupational composition of rural poor varied across the states. In general, in developed states poverty was highly concentrated among agricultural labour households and in contrast in backward states poverty extended to other occupational groups including self-employed in agriculture (Radhakrishna and Ray, 2005). For instance, in Punjab, Haryana, Maharashtra, and Andhra Pradesh agricultural labour household constituted more than (60 per cent) of the rural poor in 1999-2000, but they constituted less than 16 per cent in Rajasthan and 28 per cent in Assam (Radhakrishna and Ray, 2005). Wage earners in agricultural and non-agricultural sectors are almost equally poor. Poverty is the least among the salaried group followed by the self-employed in non-agriculture. Poverty among self-employed in agriculture is higher than average for all groups Incidence of poverty is the highest among wage earning class. It is about (60 per cent) higher than that for all groups. (Radhakrishna & Panda, 2006). Nearly 50 per cent of agricultural labourers
and 40 per cent of other labourers are below the poverty line in rural areas, whereas in urban areas, the poverty ratio for casual labourers is 47.1 per cent. As expected, those in regular wage/salaried employment have the lowest proportion of poor. In the agriculturally prosperous state of Haryana, 55.9 per cent agricultural labourers are poor, whereas in Punjab it is 35.6 per cent. The HCR of casual laborers in urban areas is very high in Bihar (86 per cent), Assam (89 per cent), Orissa (58.8 per cent), Punjab (56.3 per cent), Uttar Pradesh (67.6 per cent) and West Bengal (53.7 per cent).

6.4: Poverty Alleviation Strategies over the Successive Five Year Plans

Growth with social justice has been the basic objective of development planning in India since independence. There have been several initiatives to tackle the problem of poverty since the early 1950’s. The first such initiative was the Community Development Programme started in 1952. The programme aimed basically at integrated development at local level through cooperation of people and convergence of technical knowledge in various fields. The second initiative taken in the country was by introducing measures for abolition of intermediary institutions and systems of land holdings such as zamindari, jagirdari, etc. This was followed by attempts to have a comprehensive policy of land reforms. The third initiative was the emphasis during Third five year plan on food grain production through introduction of new technology which resulted in the green revolution. While the achievements through many of the efforts were significant, the impact of these initiatives was far from satisfactory to tackle the problem of poverty. Abolition of intermediary system of land tenure was completed with success, but land reform which is still an on-going process has not yielded desired results in terms of either growth or social justice. The success of the green revolution was limited to specific areas and crops (Radhkrishnan and Ray, 2005)

The development strategy adopted during the first two decades was based on the assumption of ‘trickle down’. However in the early 1960s, the contemporary empirical evidences revealed that the fruits of development had not percolated down to the masses and there were a large number of deprived and deserving communities whose basic needs remained unmet. As a response to this criticism, the Planning Commission came out with a paper in 1962 titled, ‘Perspectives of Development: 1961-1976; Implication of Planning for a Minimum Level of Living’. Thus, the planners for the first time explicitly recognized the importance of distributional
policies and considered it necessary to have targeted programmes for employment
generation and income support for those who had been left out of the benefits of the
growth process. Consequently, some special programmes like public distribution of
food grains at reasonable prices, Small Farmers Development Agency (SFDA) and
Marginal Farmers and Agricultural Labourers (MFAL) schemes were introduced in
the late 1960s and towards the beginning of the 1970s to target the specific
disadvantaged groups like the small and marginal farmers (Bandyopadhyay, 2007).
Thus there was reconceptualization of the programmes and policies in the 1970s. The
need for direct attack on poverty was finally felt particularly during the Fourth Plan
period.

During mid-1970s, the policymakers realised that the institutional changes and
the special programmes that had been in operation to complement the low economic
growth rate could not succeed in making a significant dent on those excluded from the
growth process. The on-going research further established the prevalence of poverty
among wage labourers, scheduled tribes and scheduled castes and people inhabiting
the backward regions. These findings provided the rationale for formulating growth
promoting policies with emphasis on direct measures in the form of targeted
programmes designed for a much larger set of disadvantaged population groups. One
of the important supporters of the idea of poverty-reducing growth process during this
period was Prof. Sukhamoy Chakraborty, who suggested that “just a high rate of
economic growth is not enough but growth should happen in a manner which
increases income much more for the lowest 30 per cent of the population”. Thus, a
number of targeted income and employment generation programmes were introduced
during the Fifth Five-Year Plan with the objective of making better the living
conditions of the disadvantaged. The decade of the seventies is thus considered as a
landmark with the introduction of a series of programmes based on a three-pronged
approach to attack poverty and unequal distribution which included: (i) creation of
income-generating asset base for the rural poor (ii) generation of opportunities for
wage employment; and (iii) area development programmes in backward regions like
dry land, rain-fed, drought-prone, tribal, hill and desert areas. Furthermore, since
industrial development was considered as an avenue for large-scale labour absorption,
the government also introduced Rural Industrialization Programme (RIP) and Rural
Artisans Programme (RAP). This strategic emphasis on growth with redistribution
continued during both the sixth (1980-85) as well as the seventh plan (1985-90) periods.

During the eighth plan (1992-97) policy makers were able to recognize the limitation of an income and commodity-centric notion of poverty and human well-being. In line with Prof. Amartya Sen’s celebrated work ‘Development as a Freedom’, poverty came to be recognized as not simply “a state of low income or consumption” but as the lack of freedom of a person to choose and live the life he has reasons to value. This recognition of the multi-faceted nature of poverty generated an urge among the policymakers for complementing poverty alleviation strategy with special programmes for building up the capabilities of the poor and the disadvantaged. Accordingly, the Eighth Five-Year Plan document underscored the human and social development policies as crucial components of the strategy for ensuring ‘development with social justice’. The focus was primarily on health care and education along with Special Component Plan for Scheduled Castes/Scheduled Tribes (SCs/STs).

The Tenth Plan period (2002-07) has observed a healthy transformation in the policy sphere with the emergence of a more vibrant civil society and media and the evolution of a more dynamic and sensible judiciary. In turn we have now seen India adopting a rights-based approach to development in order to address the issues of poverty. A rights-based approach recognises the multidimensional character of persistent poverty and its underlying reasons. India has already passed legislation on the rights to information, employment and education. There is already passionate advocacy on the right to food, and a more measured case is being made on the right to health (Mehata et al., 2011).

The tenth plan acknowledged the challenge of providing employment opportunities which provide enhanced incomes in view of the fact that substantial additions to labour force as a result of India’s demographic dividend were expected to take place during the next five years. Enlargement of self and wage-employment programmes and their effective delivery become an imperative in such a scenario. Thus effective implementation of anti-poverty programmes would be central to achieving the planned reductions in poverty. Concurrently Poverty alleviation programmes were designed to address different facets of rural poverty. Micro credit-linked programmes in order provide a package of services including credit and subsidy to set up micro enterprises. Wage employment programmes to address the
issue of transient poverty. Besides, schemes for infrastructure development and provision of basic services contribute to the well-being of the rural people. The plan document acknowledges that mere availability of funds is not likely to eradicate rural poverty. The success of these programmes ultimately depends on the capability of the delivery system to absorb and utilise the funds in a cost-effective manner. Therefore Successful implementation of these programmes requires an appropriate policy framework, adequate funds, and an effective delivery mechanism (Planning Commission, 2002). The Eleventh Plan visualized “Faster and more inclusive growth” as its objective. After a period of a decade and a half of reforms initiated in 1991, it was being realized that the reform process has widened disparities between the rich and the poor, it has slowed down reduction of poverty, it has resulted in a rise of unemployment. Besides, it has sharpened the rural-urban divide as well as the regional divide between the fast growing forward states and slow growing backward states. The iniquitous growth that the reform process had generated was shaking the political foundation of the Indian society and there was a need for a course correction. But inclusive growth would become a reality only if there is a rapid decline in poverty coupled with rapid reduction of unemployment in the 11th Plan (Ruddar Datt, 2008).

The plan document makes it clear that rapid growth will be essential to reduce the number of the poor and for sustainable poverty reduction, but for growth to benefit the poor disproportionately, it will have to be accompanied by more rapid employment expansion than hitherto, greater investment in health, education, water/sanitation, and child nutrition than so far, and directly targeted poverty-reduction programmes. Since the poor also suffer from low human capital, the directly targeted poverty reduction efforts of the government will fail in the Eleventh Plan if the quality of public health services and the integrated child development services do not improve, and also if the universalization of elementary education with quality does not happen. However, an inclusive growth strategy that focuses only on human capital formation or directly targeted poverty reduction is likely to fail. The structure of growth and also the pattern of production have to be employment-generating, especially outside agriculture. In other words, the simultaneous focus on a three-legged strategy: economic growth, income-poverty reduction through targeted programmes, and human capital formation will put India on a sustainable growth path.
since there is a recognized synergy between these outcomes (Planning Commission, 2008).

6.5: Pro-poor growth / Inclusive growth

Poverty alleviation has been on the national policy agenda for more than 50 years. As early as 1938, the Indian National Congress constituted a National Planning Committee (NPC) headed by Jawaharlal Nehru, which had declared that the social objective should be "to ensure an adequate standard of living for the masses, in other words, to get rid of the appalling poverty of the people". The importance of reduction in poverty, provision of other basic needs and equitable development has been emphasised in all the five year plans since independence particularly since the 5th Five-Year Plan. The government has a two-pronged approach, viz. promoting economic growth and direct action towards poverty alleviation. The latest estimates on poverty based on NSS data show that poverty in India in 2004-05 was around 37 per cent (GOI 2009). In other words, more than 400 million people are still below poverty line in India. These numbers on poverty indicate that the social objective declared by the NPC headed by Jawaharlal Nehru in 1938 is largely unaccomplished even after 62 years of independence.

The search for the “ultimate” cause of poverty is possibly one of the most sacred jobs among economists. What makes some wealthy and others poor has been the subject of many of the classical texts of economics at least right from Adam Smith. Not surprisingly, views on the ultimate causes of poverty vary from a wide spectrum, particularly with respect to the appropriate role of market forces and state interventions (Banerjee et al., 2006). During recent times for instance there has been emphasis on the promotion of market forces at the expense of state-led development in the poor and middle income countries. Commonly referred to as “Washington Consensus” the policy package combines opening countries to foreign trade and investment flows, privatizing state-owned enterprises, deregulating business and industries, and implementing restrictive fiscal and monetary policies. The underlying view is that the only effective way to reduce poverty is to promote growth via “trickle-down.” This period of the decades of 1980s-90s was one where ‘growth-first’ ideas dominated. The global politics under which this occurred can be summarised under the term ‘neo-liberalism’.
This consensus has weakened recently with the disappointing performance of many Latin American countries following this approach since mid-1980s. Despite this weakening, however, the “orthodox” approach continues to hold sway in policy circles. At the same time strong voices can be heard arguing for a package of policy measures that directly confronts poverty which include better social safety nets, schools for the poor, progressive taxes, promoting small businesses, protecting workers rights, antidiscrimination policies, land reforms, improvements in public services, and reducing protectionism in rich countries (Bridsall et al., 2001). The poverty and inequality are multi-dimensional has become generally accepted among academic and research circles, notable being World Development Report 2004 which is strongly based on Amartya Sen’s notion of capabilities. In the backdrop of all this strong voices are being heard advocating a wider set of political and institutional reforms, including promoting democracy, the rule of law, property rights (especially for the poor), reducing corruption, enhancing government accountability, and strengthening the role of civil society. Thus participatory approaches and measures relating to governance and accountability have become firmly embedded within the international development debate (Haan & Thorat, 2013).

Much of the recent debate on inclusive growth has surfaced in emerging economies, where increased rates of growth have been accompanied by growing inequalities. In India, inclusive growth emerged as a major theme with the change in government in 2004. This followed criticism that the growth model that had emerged during the previous years (and the slogan ‘Shining India’) had excluded large parts of the population, and had undermined earlier policies to promote the well-being of all. The 11th and 12th Five Year plan detail the type of development envisaged in an inclusive growth model (Haan & Thorat, 2013). There is a growing consensus among development practitioners and thinkers that growth alone is not enough to reduce poverty. The centre of the discussion is now on pro-poor growth, which takes us well beyond the trickle down theories of a few decades ago. There is still much to be done in defining what pro-poor growth is, how we assess and measure it (Eduardo Zepeda, 2004). Generally we have two definitions of pro-poor growth which are in use. Martin Ravallion (2004) defines pro-poor growth as any increase in GDP that reduces poverty, on the other hand in their paper, Kakwani and Son (2003) propose a simple and sensible definition, according to which
growth is pro-poor, relatively speaking, if it benefits the poor proportionally more than the non-poor.

The notion of pro-poor growth process in Indian context found its resonance in Sukhamoy Chakraborty’s perception of poverty-reducing growth process which says for growth to be poverty reducing it should happen in a manner which increases income much more for the lowest 30 per cent of the population. Such an idea of pro-poor growth is more akin to Kakwani and Son (2003) work. Ravallion’s definition is identical with the concept of poverty-reducing growth any growth that reduces poverty is said to be pro-poor. In my view, simply reducing poverty cannot, in general, be a sufficient condition for ‘pro-poorness’. There has to be something more; in particular, the growth process must exhibit a bias in favour of the poor. In that sense, Kakwani’s definition is a move in the right direction. He calls a growth process pro-poor only when the poor benefit proportionately more than the rich (Osmani, 2005). Ravallion’s definition refers to the totality of the growth process, whereas Kakwani’s stresses the existence of a bias in favour of the poor. We clearly need to combine the strengths of both. The concept of pro-poor growth must refer to the absolute magnitude of poverty reduction, yet contain an element of bias in favour of the poor. The critical question is how this bias is defined. I believe we must first identify a benchmark that will allow us to gauge the ‘pro-poorness’ of growth (Osmani, 2005).

The first concern that developing countries face in their objective to reduce poverty is the lack of sufficient economic growth. This is justifiably so given that no lasting poverty alleviation has occurred in the absence of sustained production growth. However, growth’s sheer size does not appear to be a sufficient condition for profound poverty reduction (Loayza and Raddatz, 2006). Why growth in the non-farm sector has not done more for India’s poor can be found in the diverse performances in poverty reduction across states over recent decades. There have been large differences in the poverty impact of any given rate of growth in non-farm output. Growth in this sector has generally not been any higher in the states where it would have had the most impact on poverty. The differences across states in the non-farm growth elasticity of poverty are explicable in terms of differences in initial rural development, and initial human development. States that lagged in these areas faced limited longer-term prospects of pro-poor growth from their non-farm economies (Ravallion, 2000).
A general argument for the resilience of poverty relies on either the lack of opportunities presented to the poor or their inability to take advantage of them. If the poor are malnourished, are uneducated, live in remote areas, or are discriminated against, the gains of economic growth are likely to escape them (Loayza and Raddatz, 2006). For some time to come, gains in agricultural productivity will remain crucial to progress in attacking poverty in India. Agricultural growth reduces rural poverty directly, and it fosters the conditions for pro-poor growth in the (urban and rural) non-farm sectors. Without higher and more stable agricultural growth, it will be hard to restore India’s momentum in poverty reduction. (Ravallion, 2000). In a nutshell, not only the size of economic growth matters for poverty alleviation but also its composition in terms of intensive use of unskilled labour, the kind of input that the poor can offer to the production process (Loayza and Raddatz, 2006).

6.6: Sustainable Agriculture and Poverty Reduction

A production system is regarded as sustainable if there was a non-negative trend in its output Lynam and Herdt (1989). They proposed total factor productivity (the total value of system outputs divided by the value of system inputs) as the output criterion, because it accounts for the changes in value inputs. Our study on the sustainability of Indian agriculture as done in the previous chapter is based on the above definition. Thus positive values for productivity measured in terms of yield can be taken as a proxy of sustainability. The question we have raised in this chapter is weather agricultural sustainability measured in terms of productivity is relevant for reducing poverty. There are many such studies which establish the pro poor ness of the agricultural growth.

6.7: Improved Productivity and Poverty Reduction: Theoretical Background

Productivity improvements in agriculture are a key determinant of pro-poor growth, particularly in countries where the poor are predominantly rural (Klasen et al., 2007). In Asia, rapid productivity gains of the Green Revolution increased producers’ incomes, raised labourers’ wages and lowered the price of food, new livelihood opportunities were also generated when success in agriculture provided the basis for economic diversification (DFID, 2004). Although cash crops can play a significant role in promoting pro-poor growth, productivity improvements in food crops are a more powerful driver of pro-poor growth, as the examples of China
particularly between 1978 and 1985) and Indonesia show. Similarly, the failure to achieve sustainable pro-poor growth in many African countries is closely related to the inability to generate lasting productivity improvements in the food crop sector (Klasen et al., 2007).

Small cultivators and workers comprise a significant proportion of the poor in the developing countries. Clearly, an increase in agricultural productivity directly increases the family income of small cultivators. Unskilled labour power is the sole asset available to the poor, so improvements in wages of unskilled workers are essential to reduce poverty. These wages in turn depend on the level of Agricultural productivity for a variety of reasons. Moreover, it allows the subsistence food requirements of society to be met with fewer workers engaged in agriculture, thus releasing labour for industrial occupations where productivity growth tends to outstrip that of agriculture (Banerjee et al., 2006). Estimates on the structure of rural poverty in India indicate that the incidence of poverty is the highest among the agricultural labour households in all the states. The shares of different households in total poverty households revealed that agricultural classes namely, agricultural labour households and self-employed in agriculture dominated the poverty households in rural areas (Dev, 1988).

Transmission mechanisms between agriculture and poverty reduction could be many such as improved agricultural performance could immediately impact rural income; cheaper food can impact poor both in rural as well as urban areas. Generation of increased economic opportunities in non-farm sector can result in poverty reduction (DFID, 2004). Datt and Ravallion (1998) have established the various channels of poverty reduction through productivity improvements, over the 1958-1994 periods. Agricultural productivity growth helps in reducing poverty, directly via higher farm yields to small producers and higher real wages to agricultural labourers. There is also a strong link through food prices. Poor gained in absolute terms from lower relative prices of food as inflation has adverse effects on the poor, via its short term effect on real wages and food prices. Further there are strong evidences of important indirect channels linking average farm productivity to living standards of the rural poor, that real agricultural wages responded positively to higher farm yields, presumably through effects on labour demand, such as due to multiple cropping (Datt & Ravallion, 1998).
In agriculture, yield increases are the main source of output growth once the agricultural frontier has been exhausted. Rising yields thus support output gains which in turn can increase incomes in self-employment and employment opportunities for those on the labour market. The expected inverse relationship between rising yields and falling rural poverty is visible however, it varies widely across region (de Janvry & Sadoulet, 2009). Dev (1988) established a link between agricultural productivity and poverty reduction. “The cross section regression reveals a significant inverse relationship between labour productivity and incidence of rural poverty”. Once again Yield being the major source of growth in labour productivity. Further the poverty reducing impact of productivity is more in post new technology era.

6.8: Empirical Study of the Relationship between Agricultural Sustainability and Poverty

There are number of empirical studies indicating the inverse relationship between agricultural growth especially rising productivity and poverty reduction in general in Asia and especially in India. Ahluwalia (1978) in his study for India for the period 1956-57 to 1973-74, concluded that poverty is inversely related to the agricultural productivity. (Datt and Revallion, 1990, 1996, 1998) estimated a model of joint determination of consumption-poverty measures, agricultural wages, and food prices, also support the view that improved productivity reduces poverty via wages and prices. (Prabha et al., 2010) in her district level study on the linkages between poverty and agricultural productivity in the state of Uttar Pradesh found that the negative impact of agricultural productivity on the incidence, depth and severity of rural poverty is statistically significant across the districts of Uttar Pradesh.

The present study will examine the association between poverty and sustainability for the country as a whole, and separately for each agro-ecological zone of the country. The study will also look at the disaggregated analysis of the relationship at the regional level also in terms of various agro ecological zones.

Regression Equation

The study will use the following equation to study the relationship

\[ poverty_i = \alpha_0 + \beta_1 yield_i + u \ldots \ldots \ldots \ldots \ldots 1 \]

\[ poverty_i = \alpha_0 + \beta_1 yield_i + \beta_2 SCST_i + \beta_3 literacy_i + U \ldots \ldots \ldots \ldots \ldots 2 \]
\[ poverty_i = \alpha_0 + \beta_1 Y_{i}, yield_i + \beta_2 SCST_i + \beta_3 literacy_i + \beta_4 Arid + \beta_5 Coastal \\
+ \beta_6 Hill + \beta_7 Irrigated + \beta_8 Rainfed + U \ldots \ldots \ldots .3 \]

Where poverty is the head-count ratio of district i. Yield is the ratio of production per hectare unit. SCST is the share of SCST population for district i. Literacy is the share of literates for district i. Arid takes value 1 if district i belongs to Arid region and otherwise zero. Coastal takes value 1 if district i belongs to Coastal region, similarly Hill, Irrigated and Rain fed dummies takes value 1 if district i belongs to these regions respectively and otherwise takes value zero.

As indicated, we have used SC/ST population and literacy rates as our control variables because of high correlations of these variables with poverty. Though problem of endogenity is a limitation of the present study we plan to use panel data in future to overcome this limitation. In order to make regional level study we have run the separate regressions for each Agro Eco zones; Arid (AEZ-1), Coastal (AEZ-2), Hill (AEZ-3), Irrigated (AEZ-4) and Rain fed (AEZ-5). The Zone wise division of the country is based ICRISAT Hyderabad classification.

**Results and Discussion**

The results obtained in table 6.4 “Model-1” are as expected signifying an inverse or a negative relationship between the two, that is productivity and poverty reduction has a negative relationship an increase in productivity results in the reduction of poverty. This clearly indicates that as productivity improves it has an implication for poverty decline. To get an idea of the magnitude, a negative value of -2.211 means that as productivity increases by one standard unit of measurement, poverty is reduced by 2.211 per cent.

Model 2 provides Regression results by adding to variables, share of SC/ST population and Literacy rates. The reason for using SC/ST and Literacy as control variables is that these variables are high correlates of poverty. As expected, the result remains same in terms of direction, though magnitude declined. This clearly demonstrates that without controlling for SC/ST and Literacy, the equation will produce results with upward bias. Earlier studies did not account for SC/ST and Literacy, so, those results may be seen with caution. Model 3 presents regression
results by adding agro-ecological zones as dummies in addition to the SC/ST and Literacy controls. The magnitude of the variable of interest has declined further. But, direction and significance did not change. This clearly establishes an inverse relationship between poverty and productivity.

Table 6.4: Agricultural Productivity and Poverty Reduction; A Country Level analysis

<table>
<thead>
<tr>
<th></th>
<th>(Model 1) Poverty (HCR)</th>
<th>(Model 2) Poverty (HCR)</th>
<th>(Model 3) Poverty (HCR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield (Per acre)</td>
<td>-2.211***</td>
<td>-2.206***</td>
<td>-2.059***</td>
</tr>
<tr>
<td></td>
<td>(0.194)</td>
<td>(0.194)</td>
<td>(0.200)</td>
</tr>
<tr>
<td>SC/ST population</td>
<td>0.0995**</td>
<td>0.139***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0406)</td>
<td>(0.0406)</td>
<td></td>
</tr>
<tr>
<td>LITERACY</td>
<td></td>
<td>-0.415***</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0604)</td>
<td></td>
</tr>
<tr>
<td>Reference regions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coastal</td>
<td>16.83**</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(5.771)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hill</td>
<td>1.561</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(6.030)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Irrigated</td>
<td>17.63***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(5.266)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rain fed</td>
<td>17.82***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(5.247)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>45.19***</td>
<td>40.58***</td>
<td>46.34***</td>
</tr>
<tr>
<td></td>
<td>(1.838)</td>
<td>(2.320)</td>
<td>(6.315)</td>
</tr>
<tr>
<td>R Square</td>
<td>0.195</td>
<td>0.209</td>
<td>0.345</td>
</tr>
<tr>
<td>No. of observations</td>
<td>472</td>
<td>472</td>
<td>452</td>
</tr>
</tbody>
</table>

Standard errors in parentheses
* p < .10, ** p < .05, *** p < .001
Each Column is a result of separate regression
Table 6.5: Poverty and Productivity: A regional analysis

<table>
<thead>
<tr>
<th></th>
<th>Column 1 (Coastal)</th>
<th>Column 2 (Hill)</th>
<th>Column 3 (Irrigated)</th>
<th>Column 4 (Rain fed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield (Per Acre)</td>
<td>-2.013**</td>
<td>1.228</td>
<td>-1.536***</td>
<td>-2.113***</td>
</tr>
<tr>
<td></td>
<td>(0.772)</td>
<td>(2.085)</td>
<td>(0.285)</td>
<td>(0.304)</td>
</tr>
<tr>
<td>SCST (Share of SCST population)</td>
<td>0.138</td>
<td>0.0656</td>
<td>-0.0409</td>
<td>0.229***</td>
</tr>
<tr>
<td></td>
<td>(0.160)</td>
<td>(0.154)</td>
<td>(0.0656)</td>
<td>(0.0586)</td>
</tr>
<tr>
<td>LITERACY (Share of the Literate in the Population)</td>
<td>-0.133</td>
<td>-0.278</td>
<td>-0.443***</td>
<td>-0.481***</td>
</tr>
<tr>
<td></td>
<td>(0.137)</td>
<td>(0.312)</td>
<td>(0.122)</td>
<td>(0.0852)</td>
</tr>
<tr>
<td>Constant (Alpha)</td>
<td>42.39**</td>
<td>23.33</td>
<td>68.96***</td>
<td>63.97***</td>
</tr>
<tr>
<td></td>
<td>(16.71)</td>
<td>(37.27)</td>
<td>(7.155)</td>
<td>(6.623)</td>
</tr>
<tr>
<td>R Square</td>
<td>0.245</td>
<td>0.0778</td>
<td>0.369</td>
<td>0.311</td>
</tr>
<tr>
<td>No. of Observations</td>
<td>48</td>
<td>18</td>
<td>140</td>
<td>243</td>
</tr>
</tbody>
</table>

Robust Standard errors in parentheses

* \( p < .10 \), ** \( p < .05 \), *** \( p < .001 \)

Each column is the result of different regressions.

The study was extended further at regional level to study whether the link between poverty and productivity vary by agro eco zones (coastal, hill, irrigated, and rain fed). The results of arid zone are dropped from the table because of insufficient data. Model 2 was used for running the results for each AEZ separately. Table 6.5 presents the results for coastal, hill, irrigated and rain fed zones in columns 1, 2, 3 and 4 respectively. The result for coastal region shows a negative and significant relationship between poverty and productivity. The result for hill region shows insignificant relationship between poverty and productivity. The results are expected as in hill regions poverty is determined by factors other than agriculture because agriculture is not an important economic activity in hills. The results are significant
for irrigated zones of the country; the results are significant even after controlling for SCST population and level of literacy in this zone. The results are also significant for rain fed regions and in rain fed regions productivity influence poverty reduction more than irrigated regions. It is interesting to note that the magnitude of variable of interest is higher for rain fed than irrigated regions. This clearly implies that as expected rain fed districts are responding at higher rate (See Table 6.5) than irrigated districts as a consequence of improvement in productivity. The main reason for this finding is that rainfed districts have a higher poverty than irrigated districts, to begin with.

Our results are consistent with what Dutt and Ravallion 1998 observed that productivity improvements help in poverty reduction and growth led by agricultural sector is pro-poor. Since India being a vast country has inter regional variations in poverty and diverse agro ecological conditions the present study acknowledges such observations. It also establishes the role of agro ecological conditions for poverty reduction through agricultural growth. Arid and coastal and hill regions are less significant in the present study. Whereas in case of irrigated and rain fed regions the study gives significant results. Since the study shows that rain fed regions show a strong association between agricultural growth and poverty reduction this is in line with (Fann and Hazel, 2000) that marginal returns to public investment are higher in rain fed relative to irrigated regions.

The results suggest that sustainable agriculture growth driven by yield gains can provide an effective way of fighting poverty. Hence to remove poverty sufficient amount of attention must be given to agriculture in terms of public investment for providing supportive infrastructure, which incidentally has fallen from policy priority during past decades.

**Summing up:**

The decade of 90s was generally considered as a lost decade for poverty reduction. However of late substantial gains were achieved since 1999-2000 and the speed further increased during 2004-05 and 2009-10. Poverty had indeed decreased; the extent of decline however in the post-reform period in poverty was not higher compared to the pre reform period. The distribution of poverty was highly uneven in India, with some states having more than 40 per cent of the people living below poverty line. Similarly poverty was more common among few social groups
especially SC/ST and Muslims. Among the occupational groups, incidence of poverty was highest among the wage earning class. The study found an inverse or negative relationship between agricultural productivity and poverty reduction, which means an increase in productivity would result in reduction of poverty. The magnitude of poverty reduction was however higher in rain fed regions of the country.
The present study examined poverty and sustainable agriculture development in India in the post reform period. First, it examined the performance of Indian agriculture during the post reform period and highlighted the issues and challenges in Indian agriculture. Second, it estimated the measure of sustainability in Indian agriculture using Malmquist Total Factor Productivity approach. Finally, it established the relationship between agricultural productivity and poverty using cross sectional district level data through ordinary least square method.

Performance of Indian Agriculture

Agricultural growth during 1990-91 to 2005-06 reflected the impact of economic reforms on agricultural performance. The most important feature of this period was that agricultural growth decelerated sharply at all India level and in all regions. The main reason for the deceleration of growth during the post reform period was a visible deceleration in investment in irrigation and other rural infrastructure. Agricultural GDP growth has accelerated to an average 3.9 per cent during 2005-06 to 2010-11. The Eleventh Five Year Plan had sought to reverse the deceleration of agricultural growth which occurred in the Ninth Plan and continued into the Tenth Plan. It had some success as food grain production touched a new peak of 250.42 million tonnes in 2011-12 and average annual growth rate during the Eleventh Plan was 3.3 per cent which was much better than last two plans though less than targeted 4 per cent growth rate. The increasing divergence between the growth trends of the total economy and that of agriculture and allied sectors suggests ‘under performance’ by agriculture. Further unlike the overall economic growth pattern, agricultural performance in India was quite volatile; the coefficient of variation during 1991 to 2011 was 140.66 indicating increasing volatility which was a real challenge in the wake of climate change.

There was an increase in area under cultivation of wheat, while area under paddy cultivation decreased slightly. But in terms of production and yield both the crops had a disappointing performance indicating clearly that yield levels had plateaued for these crops and there was need for renewed research to boost production and productivity. Area under coarse cereals displayed a negative growth which was due to either shift to other crops or the relatively dry areas being left fallow. But production and yield of coarse cereals improved significantly especially during the decade of 2000-01 to 2009-10. This increase was primarily driven by rise in
production and yield of maize and Bajra. Within the grains segment however, performance of maize was dramatic. It emerged as the third major food grain crop and the most important coarse cereal. This growth was largely driven by rising adoption of hybrid seeds and demand for feedstock due to rapid growth in the poultry sector. Gram and Tur were the major contributors to total production of pulses in the country. The growth in indices of area and production was mainly on account of Gram. It recorded an impressive growth in its production.

The oilseeds showed an improvement both in terms of yield as well in the area under cultivation. Soyabean recorded a high rate of growth in production, driven primarily by expansion in area under cultivation. Rapeseed and Mustard and Sunflower also recorded a high growth rate especially during the last decade. Apart from oilseeds cotton showed the biggest increase in the growth rates of production and yield during the last decade. Cotton experienced significant changes with the introduction of Bt. Cotton. Bt cotton cultivation increased yields in most areas and at the same time reduced pesticide sprays. The combined cost savings from reduced pesticide use and increased yields thus increased profits for farmers.

The commercialisation of agricultural production seemed to gain momentum since early 1990s. There was a definite shift from food grains to non-food grains such as fruits and vegetables, oilseeds, fibres and condiments and spices whose share in both area and in value of output increased over the period. As a result gross sown area (GSA) under food grains declined mainly due to fall in area under coarse cereals. The area lost by food grains especially coarse cereals was instead used for the cultivation of oilseeds, fruits, vegetables and non-food crops. Although the shift from coarse cereals to high value crops increased farm output and income to farmers, in dry land regions it exposed cultivators to serious weather-borne risks due to high water requirement of high value crops.

There was a continuous decline in the share of Gross Capital Formation (GCF) of agriculture and allied sectors in total GCF; from 18 to 20 per cent in 1980s it declined to 5 to 6 per cent in 2007-08. Moreover, there was a significant decline in the allocation of public outlay on agriculture as a per cent of total public outlay during the post-reform period compared to that in pre-reform period. The main reasons for reduced share of public sector expenditure under agriculture and allied activities were increased and larger public expenditure on rural development schemes like the
Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA), and rural development and poverty alleviation programmes, and secondly, increased and larger spending on food and fertilizer subsidy.

Since independence government efforts have helped increase irrigation facilities. Most of the major river systems were fully exploited, moreover the massive expansion of tube well irrigation led to serious overdrawling of groundwater and falling water tables. More than a fifth of groundwater aquifers were overexploited in Punjab, Haryana, Rajasthan, and Tamil Nadu, and groundwater levels have been falling. Surface irrigation played an important role in the turnaround of agriculture but as of now it is suffering from a number of problems, ageing of the infrastructure being a major problem. Almost 60 per cent of the dams in the country were more than two decades old. Canal networks also needed annual maintenance. Besides regular maintenance, many older structures needed replenishment for which funds were a constraint. Increased siltation of large dams was another challenge. All this will have long-term impacts on the country’s food security and economic growth.

Although the all-India average consumption of fertilizers increased substantially to 144 kg per ha in 2011-12, the average intensity of fertilizer use in India remained much lower than most countries in the world. Further the use of fertilizer is highly skewed with wide inter-regional, inter-state and inter-district variations. It was however found that non-price factors such as irrigation, high yielding varieties were more important than price factors in influencing demand for fertilizers. One of the major constraints to fertilizer use efficiency in India was imbalance of applied nutrients. Nitrogen (N) applications tended to be too high in relation to the amount of potassium (K) and phosphate (P) used. This was partly the result of a difference in price of different nutrients, and partly due to the lack of knowledge among farmers about the need for balanced fertilizer applications.

Despite significant improvement in the spread, network and outreach of rural financial institutions, the quantum of flow of financial resources to agriculture continued to be inadequate. One of the major impediments which constrained the adoption of new technological practices, land improvements and building irrigation and marketing infrastructure was the inadequacy of farm investment capital. Agricultural credit was an important contributor to increased agricultural production; but only if it reached the farmers, especially, the disadvantaged groups, and if they
were able to absorb it effectively. The share however, of marginal and small farmers in total credit had been shrinking. It appeared that the banking system was still hesitant to provide credit to small and marginal farmers. The need to augment the credit flow to the lower strata of the farming community, which had more shares in the total operational land holdings, becomes all the more important. Inadequate and untimely credit along with procedural hassles from formal institutions added to farmers’ burden. Finally an assessment of agriculture credit situation brought out the fact that the credit delivery to agriculture sector continued to be inadequate.

Increasing incidence of farmer suicides was a strong manifestation of very deep crisis in Indian agriculture. During the period between 1997 and 2010 as many as 232464 farmers committed suicide in India. The average suicides committed by farmers per year during this period were about 16605. Suicides by farmers were 14.5 per cent of all the suicides in the country during the given time period. The spatial distribution of number of suicides across different states was however highly uneven, with number of farmer suicides highly concentrated in certain states. The top seven states in terms of farmer suicides during the year 2010 were Maharashtra, Karnataka, Andhra Pradesh, Madhya Pradesh, Chhattisgarh, West Bengal and Kerala and amounted to 78.3 per cent of the all farmer suicides in the country. These states however had generally both high farmer suicide rates as well as general suicide rates.

Most of the victim households had borrowed from non-institutional sources and the interest rates charged on such debts were very high. The increased burden of labour force on a slowly contracting cultivable land area leads to increased number of holdings with lower size. The declining size of landholdings without any alternative income-augmenting opportunity resulted in fall in farm income, causing agrarian distress. The study has identified crop losses, failure of monsoon, recurrent droughts, mounting debts, mono-cropping, and land tenancy, as some of the main causes which led distressed farmers to suicides. Of the total number of suicide cases reported, 76 per cent of the victims were dependent on rain-fed agriculture and 78 per cent were small and marginal farmers. Indebtedness among farmers was however a major reason for the suicides.

Environmental sustainability of current agricultural practices was the biggest challenge faced by Indian agriculture. Degradation which was one of the biggest challenges was evident in increased soil erosion, decline in soil fertility, water-
logging, secondary salinization and contaminations of soils with toxic elements. The quality of Indian soils gradually deteriorated at the farm and eco-system level. There was growing evidence that poor irrigation practices led to significant waterlogging and salinization of irrigated land. Since climate is a direct input in the agricultural production process, climate change is expected to disproportionately impact agriculture. Risks associated with climate change will threaten livelihood opportunities within the food production sectors mainly in two ways: Firstly, increase in frequency and intensity of extreme weather events would expose the agricultural sector to greater risks to productivity resulting in loss of revenue and consequently to devastating economic and social consequences and secondly, changing weather and precipitation patterns would require expensive adaptation measures such as relocating crop cultivation, changing the composition or type of crops and increasing use of inputs such as feed, fertilizers and pesticides which may lead to economic denigration and job loss.

Indian agriculture continues to be fundamentally dependent on weather which makes it sensitive to climate induced effects. Among the most significant potential impacts of climate change on India are changes in the monsoon pattern. Because of climate change, Indian agriculture is doubly vulnerable. First as around 60 per cent of India’s total agricultural areas are rain-fed, it is highly vulnerable to climate change impacts on monsoon. Secondly, more than 80 per cent of farmers in India are small and marginal (having less than 1 ha of land) thus having less capacity to cope with climate change impacts on agriculture. since India’s 200 backward districts as ranked by the Planning Commission are distinguished for the large-scale practice of rain-fed agriculture.

**Total Factor Productivity**

The total factor productivity has been measured using Malmquist Productivity Index for Cereals, Coarse Cereals, Commercial Crops, Oilseed and Pulses. Paddy showed a substantial improvement in TFP averaging at 3.6 per cent during the study period. On the other hand TFP for Wheat production averaged at a meager 0.8 per cent during the study period. This was in conformity with the fact that present techniques of Wheat production reached a limit. Stagnancy was visible in traditional Wheat growing areas where intensive input use was aggravating the problems leading to unsustainable use of inputs. Within the Indian grains segment, performance
of Maize was dramatic. It emerged as the third major food grain crop and the most important coarse cereal. The results indicated that TFP in Maize production averaged at 2.5 per cent during the study period. This growth was largely been driven by rising adoption of hybrid seeds from the private sector and demand for feedstock due to rapid growth in the poultry sector. The results indicate that the total factor productivity change TFP in Bajara production averaged at 3.2 per cent during the study period. This was an impressive performance mainly because of the adoption of modern varieties (MV) of seeds; the adoption rate of MVs of coarse cereals has reached about 80-100 per cent in the irrigated areas. The results indicated that the total factor productivity change TFP in Jowar production averaged at 3.9 per cent during the study period Jowar has also benefited from an improvement in technology in terms of better quality seeds. Thus the performance of coarse cereals in terms of TFP was impressive.

The results indicated that the TFP in Cotton production averaged at 4.1 per cent during the study period. The increased performance of cotton in recent times can be explained in the background of introduction of Bt cotton in India. Productivity was substantially higher for Bt cotton than that for non-Bt cotton varieties. The cost efficiency as well as profit per hectare was also found to be higher for farmers cultivating Bt cotton crop. For Sugar the results indicated that TFP averaged at a negative value of -0.9 per cent during the study period. The post-Green Revolution phase was characterized by high input-use and decelerating total factor productivity growth. Sugarcane productivity attained during the 1980s was not sustained during the 1990s and early 21st century. Despite large area under sugar cultivation, productivity and yields are unimpressive, especially where the crop was irrigated. The results indicate that TFP in Jute production averaged at a negative value of -0.2 per cent during the study period. This implied a need for technological breakthrough to bring Jute out of the prevailing stagnancy. Cotton is the only commercial crop to perform well especially because of technological breakthrough achieved with the introduction of Bt. Cotton.

TFP for Groundnut production averaged at a negative value of -0.1 per cent during the study period. While TFP in Soya production also averaged at a negative value of -0.6 per cent during the same period, full potential of the oilseed sector had probably not been realized either through the improved production techniques or
better application of the available technology with the result Soybean yield in India, was 0.95 tons per hectare, which was quite low, compared to other major Soybean producing countries. The results indicate that the TFP in Arhar production averaged at a value of 1.1 per cent during the study period. The results indicate that TFP in Gram production is almost stagnant and has averaged at a meager 0.1 per cent during the study period. Pulses remain one of the weak spots in Indian Agriculture even now. Shortage of pulses will thus continue to be a cause of concern in the near future. The input support as well as the institutional support in pulses continues to remain weak.

At the state level, the highest growth in TFP in paddy production was experienced in Bihar, followed by Uttar Pradesh, Andhra Pradesh, and Punjab. West Bengal was the only state (among the states studied) which showed a negative growth rate. Growth had thus reached a limit in case of already developed states like Punjab and earlier backward states have started benefitting from advanced technologies and had begun to catch up over the years. Except for Madhya Pradesh, all other wheat producing states had benefited from TFP growth. The highest TFP growth among states, had been observed in Rajasthan, followed by Haryana and Punjab however, the value of TFP for both the states being less than one. The highest growth rate in Rajasthan suggested that the states which had initially not benefitted from green were also catching up with technological improvements, while states like Punjab and Haryana had reached a level of stagnation.

Substantial growth and efficiency in maize production was observed as a result of improved technology in Andhra Pradesh followed by Karnataka. Rajasthan was the only under-performing state. The performance of coarse cereals was substantially higher in irrigated states compared to states with lower irrigation facilities such states were also doing better in adoption of modern varieties of seeds; in case of Jowar Uttar Pradesh had done better than Maharashtra and Rajasthan with comparatively lesser irrigation availability. Technology has brought substantial growth and efficiency in cotton with the introduction of Bt. Cotton. The highest growth rate, among states, was observed in Andhra Pradesh followed by Gujarat and Maharashtra. This point out that Bt cotton worked well in the irrigated areas. For Jute ironically all the three states studied have a negative value for TFP. Assam is the worst performer followed by Orissa and West Bengal. Jute needs a technological breakthrough to come out of the prevailing stagnancy. In case of Sugarcane, Tamil
Nadu was the best performer among the three states studied followed by Uttar Pradesh. While Maharashtra an important sugarcane producing state performed badly. Sugarcane productivity during the 1980s was not sustained during the 1990s and early 21st century and posed a challenge for the researchers to shift production function upward by improving the technology index.

Despite a lacklustre performance by major oilseeds (Groundnut and Soyabean) at national level, groundnut performed well in Andhra Pradesh. Gujarat and Tamilnadu however, did not perform well. Similarly for Soyabean, Madhya Pradesh fared well while Maharashtra performed badly. This clearly indicated that full potential of the oilseed sector was not realized. The input support as well as the institutional support in pulses continued to remain weak. Furthermore, farming of pulses was still in its initial phase of technological change and was not enough technological break-through in pulses to make pulse farming as remunerative as other competing crops. Uttar Pradesh was the best performing state in Arhar cultivation followed by Maharashtra while Madhya Pradesh had performed badly during the study period. Gram production was poor at national level as well in Rajasthan and Uttar Pradesh Madhya Pradesh however had an excellent performance with a TFP value of 3.8 per cent.

**Poverty and Productivity**

On the front of poverty though there was not much progress during the early years of post-reform period, however of late substantial gains were achieved since 1999-2000 and the speed further increased during 2004-05 and 2009-10. The decade of 90s is generally considered as a lost decade for poverty reduction. Poverty is indeed lower now the extent of decline however in the post-reform period in poverty is not higher compared to the pre reform period. This confirmed that the somewhat faster post - reform GDP growth had not been accompanied by more rapid poverty reduction. It had, in fact, been accompanied by an increase in inequality.

The regional differences in poverty reduction were substantial across India; as incidence of poverty varied largely across states. On the one end states like Himachal Pradesh and Jammu and Kashmir had poverty ratio within a single digit. While in Bihar more than 50 per cent of the population remained below the poverty line, around 40 per cent of the population were below poverty line in Orissa.
Incidence of poverty also varied widely across social groups. High incidence of poverty prevailed among the scheduled tribe and scheduled caste population; there communities have suffered from social and economic exclusion for centuries in India. Among the religious groups, Sikhs had lowest HCR in rural areas whereas in urban areas, Christians had the lowest proportion of poor. Muslims had the highest HCR in both rural as well as urban areas. The occupational composition of rural poor varied across the states. In general, in developed states poverty was highly concentrated among agricultural labour households and in contrast in backward states poverty extended to other occupational groups including self-employed in agriculture. Wage earners in agricultural and non-agricultural sectors were almost equally poor. Poverty was the least among the salaried group followed by the self-employed in non-agriculture. Poverty among self-employed in agriculture was higher than the average for all groups. Incidence of poverty was the highest among the wage earning class.

To see the role of productivity in poverty reduction, we have examined the relationship between poverty and productivity using cross-sectional district level data for 2004-05 using OLS method. The study found an inverse or negative relationship between agricultural productivity and poverty reduction, which means an increase in productivity, would result in reduction of poverty. This clearly indicated that as productivity would improve it would bring about a decline in poverty.

Significant results were found even when share of SC/ST population and literacy rate were used as control variables, though the magnitude declined. This clearly demonstrated that without controlling for SC/ST and literacy the equation will produce results with upward bias. Regression was carried out by adding agro-ecological zone as dummies in addition to SC/ST and literacy controls. The magnitude of the variable of interest declined further, but, direction and significance did not change. This clearly established an inverse relationship between poverty and productivity.

The study was extended further at the regional level to establish the link between poverty and productivity across various agro-eco-zones (coastal, hill, irrigated, and rain fed). The result for coastal region showed a negative and significant relationship between poverty and productivity. The result for hill region however shows insignificant relationship between poverty and productivity. These results were expected, as in such regions poverty is determined by factors other than agriculture.
because agriculture is not an important economic activity in hills. The results were significant for irrigated zones of the country and were significant even after controlling for SC/ST population and level of literacy in the zone. The results were also significant for rain-fed regions, in rain-fed regions, productivity influenced poverty reduction more than in irrigated regions. It was interesting to note that the magnitude of variable of interest was higher for rain-fed region than irrigated regions. This clearly implied that as expected rain-fed districts were responding at higher rate than irrigated districts as a consequence of improvement in productivity. The main reason for this finding was that rain fed districts had higher poverty than irrigated districts, to begin with. The results suggest that sustainable agriculture growth driven by yield gains can provide an effective way of fighting poverty.

On the basis of the findings of present study, following suggestions can be given in order to promote sustainable growth of agriculture; such growth process will be inclusive in terms of poverty reduction.

- **Improving Productivity:** productivity needs to be improved as the scope to expand the area available for cultivation is limited. With an increasing pressure of population and a decreasing per capita availability of cultivable land, there is a need to enhance cropping intensity without compromising land productivity. As observed in this study most of the crops attained stagnancy except for few, like Cotton, (because of technological breakthrough) and Maize (as a result of increased demand). Present techniques of Paddy and Wheat production have reached a limit and stagnancy is more visible in traditional strongholds. Similarly it was apparent that, in future, the production target of Sugarcane had to be met mainly by increasing the productivity and the quality of crop, because of poor returns even in irrigated areas. As TFP for Jute was negative, Jute also needs a technological breakthrough to come out of the prevailing stagnancy. As full potential of the oilseed sector had not been realized, there was a need for enhancement of oilseed productivity. Furthermore, farming in pulses is still in initial phase of technological change. Not enough technological break-through had taken place in pulses to make pulse farming as remunerative as other competing crops. Pulses remain one of the weak spots in Indian agriculture even now. A major increase in pulse production is possible only through an increase in
productivity. Given the obvious limitations in expansion of agricultural land, therefore long-term growth primarily depends on improvement in yields.

**Efficient Use of Available Irrigation Potential:** Most disturbing feature in Indian agriculture was the recent trend of a decline in real investment in irrigation because of lack of investible resources caused largely by the rise in subsidies. Removal of input subsidies, where they have outlived their utility, would generate investment in agriculture and also promote efficient allocation of resources. Productivity of resources can be enhanced further by improving the management of infrastructure as well as by extending it to less developed areas and by introducing new technologies. The water use efficiency in India was estimated to be about 38-40 per cent for canal irrigation and about 60 per cent for ground water irrigation. Therefore, improving water use efficiency is of great significance. It is estimated that with 10 per cent increase in the present level of water use efficiency in irrigation projects, an additional 14 million hectares area can be brought under irrigation from the existing irrigation capacities which would involve a very moderate investment as compared to the investment that would be required for creating equivalent potential through new schemes. Water governance is thus an important policy concern at present and the government must focus on revitalizing canal irrigation systems and monitoring groundwater usage, to drought-proof large tracts of agricultural land in India that still remain vulnerable to erratic monsoons. Further it is very important to ensure active participation of farmers in irrigation management and that would improve the performance and sustainability of irrigation systems.

**Promote Environment Friendly Agricultural Practices:** Excessive groundwater withdrawals and distorted application of nitrogenous fertilizers have implications on the environmental sustainability of natural resources such as groundwater and soil quality, apart from being a considerable fiscal burden. It is apparent that an integrated nutrient management approach is required to enable a balanced use of fertilizers for optimum results. Also, the setting up of adequate capacity for soil testing needs to be continued. The current policy of subsidizing agricultural power, irrigation, and fertilizers has outlived its relevance and is actually constraining agricultural investments in areas where the returns are higher. Although it is difficult to completely remove these subsidies, they still
need to be gradually phased out and converted into investments in rural infrastructure (especially roads) and research and extension systems, which desperately need to be vitalized. The present study revealed that the response to increased productivity in terms of poverty reduction was more in rain fed regions than in irrigated regions. Therefore special attention must be given to development needs of such regions in terms of public expenditure.

- **Enhance Research & Development in Agriculture:** The public expenditure for technology-led agricultural growth must be prioritized in favour of agricultural research and education including extension; irrigation and flood control; soil and water conservation; rural infrastructure, rural financial institutions, and rural development and poverty alleviation programmes for creating community assets that directly contribute to agricultural growth. Declining importance of coarse cereals, over time, should not lead to the neglect of these crops. Their production needs to be promoted in location specific and in a regional development framework for sustaining livelihood of producers and food security of poor consumers in unfavorable dry land areas. Hence, to remove poverty sufficient amount of attention must be given to agriculture with preferential treatment to rain fed regions, in terms of public investment for providing supportive infrastructure, which incidentally has fallen from policy priority during past decades.

- **Crop Diversification:** The emphasis on cereal production (especially rice and wheat) in the past to achieve food security has dampening agricultural growth. Sustained economic growth, urbanization and globalization are changed the consumption pattern of consumers from food grains to high-value commodities. Such changes in consumption patterns clearly reveal that food security is no longer restricted to availability of cereals but involves a diversified food basket that includes high value commodities such as fruits, vegetables, milk, meat, eggs, fish and processed commodities. Alternative options need to be explored to revitalize agriculture, make it more profitable and improve its growth performance. Agricultural diversification towards high value commodities (HYVCs) is one of the most promising strategies to reverse the declining growth trend in agriculture. Agricultural diversification encompasses change in production portfolio from low-value to more remunerative and high-value
commodities like fruits, vegetables, milk, meat, eggs and fish that expand farm and non-farm sources of income. It not only involves production processes but also new marketing and agri-business-based industrial activities that expand the income sources of rural households and stimulate the overall rural economy.

- **Target Global Market:** Further the global trade of HYVCs is growing rapidly. India is gradually responding to the increasing demand for HYVCs in the international market. For example, the share of HYVCs in agricultural exports increased from 21 per cent in 1990 to 36 per cent in 2000. At present, the country is a minor exporter; contributing just 0.5 per cent of global exports of fruits, 1.7 per cent of global exports of vegetables and less than 1 per cent of global export of dairy products during 2001-03. Low volume of Indian export in the global market despite high production of HVCs reveals ample opportunities for India to increase its participation in the global trade.

- **Efficient Credit Delivery:** Credit is one of the important facilitating inputs that improves productivity and production of farm enterprises. Since indebtedness was the most important reason for farmer distress. Easy availability of credit was therefore an important precondition for rising agricultural production. Necessary steps required to facilitate the inclusion of small and marginal farmers, tenant farmers and farm labourers in to formal credit delivery system. The SHG-Bank Linkage model is an outstanding example of an innovation leveraging on community-based structures and existing banking institutions. With regard to KCCS, there is a need to upscale its outreach to cover all the eligible farmers by creating greater awareness and giving greater publicity to the scheme. The cooperative credit structure needs revamping to improve the efficiency of the credit delivery system in rural areas. Such steps are necessary in order to protect the small and marginal farmers, tenant farmers and farm labourers from the moneylenders charging usurious rates of interest.

- **Providing Employment Opportunities Outside Agriculture:** The declining share of agriculture to GDP, continuing high pressure of population on agriculture and increasing fragmentation of land holdings led to decreasing availability of cultivated land area per household. In such circumstances, agriculture sector would hardly be in a position to create additional employment opportunities to sustain the livelihood for rural households. Thus there is a need
for creation of additional employment opportunities in non-farm and manufacturing sectors, especially, in agro-based rural industries which have area specific comparative advantage in terms of resources endowment and development possibilities. This would require suitable skill development of the people so as to gainfully employ them in non-farm activities. This alone would be able to make agriculture viable in a sustainable manner. In addition, by creating more employment in non-farm sector and absorbing some of the surplus labour in agriculture, this will contribute to achieving the objective of inclusive growth.

- **Promote Pro-Poor Growth Process**: The Indian economy is characterized by skewed distribution of incomes, development in general and gainful employment opportunities in particular are bypassing the poorer segments of the society. Serious challenges in translating growth into development result from an absence of employment opportunities. Employment elasticity of output is extremely low, both in aggregate terms and especially in agriculture. Therefore the pattern of growth should be such as to reach a larger proportion of the poor.

- **Insulating Poverty through Food Security**: Food-based interventions may play a supplementary role in preventing entry into and further deepening of poverty, which worsened due to rising food prices, especially since 2008. Shifting from a universal to a targeted system for the PDS will have worsened coverage of the poor who are food-insecure but do not have a BPL card, especially where governance is weak. A universal approach, at least in the poorest districts, may help repair this damage.

- **Develop a Sustainable and Poverty-Reducing Approach to Agricultural Growth**: Agriculture remained a very important sector for poverty reduction, and agricultural policy needs to be reassessed in light of its contribution to improved wages and working conditions for labourers. Targeting a 4 per cent agricultural growth is an important precondition for promoting broad-based and sectorally balanced economic growth. This is possible through an increased public investment in various segments of the rural economy, i.e., land and water management, roads and other infrastructure and, above all, technology development and dissemination.
Allocate the resources to eliminate poverty: There is no denying the need for improving efficiency and effectiveness of implementation of safety net programmes. At the same time however if the goal of eradication of poverty is to be achieved within an acceptable time frame, the resources allocated to poverty reduction will need to increase substantially, in view of the massive scale on which poverty is experienced. For instance, public expenditure on delivering employment, primary and vocational education, public health services and agriculture, as well as on monitoring, evaluation, mid-course correction and regulation to ensure achievement of planned outcomes, would need to increase sharply. Strong voices are being raised for special status by some states with larger proportions of poverty. A special package could be created for states that have high levels of poverty and are willing to make commitments to eradicate it in a time-bound manner.