ECONOMIC REFORMS IN INDIA: IMPACT ON THE POOR AND POVERTY REDUCTION*

IDS WORKING PAPER 102

K N Ninan

SUMMARY

This paper analyses the impact of the economic reforms initiated in India in 1991 on the poor and poverty reduction. Using time series analysis of poverty indicators for all India and across states, it notes that while rural, urban and overall national poverty levels in India recorded a significant decline during the pre reform period (1969-70 to 1990-91), during the post reform period (1991-92 to 1993-94), these negative trends have weakened or even got reversed in terms of one or more poverty indicators. Across states a diversity of trends and patterns is observed. While during the pre reform period all fifteen states recorded significant reductions in rural and urban poverty levels, during the post reform period the scenario has changed. Although a majority of the Indian states continued to register negative trends in rural and urban poverty levels, these were not statistically significant in most cases. While a few states such as Gujarat and Karnataka reported a steeper decline in rural poverty levels in the latter period, others, notably Punjab and Haryana which ushered in the green revolution in India reported a reversal with rural poverty trends turning from negative to positive.

The study then probes into the role of different factors on poverty levels, using time series analysis of all India data and a cross section analysis of interstate data for two points of time covering the pre and post reform periods. It suggests that policies to accelerate agricultural growth, improve access to subsidised food through the public distribution system, and infrastructure development along with measures to control inflation and reduce inequalities promises to be most effective in reducing poverty in India. The poverty–aggravating effect of a rise in food prices is seen to be greater in respect of rural poverty, and during the post reform period.

ISBN 1 85864 284 1

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* This is a revised version of a paper written by me when I was a Visiting Fellow at the Institute of Development Studies, University of Sussex, during April-June 1998. Thanks are due to Sir Hans W Singer, Professors John Toye, Martin Greeley, Bob Baluch and other participants at a seminar at the IDS for several comments and suggestions on an earlier draft. My thanks are also due to Professor. T N Srinivasan, Yale University for several useful and incisive comments on the earlier draft. I also benefited from discussions with Professors Michael Lipton, University of Sussex and V M Rao, ISEC, Bangalore. Mr S. Jyothis and Ms. T. S Jeena spared considerable time and effort to computer process and analyse the data used in the study. I am extremely grateful to Professor Martin Greeley for being my academic sponsor and to the Institute of Development Studies, Sussex for awarding me a fellowship and for the congenial environment and support provided for conducting this study. Special thanks are also due to the Director of my parent Institute, the Institute for Social and Economic Change, Bangalore-72, India, for giving me the necessary leave to take up the fellowship at the IDS.

For correspondence, Dr K N Ninan, Institute for Social and Economic Change, Nagarbhavi P.O., Bangalore, 560072 India. Fax: 0091-80-3217008, E-mail: ninan@isec.kar.nic.in. Or ninankn@hotmail.com.

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INTRODUCTION

The economic reforms initiated by India in 1991 following a macroeconomic crisis have evoked considerable debate and controversy, especially regarding its social implications. Will these reforms consisting of stabilisation and Structural Adjustment Programme (SAP) benefit the poor and other marginalised groups by reducing poverty, improving food entitlements, and access to other basic needs, or will it accentuate poverty and inequality? These questions assume importance especially in the context of a widespread belief that while the benefits of such reforms have largely accrued to the rich and other better-off sections, the costs have most often been borne by the poor. The experience of countries which embarked on such reforms reveal diverse experiences in this regard. The experience of several African countries that undertook such reforms found that these reforms failed to stimulate the growth of the agricultural sector as envisaged, resulting in the stagnation of African agriculture, and a deterioration in the terms of trade for African agriculture (Greeley,1993). Real wage rates fell whereas food prices rose steeply resulting in food riots and other social and political upheavals. Evidences from Africa also suggest that these reforms affected food security resulting in increased malnutrition and infant mortality rates. Similarly many Latin American countries reported an increase in income inequalities and pauperisation.

Asia's experience with such reforms has been a mixed bag. While outward-oriented policies, rich natural resources, strategic economic and political alliances, and other factors enabled East and South-East Asian countries to register high rates of economic growth with consequent reduction in poverty levels, Sri Lanka reported a rise in malnutrition, especially among women and children, and in school drop outs. In the case of East Asian countries like Japan and South Korea land reforms and favourable human capital endowments prior to the reforms enabled the success of these reforms as well as make it more broad-based and a less painful process. These initial endowments and favourable conditions such as a more egalitarian distribution of land and other productive assets, human resource development, etc., are absent in India which may impact on the quality and success of these reforms.

There are several features of India's economic reforms which raise concern from the perspective of the poor and poverty reduction. Unlike in Africa and Latin America where agriculture was accorded priority under SAP, in India it has been accorded low priority compared to industry. This is lamentable considering that the fortunes of the rural poor of India are intrinsically linked to those of the agricultural sector, as evinced by the findings of a number of studies which observed a strong negative association between the incidence of rural poverty in India and agricultural performance (Cf. Ahluwalia, 1978, 1985; Ninan, 1994; 1995-96). Agriculture impacts on the poor in several ways. A higher agricultural output helps reduce prices as well as improve food availability, both of which are to the advantage of the poor. It will not only generate employment opportunities in the agricultural sector, but also through its linkage effects spur growth in the non-agricultural sector, thereby creating income-earning opportunities. Apologists of the reforms, however, argue that unless India attains rapid economic growth, no serious dent can be made on rural poverty. But India's experience shows that high rates of economic growth were registered whenever the agricultural sector performed well. The reforms also emphasise reduction in public expenditures on the social sectors, including food subsidies as part of the government's deficit-curbing exercises which will hurt the poor, and if pursued

vigorously without adequate safeguards could reverse the negative trends in rural poverty recorded after 1969-70. This is more so in the light of a recent study which observed a strong negative association between access to the Public Distribution System (PDS), and rural poverty levels (Ninan, 1994; 1995-96). In fact, recent evidence suggests that poverty and income inequalities have aggravated after the reforms, due to high inflationary trends, a decline in the per capita availability of foodgrains and a steep rise in the prices of foodgrains distributed through the PDS (Ninan, 1995-96). Though the World Bank and the IMF recognise the need for safety nets and effective targetting of food subsidies to make this transition process less painful, one study indicates that if the poor in India are to be effectively targeted and covered by the PDS, foodgrain requirements and food subsidies will have to be substantially raised from 20 to 52 million tonnes, and from Rs. 36 billion to Rs. 93 billion, respectively (Geetha and Suryanarayana, 1993). Studies also indicate that unless public investment in agriculture is stepped up, capital formation and private investment in agriculture will continue to stagnate as seen during the 1980s (Mallick, 1993). But this will conflict with SAP's objective which is to reduce public expenditures. Evidences from developing countries also suggest that the negative effects of such reforms have often been borne by the unorganised sector, and women.

Keeping the above in view, the present study seeks to analyse the impact of the economic reforms in India from the perspective of the poor and poverty reduction. In particular, have the declining trends in rural poverty in India observed after 1969-70 been sustained or got reversed after the reforms? A number of studies using estimates of poverty data based on national consumer survey data pertaining to the post-reforms period suggest that poverty has aggravated after the reforms (Gupta, 1992, 1996; Ninan, 1994; 1995-96). These evidences have provided ammunition to critics of the reforms to point to its adverse social effects. A recent World Bank study, however, suggests that although poverty levels seem to have risen in the initial two years after the reforms, thereafter it fell to around the level that prevailed on the eve of the reforms (World Bank, 1997). This study also suggests that the high poverty rates observed in the initial year or two after the reforms may be due to sampling and non-sampling errors in the data. The above refer to trends for the country as a whole. There is also a need to see whether the above trends in poverty hold true across states. An earlier study had noted that the trend of declining poverty in India after 1969-70 and up to 1986-87 were valid both for all India and most states (Ninan, 1994; 1995-96). As regards causal factors behind poverty a number of studies have noted the poverty-alleviating role of agricultural growth, infrastructure development and access to subsidised food through the public distribution system, as against the poverty-aggravating effect of inflation and rising inequalities (Ninan, 1994; 1995-96). It would be interesting to examine afresh the role of these and other factors on poverty in the context of the reforms. The World Bank study cited earlier, notes that only a third of the increase in measured poverty over this period could be attributed to variables such as wages for unskilled agricultural labourers, agricultural production and inflation. There are also other related issues which merit an analysis, viz., whether inequalities and the conditions of the poor have deteriorated after the reforms. In attempting this analysis we are aware of some of the reservations that are likely to be expressed. One is that the available data for the post reform period (two or three years) is too small for making an assessment of the impact of the reforms. However, as is well known even with just one year's data pertaining to the post reform period already several papers have appeared which have tried to

assess the impact of the reforms. Unlike most earlier studies we have the advantage of having data for more years for assessing the reform's impact. Another criticism is that the reforms have been implemented only partially and hence it would be too early to attempt such an analysis. Also there are lags in the initiation and effects of the reforms and hence our analysis at this juncture may only give a partial view of the full impact of the reforms. Notwithstanding these criticisms, one would like to get some early signals regarding the social effects of the reforms so that, if necessary, corrective steps could be taken to make the reforms a less painful process especially for the poor. In the light of the above, the specific objectives of the present study are as follows.

OBJECTIVES

1. To analyse the trends in poverty in India in the post-reform period as compared to the pre-reform period, both at all India level and across states.
2. To analyse the role of agricultural and non agricultural sector growth, food prices, access to subsidised food, and other factors on poverty in India at all India level and across states.
3. To analyse the trends in (consumption) inequality in India in the pre and post-reform period.
4. To estimate the elasticities of poverty in India with respect to selected variables, as well as explore factors behind improvement or deterioration of poverty levels in India in the post reform period.

DATA AND APPROACH

The study is mostly based on secondary data and sources of information available in official documents, supplemented by non-official documents. The data used for the analysis are drawn from the World Bank document cited earlier and a World Bank data set on 'Poverty and Growth in India' (Ozler et al, 1996). These have been supplemented with data from official publications of the Government of India such as the National Accounts Statistics, Estimates of State Domestic Product, Bulletin of Food Statistics, Statistical Abstracts of India, Indian Agricultural Statistics, etc. Trend analysis and regression analysis are employed in the study. For our analysis the estimates of poverty using three alternate measures of poverty i.e. head-count ratio, poverty gap index, and squared poverty gap index, as well as gini ratios computed by Gaurav Datt and cited in the World Bank document and data set cited earlier will be used. A time series analysis of poverty indicators covering both rural and urban areas, for all India and across states will be attempted. To study the role of different factors like agricultural and non-agricultural sector growth, prices, access to subsidised food through the public distribution system, etc., on poverty levels, a time series analysis of all India data, and a cross section analysis of inter-state data for two points of time covering the pre and post-reform period is also attempted in the study.

The estimates of poverty by Datt, and the World Bank are based on the official poverty line determined by the Planning Commission as recommended by the Expert Group on Estimation of Number and Proportion of Poor, Planning Commission, 1993. As per this, the poverty line corresponds to a per capita monthly expenditure of Rs. 49 for the rural areas and Rs. 57 for the urban areas at October 1973-June 1974

all India prices. These poverty lines correspond to a total household per capita expenditure sufficient to provide, in addition to basic non-food items- clothing, transport, - a daily intake of 2400 calories per person in rural areas, and 2100 calories in urban areas. This poverty line was an improvement over the earlier official poverty line which had attracted wide criticism because of the questionable methods used to derive it such as the use of a uniform implicit price deflator for rural and urban areas, the practice of making an arbitrary upward adjustment in NSS consumption figures in order to reconcile the discrepancies in the consumption data indicated by the NSS and the National Accounts Statistics (Cf. Minhas et al, 1987; Minhas et al, 1992; World Bank, 1997). This poverty line for rural areas was adjusted for subsequent years using the Consumer Price Index for Agricultural Labourers (CPIAL) with the base 1960-61 = 100, collected by the Labour Bureau, Government of India. For urban areas, the Consumer Price Index for Industrial Workers (CPIIW) with the base 1960 = 100 is used. The poverty estimates by Datt and the World Bank have used a corrected CPIAL series where upward adjustments were made to the nominal price of firewood, which had been kept constant since 1960-61 in the official CPIAL series. Because of variations in the commodity prices and rates of inflation across states, the official all India poverty line at 1973-74 prices was adjusted using the state-specific consumer price indices for rural and urban areas to derive the state-wise poverty lines. This is inflated for subsequent years using the state-specific CPIAL and CPIIW. These norms have been used to derive the poverty estimates for rural and urban areas at all India level and across states over time. The estimates of poverty made by Datt, and the World Bank are in terms of three poverty indicators, viz., the Head-Count Ratio (HCR), The Poverty Gap Index (PGI), and the Squared Poverty Gap Index (SPGI), which belong to the general class of poverty measures indicated by Foster, Greer, and Thorbecke, 1984 (World Bank, 1997). These measures respectively capture three dimensions of poverty viz., the extent, depth and severity of poverty. While the HCR indicates the proportion of poor with reference to the specified poverty line, the PGI measures the average distance below the poverty line in the population (counting the non-poor as having zero poverty gap), expressed as a percentage of the poverty line; and the SPGI is based on the individual poverty gaps raised to a power of two, i.e., it is the mean of the squared proportionate poverty gaps (Ravallion and Datt, 1996a,1996b; World Bank, 1997).

These poverty estimates are available from 1951-52 to 1993-94 for all India, and 1957-58 to 1993-94 for states, for both rural and urban areas, with gaps in between. While these data are available almost uninterrupted on an annual basis from the fifties upto 1973-74, thereafter upto 1986-87 they are available at greater point intervals due to a decision by the NSS to collect such consumption data on a quinquennium basis. However, with a view to build a time series of data a decision was again taken to collect such data on an annual basis from 1986-87 based on a smaller sample to supplement those from the quinquennium surveys. Apart from the uneven spacing of the NSS surveys, the length of the surveys have also varied from six months to one year, and some based on calendar years, and others either corresponding to or near about the agricultural year. Despite these deficiencies these are the only series available for such a long time span for any country, and hence generated wide interest and research on temporal and spatial variations in poverty for India.

Most trend fitting exercises beginning with Ahluwalia (1978) implicitly assume that the period to which the observations belong are structurally homogenous, in terms of the policy environment favouring the poor. This is incorrect. A subsequent study covering the period 1957-58 to 1986-87 provided strong theoretical and empirical grounds to justify treating this period as consisting of two distinct phases, the first from 1957-58 to 1968-69, and the second from 1969-70 to 1986-87 (Ninan, 1994; 1995-96). The green revolution marked an important phase in India's agricultural development during which there was a structural break in the trend rate of agricultural growth. Due to the bad drought years of 1965-66 and 1966-67 and their after effects, the benefits of the green revolution were transparent only after 1967. Even a visual examination of the time series data reveals that the incidence of poverty measured in terms of the HCR or Sen's Poverty Index, except for the fifties, generally showed an upward trend and reached peak levels between 1965 to 1968, and thereafter recorded a decline. The post 1969-70 period also marked an important shift in the policy environment towards the poor when owing to economic and political compulsions following a split in India's ruling congress party, then Prime Minister Indira Gandhi in a bid to fulfil her 'Garibi Hatao' (Banish Hunger) slogan sought to give a pro-poor content to her party's programmes. The post 1969-70 phase, therefore, witnessed a spurt in poor-centered welfare programmes through direct institutional intervention such as the Integrated Rural Development Programmes (IRDP), National Rural Employment Programmes, Food for Works Programme, Employment Guarantee Schemes, etc. which focused on improving the asset base of the rural poor, generating employment, and providing access to basic needs (Ninan, 1994; 1995-96). Using this categorisation of the time period of analysis into two phases which is theoretically and empirically justified, the latter study came up with more meaningful and consistent results. This indicated that contrary to the findings of other researchers, not only were there distinct time trends in the incidence of rural poverty both at all India level and across states, but also while these trends were positive and significant during 1957-58 to 1968-69, they were negative and significant in the subsequent period. The rate of decline in rural poverty during the latter period was also higher than the rate of increase in rural poverty during the previous period, both for all India and most states (Ninan, 1994; 1995-96). Keeping the above in view, 1969-70 has been taken as the starting point for our analysis, and covers the period upto 1993-94, the latest year for which poverty estimates are available. Although our analysis spans twenty five years, we have only fourteen observations at all India level, and twelve observations at state level, at our disposal for analysis, because of gaps in the data cited earlier. Unfortunately, the poverty estimates at the state level by Datt and the World Bank have omitted the figures for the 47th Round, which is the first year after the reforms. One does not know as to why this is done especially since it was the results of the NSS 47th Round which sparked off a lively debate about the adverse social costs of the reforms in India. The pre-reform period for our analysis refers to the period 1969-70 to 1990-91, and the post reform period from 1991-92 to 1993-94.

TRENDS IN POVERTY

For fitting trends the following model is used:

$$g_t = a_0 + a_1 t + a_2 d + a_3 (d.t) + u$$

where:

g = Head-count ratio or Poverty gap index or Squared poverty gap index.
d = Dummy variable where d = 0 for the Pre-Reform Period and d = 1 for the Post-Reform period.
t = Time.
d.t = Product of dummy and time variables.
u = Error term

From the estimated equations we can derive the equations for the pre and post reform periods (period I and period II) as follows:

Period I $g = a_0 + a_1 t$
Period II $g = (a_0 + a_2 d) + (a_1 t + a_3 (d.t))$

This model offers several advantages in terms of providing greater degrees of freedom for econometric analysis as inferences about the period-wise trends can be drawn from a single sample rather than two (as per the alternate method of fitting separate trends for the two sub-periods), and, more important, it enables us to see whether the slope itself has undergone a change over the two periods. Linear trends using Ordinary Least Squares (OLS) method have been used to estimate the trends in rural and urban poverty at the all India level and across states. In the equations where auto-correlation was found to be serious the parameters were re-estimated using the Beach-Mackinnon method. The estimates for the pre and post-reform period presented in tables 1 to 3 are derived from the estimated linear equations using the above model. The trends are calculated using the three alternate measures of poverty, viz., the head-count ratio (HCR), the Poverty Gap Index (PGI), and the Squared Poverty Gap Index (SPGI).

Table 1 which presents the trends in poverty and (consumption) inequality for India are quite interesting. During the pre reform period from 1969-70 to 1990-91, rural poverty levels in India recorded a significant decline in terms of all three poverty indicators under review i.e. the HCR, PGI and SPGI. The rate of decline in rural poverty levels was sharper than the same for urban poverty, in respect of all these three poverty indicators. In contrast to the above, the post reform period from 1991-92 to 1993-94 recorded either a weakening of the negative trends in poverty observed earlier or a reversal in the poverty trends from negative to positive. In terms of PGI and SPGI, which measure the depth and severity of poverty, rural poverty trends in India have reversed from negative to positive, while in terms of the HCR, a sharp weakening of the declining trend observed earlier is noted. Urban poverty trends in terms of all three poverty indicators continued to record declining trends. But none of these trends were statistically significant. Thus there are visible signs to suggest that the significant decline in poverty levels recorded in India after 1969-70

have considerably weakened or even got reversed during the post reform period. Trends in inequality (consumption) for rural India recorded a decline during both periods whereas in respect of urban areas this trend was positive during the pre reform period and negative in the latter period; none of these trends were, however, statistically significant.

The state-wise trends in rural poverty for fifteen major states in India corresponding to the three poverty indicators is presented in table 2. It is interesting to see that while during the pre reform period all fifteen states recorded a significant decline in poverty levels in terms of all three poverty indicators, during the post reform period one comes across a diversity of trends and patterns in rural poverty across these states. Eleven out of these fifteen states continued to record negative trends in rural poverty for one or more poverty indicators, although for most of these states these negative trends were no longer statistically significant. Two states, viz., Gujarat and Karnataka, however, continued to record significant declines in rural poverty levels with respect to all three poverty indicators. The rate of decline in rural poverty levels in these two states was also faster than the same during the earlier period. The intensification of rural diversifcation in Gujarat and Karnataka may explain the sharper decline in rural poverty levels in these two states in the post reform period. Three more states viz., Madhya Pradesh and Tamil Nadu in terms of HCR, and Assam in terms of SPGI recorded a significant decline; with reference to the remaining two indicators although these three states recorded negative trends these were not statistically significant. Four states report a reversal in the declining trends in rural poverty observed during the pre reform period, with the trends changing from negative to positive, although these trends were not statistically significant. Of these four states, two viz., Orissa and West Bengal (for SPGI only) fall in the eastern belt of India where poverty is known to be quite endemic. But what is most surprising is that Punjab and Haryana, which had been in the forefront in ushering in the green revolution in India, and where poverty levels recorded a consistent and significant decline earlier report a positive trend (although not statistically significant) in terms of all the three poverty indicators. The rate of increase in rural poverty levels for Haryana is quite sharp with respect to all the three poverty indicators. For instance, the HCR for Haryana which was 20.72 during 1990-91, i.e on the eve of the reforms, rose to 21.73 in 1992 and 33.08 in 1993-94 during the post reform period. Similarly, the PGI rose from 4.95 to 4.98 and 7.64 respectively; and the SPGI from 1.596 to 1.538 and 2.531 respectively.

Have the sharp hikes in procurement and issue prices of foodgrains during the post reform period in response to the pressures of the farmers' lobby worked to the detriment of the rural poor in the traditional green revolution belt of the country? This merits a detailed probe. The shift in the terms of trade in favour of agriculture reported during the post reform period may also have worked to the detriment of the rural poor, in the short run. Overall, our analysis reveals that while all fifteen states recorded significant declines in rural poverty levels during the pre reform period from 1969-70 to 1990-91 in terms of all the three poverty indicators, during the post reform period several states have reported a weakening of these negative trends; four states recorded a sharper decline in terms of one or more poverty indicators, whereas four states reported a reversal in the rural poverty trends from negative to positive; the increase in rural poverty levels for Haryana was quite sharp in terms of all three poverty indicators: but none statistically significant.

The state-wise trends in urban poverty for these fifteen states are presented in table 3. Here again it is seen that while during the pre reform period most states recorded a significant decline in urban poverty levels in terms of all three poverty indicators, during the post reform period although most of the states have continued to report negative trends these were not statistically significant. In three state viz., Bihar, Orissa and Uttar Pradesh urban poverty levels continued to decline significantly and at a faster pace during this period. Four states, viz., Assam, Madhya Pradesh, Rajasthan and Tamil Nadu reported a reversal in the negative trends in urban poverty witnessed earlier, with these trends turning positive during the post reform period with respect to one or more of these three poverty indicators. Thus, even in respect of urban poverty trends during the pre and post reform period, one finds interesting patterns emerging. While in the pre reform period urban poverty levels in all fifteen states moved in the same direction and recorded significant negative trends, in the subsequent period although most of these states continued to report negative trends, these were not statistically significant in most states; four states reported declines in urban poverty levels at an accelerated pace., whereas four states experienced a reversal with the trends becoming positive during the post reform period.

FACTORS AFFECTING POVERTY

Given the importance of the agricultural sector in the Indian economy (as is the case with most African and other Asian economies), contributing as it does to more than a third of the gross national product (GNP) and supporting over two thirds of the population, it is obvious that the fortunes of the rural poor in India are intrinsically linked to those of the agricultural sector. Ahluwalia's study, cited earlier, observed a close negative association between the incidence of rural poverty in India and agricultural performance. Agriculture impacts on the poor in several ways. A higher agricultural output helps reduce prices as well as improve food availability, both of which are to the advantage of the poor. It will not only generate employment opportunities in the agricultural sector but also through its linkage effects spur growth in the non-agricultural sector, thereby creating income-earning opportunities. Agricultural growth on the whole will give a fillip to overall economic development, raising agricultural incomes. However, if agricultural growth involves a shift from labour-intensive crops and technologies to labour-saving ones, this could also work to the detriment of the rural poor rather than to their advantage since wages from agricultural employment constitute a major component of the incomes of the poor. Evidence from India, however, suggests that, on the whole, the green revolution resulted in a net increase of labour use and real wage rates (Dantwala, 1985). Some, however, feel that in the context of the institutional and structural constraints characteristic of most low-income countries including India, the beneficial effects of growth would be mostly expropriated by groups other than the poor (Griffin and Ghose, 1979). The trickle-down effect implied by Ahluwalia's finding of a negative correlation between agricultural growth and the incidence of rural poverty was thus challenged by a number of researchers (Cf. Rajaraman, 1975: Griffin and Ghose, 1979). However, these observations are based on weak theoretical or empirical support. To cite an instance, Rajaraman's empirical findings implying a weak causal link between agricultural growth and rural poverty were based on just ten observations, of which only four pertained to the post-green revolution period. In specifying the agricultural output variables,

we have preferred to use the agricultural output variable expressed on per capita basis as used by most researchers, rather than on per acre basis as used in a recent paper by Datt and Ravallion (1998). They argue that although output on per person and per acre basis are highly correlated (being 0.89 over 35 annual observations) for predictive purposes output expressed on per acre basis is more appropriate for use in poverty equations. However in a country like India which accounts for a major chunk of the world's poor, rapid population growth can negate the favourable impact of an improvement in crop yields on poverty levels. Hence our preference to specify this variable on per capita basis.

Although urban poverty is often considered to be an outflow of rural poverty and, therefore, linked with the performance of the agricultural sector, it is primarily the performance and growth of the non-agricultural sector that determines the movements in the incidence of urban poverty. Hence, for analysing the factors behind urban poverty in India, the role of the non-agricultural sector needs to be taken into account.

Another factor influencing poverty is inflation which acts like a regressive tax and deeply affects the poor, leading to a deterioration in their entitlements and real incomes (Sen, 1990). Since food constitutes the predominant portion of the consumption basket of the poor, rising food prices cause great anxiety. Even subsistence farmers who are net purchasers of foodgrains are affected by rising food prices. Narain highlighted the role of nominal prices in affecting the incidence of rural poverty (Mellor and Desai, 1985). These results based on all India data, head-count ratio, and absolute prices were subsequently validated using data for regional disaggregates, alternate measures of poverty, and prices (both absolute and relative), including the lagged effects of agricultural output and prices on rural poverty (Ninan, 1994, 1995-96).

Population growth, poverty, and the environment are closely interlinked. Rapid population growth impacts on poverty in many ways. It can offset the beneficial effects of economic growth on poverty as experienced by some South Asian countries. Moreover, poverty intertwined with rapid population growth exercises intense pressure on scarce environmental resources resulting in environmental degradation through overexploitation of fragile resources, all of which have an adverse effect on poverty. The role of this factor also needs to be studied.

One factor which is believed to have worked to the advantage of India's poor, particularly after 1969, is the plethora of institutionalised welfare programmes to help the poor. However, few attempts have been made to test empirically the influence of these programmes on rural poverty. Of these interventions, the provision of subsidised food through the PDS has assumed great significance for the poor. However, except in Kerala and other states in southern India, the programme is largely urban-oriented, although it has been extended to rural areas in other states in the recent past. With a view to improving the targeting of the PDS, a new PDS scheme - Revamped PDS - was launched in 1992 to provide additional food subsidies in 1752 disadvantaged development blocks of the country. Subsequently, a Targeted PDS (TPDS) was introduced in 1997 which offers two distribution channels, one aimed at households below the poverty line, and the other for the population above the poverty line. As per this, poor households would be eligible for 10 kgs of cereals per month at half the issue price set for PDS foodgrains. The TPDS covers all the states and union territories except Delhi and Lakshwadeep. The specification of this variable posed problems for our analysis.

Except for one year, 1986-87, where the NSS have furnished data on commodity-wise purchases from the PDS to total purchases separately for rural and urban areas, time-series data on PDS are available only in the form of PDS offtake of foodgrains aggregated for the rural and urban areas, as well as the number of fair price shops (available separately for rural and urban areas). These limitations have been kept in view while specifying the PDS variable.

The role of other factors like inequality in rural consumption (a proxy for income inequality), and infrastructure development are also examined in our analysis.

It has been customary for some researchers to include a time trend variable as an additional explanatory variable in poverty functions to serve as a cover-all variable for all other time-related factors influencing poverty not explicitly considered in a given model. This implicitly assumes that all such time-related factors could be expected to exercise an unidirectional influence on poverty. This assumption is questionable. In fact, while some such time-related factors could be expected to exercise an upward-push effect on poverty, others may exercise a downward-push effect. The inclusion of a separate time trend variable in these circumstances is therefore questionable and could even affect the estimates of other explanatory variables.

Bearing these factors in mind, together with the data limitations, we propose to examine the causal factors behind rural and urban poverty in India between 1969-70 to 1993-94. The analysis is at two levels, a time-series analysis at the all India level, and a cross section analysis of inter-state data at two points of time ie. 1987-88 and 1993-94 which belong to the pre and post reform periods respectively.

The variables for the analysis are as follows:

Dependent Variable: Head-Count Ratio or, alternatively, Poverty Gap Index, or Squared Poverty Gap Index (all in percentages)

Independent Variables: To study the impact of agricultural growth (or performance), non-agricultural sector growth, prices, rural population pressure on environmental resources, access to subsidised food through the PDS, inequality in rural consumption levels, and infrastructure development on rural and/or urban poverty levels, the following variables are considered:

(1) Agricultural Output/Performance Variables: (three alternate specifications):
NDPAGRI - Real Net Domestic Product (NDP) from agriculture at 1960-61 prices per rural inhabitant.
NDPPRM - Real NDP from the primary sector (excluding mining and quarrying) at 1960 -61 prices per rural inhabitant.
SDPAGRI - State Domestic Product from agriculture per state rural inhabitant.

(2) Non-Agricultural Sector Output / Performance Variables (two alternate specifications):
NDPNAGRI - Real NDP from the Non-agricultural sector at 1980-81 prices per urban inhabitant.
SDPNAGRI - State Domestic Product from Non-agricultural sector per state urban inhabitant.

(3) Price Variables (two alternate specifications):

FDPR - Consumer Price Index for Agricultural Labourers for Food items (where 1960- 61=100) for rural areas, and Consumer Price Index for Industrial Workers for Food items (where 1960=100) for urban areas.

RELFDPR - Relative food to general consumer price index for agricultural labourers (1960- 61=100) for Rural areas; or Relative food to general consumer price index for industrial workers (1960=100) for Urban areas.

(4) Population Pressure on Environmental Resources:

RPPAL - Rural population pressure on agricultural land expressed in 100,000 people per ha. of gross cropped area (so as to take note of land-augmenting technologies which became prominent after the green revolution).

(5) Institutional Intervention (PDS):

PDS - Proportion of PDS Offtake of foodgrains to total net availability of foodgrains

PDSFP - Number of Fair Price Shops per 100,000 people (for rural or urban areas)

(6) Consumption Inequality:

INEQUAL - Inequality in Rural or Urban Consumption (gini ratios)

(7) Infrastructure Development:

INFRADEV - Infrastructure Development Index as constructed by the Centre for Monitoring the Indian Economy, Bombay

Not all these variables have been included in an equation because of the constraints of limited observations. Further, while some variables were common to both the time series and cross section analyses, others were included only in either the time series or cross section analysis.

The agricultural and non-agricultural output, as well as price variables were also used in their lagged forms. One could argue that the level of poverty in a given year is not only determined by that year's agricultural or non-agricultural sector's performance but also by that of the previous year. A good crop not only enables a poor household to repay past debts but also build up reserves to meet unforeseen circumstances. Similarly, inflation has a lagged effect. For instance, given the low incomes of the poor, a steep rise in the prices of essential commodities may force them to borrow in order to maintain or arrest a deterioration of their consumption standards, the after effects of which will be felt in subsequent years as well. To take note of these lagged effects, an alternate specification of the agricultural or non-agricultural output, and price variables is used which is computed as, $\{t + (t- 1)\}/ 2$. These results did not reveal any additional insights and hence for economy of space are not presented here.

Multiple linear regressions using Ordinary Least Squares (OLS) technique were used to estimate the coefficients. In those equations where the Durbin-Watson statistic indicated problem of auto-correlation to be serious the parameters were re-estimated using the Beach- Mackinnon method. The INFRADEV variable

was found to be strongly correlated with the agricultural output variable in some equations, and hence dropped from those equations. Only those equations which gave meaningful results have been presented below.

RURAL POVERTY

Table 4 which presents the results of our time series analysis for all India are quite interesting. While the agricultural output and PDS variables are negatively correlated with the incidence of rural poverty in India measured in terms of all the three poverty indicators i.e. HCR, PGI and SPGI, the relative food price variable is positively correlated with rural poverty. The coefficients are statistically significant in most cases. The gini variable which measures inequality in rural consumption (a proxy for income inequality) is also positively correlated with the incidence of rural poverty, although the coefficient was not statistically significant in the estimated equations. These observations are also valid for the equations where we have used the lagged versions of the agricultural performance and relative food price variables. The R Squares of the equations are very high. These variables are able to explain between 88 to 97 per cent of the variations in the incidence of rural poverty in India.

Results of the cross section analysis of the factors affecting the inter-state incidence of rural poverty in India for two points of time i.e. 1987-88 and 1993-94 (pre and post reform year respectively), are presented in table 5. Here again, while the agricultural performance and PDS variables are negatively correlated with the incidence of rural poverty across states in India, the food price and gini variables are positively associated with rural poverty levels. The infrastructure development index variable is negatively correlated with the incidence of rural poverty across states. The RPPAL variable is positively correlated with rural poverty indicating that rural population pressure on agricultural land exercises an upward push effect on rural poverty levels. The agricultural performance variable is statistically significant in most of the estimated equations. Although the other variables had the expected signs, none of them were statistically significant. In fact the addition of the other variables even resulted in the agricultural performance coefficient to become statistically not significant in some equations, which partly reflects the few degrees of freedom available for our analysis. An earlier study had established these variables to have a significant influence on the inter-state incidence of rural poverty in India (Ninan, 1994; 1995-96). The estimated equations are able to explain between 33 to 62 per cent of the variations in the inter-state incidence of rural poverty in India.

URBAN POVERTY

The estimated equations of the determinants of urban poverty in India are presented in table 6. While the non-agricultural sector performance and PDS variables are negatively and significantly correlated with the incidence of urban poverty levels in India, the relative food price variable is positively and significantly associated with urban poverty. The gini variable which measure the inequality in urban consumption (a proxy for income inequality) is also positively associated with urban poverty levels in the country, although this coefficient is not statistically significant. These observations are also valid for all sets of equations

corresponding to the three poverty indicators, as well as those equations where the lagged versions of the non-agricultural sector performance and relative food price variables are used. The R squares are very high in the estimated equations. These variables are able to explain between 86 to 93 per cent of the variations in the incidence of urban poverty in India.

The results of the cross section analysis of factors affecting the inter-state incidence of urban poverty in India during 1987-88 and 1993-94 are presented in table 7. While the non-agricultural sector performance, PDS and infrastructure development index variables are negatively correlated with the inter-state incidence of urban poverty in India during both the reference years, the relative food price and gini variables are positively correlated with urban poverty. The non-agricultural sector performance variable is statistically significant in all the estimated equations except one. Although the other variables have the expected signs they are not statistically significant. The above observations are true for the three sets of equations where alternatively the HCR,PGI and SPGI are used as the dependent variable. These variables are able to explain between 32 to 63 per cent of the variations in the inter-state incidence of urban poverty in India.

ELASTICITIES OF POVERTY

The elasticities of rural and urban poverty levels in India with respect to selected variables during the period under review is presented in table 8. As evident, a one per cent rise in the real NDP from agriculture per capita (rural) reduces rural poverty levels in India by over 1.4 per cent in terms of the HCR and still higher by 2.5 to 3.4 per cent in terms of the PGI and SPGI. Similarly a one per cent rise in the offtake of PDS foodgrains reduces rural poverty levels in India by 0.5 per cent, and still further, from 0.7 to 0.9 per cent in terms of PGI and SPGI. A one per cent rise in the relative prices of food, however, leads to a sharp rise in rural poverty levels, ranging from 5.3 to over 6.5 per cent across the three poverty indicators. In respect of urban poverty, a one per cent rise in the real NDP from non-agricultural sector per capita (urban) reduces urban poverty levels in terms of the HCR by 0.73 percent. This poverty-alleviating role of non-agricultural sector growth on urban poverty is sharper, ie between 1.22 to 1.6 per cent, in terms of PGI and SPGI. A rise in the offtake of PDS foodgrains by one per cent reduces urban poverty levels by 0.1 to 0.3 per cent across the three poverty indicators. As against this a one per cent rise in the relative food prices aggravated urban poverty levels by 2 to 3.7 per cent in terms of the three poverty indicators. Comparing the two sets of results it is seen that the increase in poverty levels following a rise in relative food prices is sharper in the case of rural poverty as compared to urban poverty. Similarly an increase in the offtake of PDS foodgrains brings about a sharper reduction in rural poverty levels as compared to urban poverty levels.

Table 9 presents information on the elasticities of inter-state incidence of rural and urban poverty levels in India with respect to selected variables for two points of time, viz. 1987-88 (pre reform year) and 1993-94 (post reform year). As evident a one per cent rise in the State Domestic Product (SDP) from agriculture per capita (rural) reduced the inter-state incidence of rural poverty by about 0.5 to 0.8 per cent during 1987-88 and 1993-94 across the three poverty indicators. Similarly, a rise in access to PDS by one per cent reduced the inter-state incidence of rural poverty by 0.03 to 0.2 per cent during 1987-88 and between 0.07 to 0.3 per cent during 1993-94. The poverty-alleviating role of agricultural growth and access to PDS is sharper in

terms of PGI and SPGI. A one per cent rise in the relative food prices leads to a more than proportionate rise in the inter-state incidence of rural poverty. But what is interesting to note that while in 1987-88 in the pre reform period this increase ranged between 1.04 to 1.4 per cent across the three poverty indicators, during 1993-94, in the post reform period, this increase was sharper ranging from over 2.6 per cent in respect of HCR, to around 3.2 per cent in terms of PGI and SPGI. In the case of urban poverty, a one per cent rise in the per capita (urban) SDP from non-agricultural sector reduced the inter-state incidence of urban poverty by 1 to 1.6 per cent during 1987-88, and 0.9 to 2.8 per cent during 1993-94. The poverty-alleviating effect of non-agricultural sector growth on the inter-state incidence of urban poverty is more conspicuous in relation to PGI and SPGI. But what is noteworthy is that while during 1987-88, this reduction corresponding to the SPGI was to the extent of 1.6 per cent, in 1993-94 this was still higher at 2.8 per cent. A one per cent rise in access to PDS also reduced the incidence of urban poverty across states by 0.01 to 0.2 per cent. A rise in relative food prices by one per cent increased the inter-state incidence of urban poverty by over 0.6 per cent in terms of HCR and by 1 to 1.2 per cent in terms of PGI and SPGI during 1987–88. During 1993–94, this increase in urban poverty levels was less than proportionate. The poverty- aggravating effect of a rise in relative food prices on rural poverty is more prominent during 1993-94 in the post reform period as compared to in 1987-88, in the pre-reform period.

RESULTS OF STEPWISE REGRESSIONS

In order to find out the relative contribution of selected variables to variations in rural and urban poverty levels in India during 1969-70 to 1993-94, stepwise regressions were computed. The R square values of these estimated equations, which sheds light on the contribution of these variables to poverty is furnished in table 10. As evident, over 90 per cent of the variations in rural and urban poverty levels in India is explained by the selected variables, viz. NDPAGRI, NDPNAGRI, RELFDPR, and PDS. The variables representing agricultural, and non-agricultural sector's performance are alone able to explain about 79 to 86 per cent, and 86 to 89 per cent of the variations in rural and urban poverty levels in India, respectively. The addition of relative food price variable results in a 2 to 3 per cent improvement in the explanatory power of the estimated equations pertaining to rural poverty, and 3 to 6 per cent in respect of urban poverty. The inclusion of the PDS variable raises the R square values of the estimated equation for rural poverty by 5 to 9 per cent, and only marginally in the case of urban poverty.

While the above analysis throws light on the relative importance of these variables in influencing poverty levels in India, it does not tell as to what factors may have contributed to a worsening of poverty in India in the post-reform period. To find this out stepwise regressions were run to examine the contribution of selected variables to variations in the inter-state incidence of rural and urban poverty in India for two points of time, viz. 1987-88 and 1993-94 covering the pre and post reform period respectively. Ideally, 1990-91 which was the year on the eve of the reforms would have been most appropriate to compare the pre with the post-reform situation. However, the poverty estimates for 1990-91 are based on an NSS survey with a smaller sample. The poverty estimates for 1987-88 and 1993-94 are based on full NSS samples. Keeping this in view, 1987-88 which is the latest year in the pre reform period for which poverty estimates based on the

full NSS sample are available, and similarly 1993-94, the latest year of the post reform period for which poverty estimates are available was selected for this analysis. The following variables are considered for our analysis, viz. SDPAGRI (per capita state domestic product from agricultural or non-agricultural sectors respectively) RELFDPR (relative food price) and PDSFP (number of fair price shops per l00000 population for state rural or urban areas). Table 11 presents the R square values of the estimated equations showing the contribution of the selected variables to variations in the inter-state incidence of rural and urban poverty levels in India for two points of time, viz. 1987-88 and 1993-94. For 1987-88, 30 to 52 per cent of the variations in the inter-state incidence of rural poverty in India are accounted for by SDPAGRI alone. These proportions are lower during 1993-94 ranging from 21 to 33 per cent. The importance of agriculture in affecting the incidence of rural poverty across states in India seems to be lower in the post-reform year as compared to the pre-reform year. What is most noteworthy, however, is that when the RELFDPR variable is also included, the explanatory power of the estimated equations which records only a marginal improvement of 2 to 3 per cent during the pre-reform year, 1987-88, rises substantially by 5 to 12 per cent during the post-reform year of 1993-94. The role of food prices in affecting the inter-state incidence of rural poverty appears to be greater in the post reform year as compared to the pre reform year. A sharp rise in food prices may account for the worsening of rural poverty levels in India during the post reform period. The addition of PDSFP variable also leads to only a slight improvement in the R square value of the estimated equation for rural poverty in respect of two poverty indicators, HCR and PGI. But in respect of SPGI the R square value rises further by 8 to 9 per cent in 1987-88 and 1993-94 respectively. While acknowledging a deterioration of rural poverty in India in the immediate year or two after the reforms, some have argued that a poor crop harvest was responsible for this. A close examination of the data reveals that during most years from 1969-70 to 1987-88 in the pre reform period the per capita real NDP from agriculture ranged between Rs 165 to Rs 196. It ranged between Rs 221 to Rs 223 during the three immediate years preceding the reforms (i.e. 1988-89 to 1990-91). During the post reform period, 1991-94 these ranged from Rs 210 to Rs.233. In other words, there is no conspicuous difference in the per capita real NDP from agriculture in the immediate years preceding or following the reforms. In fact, the per capita real NDP from agriculture during the post reform period was conspicuously higher than during most years from 1969-70 to 1987-88 in the pre reform period as stated earlier. Other factors may, therefore, account for the deterioration in rural poverty levels in the post reform period. In the case of urban poverty, 47 to 60 per cent of the variations in the inter-state incidence of urban poverty are accounted by SDPNAGRI during 1987-88. These proportions range from 34 to 45 per cent during 1993-94. The addition of RELFDPR and PDSFP results in only a marginal improvement in the R square values of the estimated equations across the three poverty indicators during both 1987-88 and 1993-94. It is interesting to note that while SDPNAGRI, RELFDPR and PDSFP explain between 49 to 63 per cent of the variations in the inter-state incidence of urban poverty in India during the pre reform year, 1987-88, during 1993-94 in the post reform period these variables explain a smaller proportion; i.e 37 to 48 per cent of the variations in the inter-state incidence of urban poverty in India.

RURAL POVERTY TRENDS UNDER WITH AND WITHOUT REFORM SCENARIOS

One general criticism against most studies that have assessed the social implications of such reforms in India and elsewhere, is that they fail to provide a counterfactual analysis. In other words, what would the trends in poverty have been in the absence of the reforms. To explore this we have tried to find out the trends in rural poverty in Punjab and Haryana, under a with and without reform scenario. As noted earlier, using the model spelt out earlier wherein a dummy variable was used to account for the reforms (i.e. where d = 0 during the pre reform period and d = 1 for the post reform period), we could derive two equations from the estimated equation covering the pre and post reform periods. It was noted that while rural poverty trends in Punjab and Haryana recorded significant declines across the three poverty indicators in the pre reform period, subsequently during the post reform period these trends reported a reversal and turned positive (though not statistically significant) in respect of the three poverty indicators (table 12). In the alternate case i.e. under a without reform scenario trends have been fitted by omitting the dummy variable for the period 1969-70 to 1993-94. As evident, under the without reform scenario, the rural poverty trends in Punjab and Haryana recorded a significant decline in terms of all three poverty indicators. Thus, as stated earlier in the case of Punjab and Haryana rural poverty aggravated in the post reform period. What factors account for this merits a detailed probe.

CONCLUSIONS

Evidences presented in this study suggests that while rural, urban and overall national poverty levels in India recorded a significant decline during the pre reform period from 1969-70 to 1990-91, during the post reform period from 1991-92 to 1993-94 these negative trends have weakened or even got reversed in terms of one or more of the three poverty indicators i.e. HCR, PGI and SPGI. While rural poverty levels in terms of HCR continued to record negative trends in the post reform period, in terms of PGI and SPGI a reversal is reported with the trends changing from negative to positive, although these positive trends are not statistically significant. Urban poverty levels in terms of all the three poverty indicators continued to decline at a higher rate, but none of these negative trends were statistically significant. At the state level one comes across a diversity of trends and patterns. While during the pre reform period all the fifteen states recorded significant reductions in rural and urban poverty levels in terms of all the three poverty indicators, during the post reform period the scenario has changed. Eleven out of these fifteen states continued to record negative trends in rural poverty, though these were not statistically significant in most cases. Gujarat and Karnataka, however, continued to record significant declines in rural poverty, and that too at a faster rate in terms of all three poverty indicators during the post reform period. Madhya Pradesh, and Tamil Nadu in terms of the HCR and Assam in terms of the SPGI recorded significant reductions in rural poverty levels. However, four states reported a reversal with the negative trends turning positive during the post reform period in terms of one or more poverty indicators. These include Orissa, and West Bengal (in terms of SPGI only) which fall within the eastern belt of the country known for its endemic poverty. But most surprising is that Punjab and

Haryana, the two states which ushered in the green revolution in India and where rural poverty had recorded significant reductions earlier have reported a reversal of fortunes with the trends in rural poverty becoming positive, (although not statistically significant) in terms of all the three poverty indicators during the post reform period. In the case of urban poverty levels although most states continued to report negative trends in the latter period also, these were not statistically significant in most cases, except in Bihar, Orissa, and Uttar Pradesh where they continued to decline significantly and at a faster pace. Four states, viz., Assam, Madhya Pradesh, Rajasthan and Tamil Nadu, however, reported a reversal in the negative trends witnessed earlier, with these trends turning positive during the post reform period in terms of one or more poverty indicators.

The study also confirmed the strong negative association between agricultural growth, access to the PDS and rural poverty levels in India; whereas relative food prices and inequality in rural consumption were positively associated with rural poverty levels. These were valid for all the three poverty indicators. Infrastructure development index was negatively associated with the inter-state incidence of rural poverty in India, whereas rural population pressure on agricultural lands was positively associated. The non-agricultural sector performance and access to the PDS were negatively and significantly associated with urban poverty levels in India in terms of all the three poverty indicators, whereas the relative food price variable was positively and significantly associated with urban poverty. Inequality in urban consumption too had a positive association with urban poverty. While non-agricultural sector performance, PDS, and infrastructure development were negatively correlated with the inter-state incidence of urban poverty in India during the two reference years, i.e. 1987-88 and 1993-94, the relative food price and gini variables were positively associated with the inter-state incidence of urban poverty in India.

A one per cent rise in the per capita real NDP from agriculture reduces rural poverty levels by 1.4 per cent in terms of HCR and still higher by 2.5 to 3.4 per cent in terms of PGI and SPGI. A one percentage increase in the per capita real NDP from non-agricultural sector reduces urban poverty levels by 0.7 to 1.6 per cent across the three poverty indicators. An increase in the offtake of PDS foodgrains by a similar proportion brings about a sharper reduction in rural poverty levels (0.5 to 0.9 per cent) as compared to urban poverty levels (0.1 to 0.3 per cent). The increase in poverty levels following a rise in food prices is sharper in the case of rural poverty as compared to urban poverty. A one per cent increase in relative food prices raises rural poverty levels by 5 to 6.3 per cent and urban poverty levels by 2 to 3.7 per cent across the three poverty indicators. A one per cent rise in the per capita (rural) SDP from agriculture reduced the inter-state incidence of rural poverty in India by 0.5 to 0.8 per cent during 1987-88 and 1993-94. A one per cent rise in the per capita (urban) SDP from non-agricultural sector reduced the inter-state incidence of urban poverty by 1 to 2.8 per cent during these two reference years. The poverty-aggravating effect of a rise in food prices appears to be greater during the post reform period as compared to the pre reform period. A sharp rise in food prices may, apart from other factors account for the worsening of rural poverty levels in India during the post reform period. Whether the reforms per se is to be blamed for this or the choice of inappropriate policies (e.g. the government's policy in effecting sharp hikes in procurement prices, and issue prices of PDS foodgrains) during the reform period is a matter to be debated.

There is no doubt that rapid economic growth is essential for bringing about a significant reduction in poverty levels in India. But it is not only growth per se but also the pattern of growth that matters. China's experience is worth citing here. After the introduction of reforms in China, the average annual rate of growth of GDP was 10.2 per cent during the eighties and 12.8 per cent during the first half of the nineties as compared to 5.5 per cent during the seventies. The distributional consequences of growth on China's poor have, however, been very different during the initial and latter periods of the reforms. During the initial period from 1979 until about 1985, China achieved a remarkable reduction in the incidence of poverty. Thereafter the rate of reduction for poverty drastically slowed down and arguably was halted or even reversed. (Khan, 1998). The HCR for rural poverty in China fell from 40.8 in 1980 to 14.3 in 1985. Thereafter, it has ranged between 13.6 and 16.1 between 1988 and 1994. Similarly the weighted poverty gap index fell from 4.25 in 1980 to 0.98 in 1985, it was about 1.42 in 1994 (Khan, 19988). While agriculture was accorded priority during the initial phase of the reforms in China, subsequently the trade sector was assigned priority. India like China needs to accelerate economic growth in order to seriously tackle poverty in the country. Policies to promote agricultural growth, improve access to the PDS, and infrastructure development, along with measures to control inflation, population growth, and reducing inequalities holds the key to making a dent on poverty in India. These factors need to be taken note of while implementing the reforms in the country.

Table 1: Trends in Poverty and Inequality (Consumption) in India during the Pre and Post-Reform Period from 1969-70 to 1993-94

Pre-Reform Period: 1969-70 to 1990-91; Post-Reform Period: 1991-92 to 1993-94

Poverty Indicator	Pre-Reform Period		Post-Reform Period	
	Constant	**Time**	**Constant**	**Time**
	Rural Poverty			
Head-count Ratio	59.16*	-1.02*	42.32	- 0.10
Poverty Gap Index	18.79*	-0.46*	6.87	+0.10
Squared Poverty Gap Index	7.96*	-0.23*	1.47	+0.07
	Urban Poverty			
Head-count Ratio	47.79*	-0.65*	66.49	-1.36
Poverty Gap Index	14.31*	-0.26*	18.65	-0.42
Squared Poverty Gap Index	5.68*	-0.12*	9.45	-0.26
	Overall National Poverty			
Head-count Ratio	56.82*	-0.95*	48.99	-0.04
Poverty Gap Index	17.85*	-0.42*	9.20	-0.002
Squared Poverty Gap Index	7.49*	-0.20*	3.11	+0.001
	Inequality (Consumption)			
Rural Gini	29.91*	-0.03	30.26	-0.015
Urban Gini	34.07*	+0.05	67.21	-1.23
National Gini	31.06*	+0.001	38.56	-0.25

Notes: These equations are derived from the estimated equations using the model mentioned in the text.
The trends computed here are linear trends.
*, **, and *** indicate coefficients to be statistically significant at 1, 5, and 10 per cent levels of significance respectively. In the equations for the post reform period derived from the estimated equation, the significance of the constant term is inferred on the basis of the statistical significance of the dummy variable in the estimated equation, while that of the time trend variable is inferred on the basis of the statistical significance of the (d.t) variable.

Source: The basic data for the above analysis have been taken from a World Bank document entitled:
India: Achievements and Challenges in Reducing Poverty, May 27, 1997. The estimates of poverty using different indicators of poverty, and gini ratios reported therein have been computed by Gaurav Dutt.

Table 2: Trends in Rural Poverty in India: Statewise during the Pre and Post-Reform Period from 1969-70 to 1993-94

I- Pre-Reform Period: 1969-70 to 1990-91; II- Post-Reform Period: 1991-92 to 1993-94

States	Period	Headcount Ratio		Poverty Gap Index		Squared Poverty Gap Index	
		Constant	Time	Constant	Time	Constant	Time
Andhra Pradesh	I	61.51*	-1.30**	19.68*	-0.58*	8.36*	-0.29*
	II	343.97	-12.12	113.22	-4.13	49.64	-1.85
Assam	I	56.67*	-0.60***	12.59*	-0.17	4.06*	-0.06
	II	248.78	-7.69	120.36	-4.26	55.25***	-2.02***
Bihar	I	69.91*	-0.49*	24.85*	-0.45*	11.45*	-0.28*
	II	175.31	+4.30	79.91	-2.41	41.42	-1.35
Gujarat	I	64.59*	-1.17*	20.40*	-0.55*	8.44*	-0.26*
	II	404.88***	-14.24***	174.65***	-6.44***	83.85***	-3.13***
Haryana	I	37.38*	-0.76*	9.65*	-0.24*	3.47*	-0.10*
	II	-250.45	+10.90	-48.77	+2.16	-19.73	+0.85
Karnataka	I	61.14*	-0.72*	19.03*	-0.28*	7.95*	-0.13*
	II	439.39***	-15.32***	172.30***	-6.25***	79.26***	-2.92***
Kerala	I	75.01*	-1.86*	29.34*	-0.97*	14.25*	-0.54*
	II	101.70	-2.73	42.16	-1.37	14.77	-0.49
Madhya Pradesh	I	67.47*	-0.88*	23.54*	-0.50*	10.56*	-0.28*
	II	322.54***	-10.66***	76.69	-2.51	24.83	-0.80
Maharashtra	I	75.19*	-1.21*	24.83*	-0.54*	9.46*	-0.21
	II	320.90	-10.48	132.57	-4.59	55.31	-1.93
Orissa	I	70.14*	-1.40*	24.46*	-0.69*	11.26*	-0.38*
	II	-23.86	+2.47	-5.06	+0.53	-11.97	+0.57
Punjab	I	30.72*	-0.70*	7.52*	-0.24*	2.65*	-0.10*
	II	-30.80	+1.87	-17.48	+0.79	-6.74	+0.29
Rajasthan	I	67.40*	-1.16*	23.74*	-0.52*	10.88*	-0.27**
	II	143.32	-3.53	61.11	-1.90	31.17	-1.04
Tamil Nadu	I	67.54*	_1.09*	22.28*	-0.48*	9.67*	-0.24*
	II	294.40***	-9.91***	119.56	-4.27	52.11	-1.89
Uttar Pradesh	I	54.62*	-0.84*	15.19*	-0.30*	5.72*	-0.13*
	II	196.49	-5.97	98.68	-3.42	55.17	-2.00
West Bengal	I	66.56*	-1.49*	21.42*	-0.62*	9.08*	-0.30*
	II	50.15	-0.88	10.34	-0.22	-0.27	+0.06

Notes: These equations are derived from the estimated equations using the model mentioned in the text.
The trends computed here are linear trends.
*, **, and *** indicate coefficients to be statistically significant at 1, 5, and 10 per cent levels of significance, respectively. In the equations for the second period derived from the estimated equations, the significance of the constant term is inferred on the basis of the statistical significance of the dummy variable in the estimated equation, while that of the time trend variable is inferred on the basis of the statistical significance of the (d.t) variable.

Source: The basic data for the above analysis have been taken from a World Bank document entitled: India: Achievements and Challenges in Reducing Poverty, May 27, 1997. The estimates of poverty using different poverty indicators reported therein have been computed by Gaurav Dutt.

Table 3: Trends in Urban Poverty in India : Statewise during the Pre and Post-Reform Period from 1969-70 to 1993-94

I- Pre-Reform Period: 1969-70 to 1990-91; II- Post-Reform Period: 1991-92 to 1993-94

States	Period	Head-count Ratio		Poverty Gap Index		Squared Poverty Gap Index	
		Constant	Time	Constant	Time	Constant	Time
Andhra Pradesh	I	50.77*	-0.80*	14.45*	-0.26*	5.62*	-0.11*
	II	88.80	-2.23	57.28	-1.94	27.52	-0.98
Assam	I	29.61*	-0.48	6.17**	-0.11	1.87**	-0.04
	II	-83.39	+3.59	-14.32	+0.58	-1.11	+0.05
Bihar	I	55.65*	-0.48*	17.51*	-0.24*	7.23*	-0.13*
	II	168.91	-4.95*	97.44**	-3.37**	49.52	-1.78*
Gujarat	I	58.27*	-0.85*	16.18*	-0.32*	6.06*	-0.14*
	II	248.36	-8.39	102.29	-3.70	49.74	-1.85
Haryana	I	42.67*	-1.11*	11.50*	-0.38*	11.40*	-0.37*
	II	202.48	-7.25	26.76	-0.94	25.84	-0.90
Karnataka	I	51.97*	-0.67*	15.88*	-0.25*	6.56*	-0.12*
	II	239.01	-8.05	94.57	-3.35	44.40	-1.61
Kerala	I	67.25*	-1.41*	27.07*	-0.81*	13.53*	-0.47*
	II	114.41	-3.40	34.01	-1.07	10.86	-0.33
Madhya Pradesh	I	57.42*	-0.70**	18.49*	-0.31**	7.89*	-0.16***
	II	-93.33	+5.13	-13.66	+0.91	-0.12	+0.14
Maharashtra	I	44.23*	-0.13	13.96*	-0.06	6.05*	-0.04
	II	46.61	-0.38	13.82	-0.11	6.66	-0.09
Orissa	I	54.93*	-0.53	18.74*	-0.32**	8.51*	-0.18**
	II	-260.37**	-8.39***	166.44*	-5.95*	90.61*	-3.32**
Punjab	I	30.57*	-0.70**	6.51*	-0.17**	1.99*	-0.06**
	II	86.06	-2.94	35.49	-1.31	13.04	-0.49
Rajasthan	I	56.77.*	-0.93*	17.89*	-0.38*	7.42*	-0.18*
	II	-25.80	+2.22	17.20	-0.36	15.85	-0.50
Tamil Nadu	I	56.77*	-0.93*	17.89*	-0.39*	7.42*	-0.18*
	II	-25.80	+2.22	17.20	-0.36	15.85	-0.50
Uttar Pradesh	I	61.04*	-0.83*	18.34*	-0.32*	7.54*	-0.16**
	II	364.94**	-12.71**	89.25	-3.10	37.42	-1.33
West Bengal	I	37.29*	-0.47**	10.29*	-0.20***	3.92*	-0.10
	II	128.12	-4.03	51.82	-1.81	23.45	-0.85

Notes: These equations are derived from the estimated equations using the model mentioned in the text.
The trends computed here are linear trends.
*, **, and *** indicate coefficients to be statistically significant at 1, 5, and 10 per cent levels of significance, respectively. In the equations for the second period derived from the estimated equations, the significance of the constant term is inferred on the basis of the statistical significance of the dummy variable in the estimated equation, while that of the time trend variable is inferred on the basis of the statistical significance of the (d.t) variable.

Source: The basic data for the above analysis have been taken from a World Bank document entitled: India: Achievements and Challenges in Reducing Poverty, May 27 1997. The estimates of poverty using different poverty indicators reported therein have been computed by Gaurav Dutt.

Table 4: Determinants of Rural Poverty in India: 1969-70 to 1993-94

Equation No.	Estimated Linear Equations	R^2	DW Statistic	Rho
	Dependent Variable: Head-count Ratio (per cent)			
1		0.92	1.99	-0.74**
2	-82.33 – 0.34 NDPAGRI* + 2.01 RELFDPR** - 2.13 PDS*	0.88	1.94	-0.58
3	123.26* - 0.33 NDPAGRI* - 2.00 PDS* + 0.37 GINI	0.94	1.80	0.77**
4	-79.39 - 0.28 NDPPRM* + 1.89 RELFDPR** - 1.94 PDS*	0.90	1.91	0.53
5	124.44* - 0.28 NDPPRM* - 1.72 PDS* + 0.01 GINI	0.91	1.91	0.48
6	-5.11 – 0.38 LNDPAGRI* + 1.21 LRELFDPR – 0.63 PDS			
	-105.85 – 0.31 LNDPPRM* + 2.08 LRELFDPR	0.89	1.59	_
	- 1.10 PDS**			
	Dependent Variable: **Poverty Gap Index**			
7				
	-22.15 – 0.16 NDPAGRI* + 0.71 RELFDPR***	0.94	2.12	-0.78**
8	- 0.93 PDS*	0.91	2.05	-0.65**
9	53.34* - 0.16 NDPAGRI* - 0.87 PDS* + 0.03 GINI	0.97	1.96	-0.87*
10	-21.07 – 0.13 NDPPRM* + 0.65 RELFDPR** - 0.84 PDS*			
	-33.91 – 0.17 LNDPAGRI* + 0.79 LRELFDPR	0.91	1.72	_
11	- 0.50 PDS**			
	-33.89* - 0.14 LNDPPRM* + 0.75 LRELFDPR	0.91	1.68	_
	- 0.47 PDS**			
	Dependent Variable: Squared Poverty Gap Index			
12		0.95	2.13	-0.77**
13	-7.03 – 0.08 NDPAGRI* + 0.30 RELFDPR* - 0.45 PDS*	0.97	1.94	-0.86*
14	-6.43 – 0.07 NDPPRM* + 0.27 RELFDPR** - 0.41 PDS*			
	-12.53 – 0.09 LNDPAGRI* + 0.34 LRELFDPR	0.91	1.67	_
15	- 0.25 PDS**			
	-12.53 – 0.07 LNDPPRM* + 0.32 LRELFDPR	0.91	1.61	_
	- 0.23 PDS**			

Notes: For a description of the independent variables refer to the text. Variables prefixed by the letter 'L' are lagged variables. Only the agricultural performance and price variables have been used in the lagged form in some equations. For *, **, and *** please refer to notes in table 2.

Source: The basic data for the above analysis have been obtained from the World Bank publication referred to in table 1, and a World Bank Data Set on Poverty and related indicators for India; these have been supplemented by official documents such as the Bulletin of Food Statistics, Statistical Abstracts of India, Govt. of India, etc.

Table 5: Determinants of Inter-State Incidence of Rural Poverty in India: A Cross-Section Analysis for 1987-88 and 1993-94

Equation No.	Estimated Linear Equations	R^2	DW Statistic
	1987-88:		
	Dependent Variable:Head-count Ratio (in per cent)		
1	28.48 – 0.01 SDPA** + 0.03 FDPR – 2.91 PDSFP + 0.11 GINI	0.56	1.95
2	- 49.34 - 0.01 SDPA** + 1.00 RELFDPR – 4.36 PDSFP + 0.13 GINI	0.57	2.09
3	- 47.79 – 0.004 SDPA + 0.96 RELFDPR – 3.58 PDSFP + 0.46 GINI – 0.10 INFRADEV	0.62	1.92
	Dependent Variable: Poverty Gap Index		
4	- 1.01 – 0.002 SDPA** + 0.01 FDPR – 1.97 PDSFP + 0.26 GINI	0.51	1.89
5	- 32.62 – 0.002 SDPA** + 0.40 RELFDPR – 2.56 PDSFP + 0.27 GINI	0.52	2.04
6	- 32.03 – 0.001 SDPA + 0.39 RELFDPR – 2.26 PDSFP + 0.39 GINI – 0.04 INFRADEV	0.58	1.79
	Dependent Variable: Squared Poverty Gap Index		
7	- 2.63 – 0.001 SDPA* + 0.005 FDPR – 1.04 PDSFP + 0.15 GINI	0.46	1.85
8	- 17.99 – 0.001 SDPA** + 0.19 RELFDPR – 1.34 PDSFP + 0.16 GINI	0.49	2.00
9	- 17.71 – 0.0004 SDPA + 0.18 RELFDPR – 1.19 PDSFP + 0.22 GINI – 0.02 INFRADEV	0.57	1.69
	1993-94:		
	Dependent Variable: Head-count Ratio (in per cent)		
10	**-** 106.10 – 0.003 SDPA* + 1.54 RELFDPR – 3.69 PDSFP	0.46	2.38
11	- 72.64 – 0.001 SDPA + 1.33 RELFDPR – 0.20 INFRADEV + 0.70 RPPAL	0.59	2.01
	Dependent Variable: Poverty Gap Index		
12	- 33.57 – 0.001 SDPA** + 0.46 RELFDPR – 3.92 PDSFP	0.37	2.42
13	- 30.21 – 0.001 SDPA** + 0.40 RELFDPR + 0.04 GINI	0.33	2.58
14	- 23.43 – 0.0002 SDPA + 0.39 RELFDPR – 2.49 PDSFP - 0.05 INFRADEV + 0.17 RPPAL	0.47	2.18
	Dependent Variable: Squared Poverty Gap Index		
15	- 13.29 –0.0003 SDPA*** + 0.17 RELFDPR – 1.93 PDSFP + 0.12 GINI	0.33	2.37
16	- 16.16 – 0.00004 SDPA + 0.19 RELFDPR – 0.43 PDSFP + 0.14 GINI – 0.03 INFRADEV + 0.12 RPPAL	0.45	1.90

Notes: 1) For a description of the independent variables refer the text.
2) *, **, *** indicates statistically significant at 1, 5, and 10 per cent levels of significance.
3) For other notes including sources of basic data for the above analysis refer to earlier tables.

Table 6: Determinants of Urban Poverty in India: 1969-70 to 1993-94

Equation No.	Estimated Linear Equations	R^2	DW Statistic	Rho
	Dependent Variable: Head-count Ratio (per cent)			
1	- 25.72 – 0.01 NDPNAGRI** + 0.94 RELFDPR** - 0.52 PDS***	0.93	1.81	0.34
2	- 34.53 - 0.01 NDPNAGRI** + 0.99 RELFDPR** - 0.53 PDS*** + 0.11 GINI	0.93	1.79	0.33
	Dependent Variable: **Poverty Gap Index**			
3	-16.96 – 0.002 NDPNAGRI* + 0.37 RELFDPR** - 0.30 PDS**+ 0.13 GINI	0.92	1.84	_
4	31.72* - 0.004 NDPNAGRI* - 0.34 PDS** + 0.02 GINI	0.86	1.34	_
5	31.73 – 0.002 LNDPNAGRI*** + 0.49 LRELFDPR*** - 0.004 PDS*	0.92	1.32	0.60
	Dependent Variable: Squared Poverty Gap Index			
6	-9.89 – 0.001 NDPNAGRI* + 0.17 RELFDPR** - 0.14 PDS** + 0.10 GINI	0.91	2.02	_
7	-13.69 – 0.001 LNDPNAGRI*** + 0.21 LRELFDPR*** - 0.002 PDS	0.93	1.52	0.63

Notes: For a description of the independent variables refer to the text. Variables prefixed by the letter 'L' are lagged variables. Only the non-agricultural sector performance and price variables have been used in the lagged form in some equations. For *, **, and *** please refer to notes in table 2.

Source: The basic data for the above analysis have been obtained from the World Bank publication referred to in table 1, and a World Bank Data Set on Poverty and related indicators for India; these have been supplemented by official documents such as the Bulletin of Food Statistics, Statistical Abstracts of India, Govt. of India, etc.

Table 7: Determinants of Inter-State Incidence of Urban Poverty in India: A Cross-Section Analysis for 1987-88 and 1993-94

Equation No.	Estimated Linear Equations	R^2	DW Statistic
	1987-88:		
	Dependent Variable: Head-count Ratio (in per cent)		
1	40.47 – 0.002 SDPNA* + 0.19 RELFDPR – 0.001 PDSFP	0.61	2.20
2	39.95 - 0.002 SDPNA** + 0.20 RELFDPR – 0.01 PDSFP - 0.005 INFRADEV	0.61	2.21
	Dependent Variable: Poverty Gap Index		
3	8.12 – 0.001 SDPNA** + 0.08 RELFDPR – 0.003 PDSFP	0.56	1.96
4	8.06 – 0.001 SDPNA** + 0.08 RELFDPR – 0.003 PDSFP -0.0005 INFRADEV	0.56	1.96
	Dependent Variable: Squared Poverty Gap Index		
5	2.22 – 0.0003 SDPNA** + 0.04 RELFDPR – 0.001 PDSFP	0.48	1.70
6	2.15 – 0.0003 SDPNA** + 0.04 RELFDPR – 0.001 PDSFP - 0.001 INFRADEV	0.48	1.69
7	2.06 – 0.0003 SDPNA + 0.04 RELFDPR – 0.002 PDSFP + 0.003 GINI – 0.001 INFRADEV	0.48	1.69
	1993-94:		
	Dependent Variable: Head-count Ratio (in per cent)		
8	46.99 – 0.001 SDPNA** + 0.003 RELFDPR – 0.05 PDSFP	0.48	1.54
9	52.63* – 0.001 SDPNA** - 0.05 PDSFP – 0.07 INFRADEV	0.53	1.48
10	91.02 – 0.001 SDPNA** - 0.64 RELFDPR – 0.03 PDSFP + 1.15 GINI – 0.12 INFRADEV	0.63	1.46
	Dependent Variable: Poverty Gap Index		
11	11.45 – 0.0002 SDPNA*** + 0.001 RELFDPR	0.33	1.42
12	11.32 – 0.0002 SDPNA*** + 0.003 FDPR - 0.02 PDSFP	0.36	1.40
13	14.18* – 0.0003 SDPNA** – 0.01 PDSFP – 0.02 INFRADEV	0.46	1.49
	Dependent Variable: Squared Poverty Gap Index		
14	3.45 – 0.0001 SDPNA* + 0.001 RELFDPR	0.32	1.46
15	2.78 – 0.0001 SDPNA*** + 0.01 RELFDPR – 0.001 PDSFP	0.36	1.44
16	4.76* - 0.0001 SDPNA*** - 0.01 PDSFP – 0.001 INFRADEV	0.38	1.44

Notes: 1) For a description of the independent variables refer the text.
2) *, **, *** indicates statistically significant at 1, 5, and 10 per cent levels of significance.
3) For other notes, including sources of basic data for the above analysis, refer to earlier tables.

Table 8: Elasticities of Rural and Urban Poverty Levels in India with respect to Selected Variables during 1969-70 to 1993 – 94

Poverty Indicators	Independent variables		
	NDPAGRI or NDPNAGRI	RELFDPR	PDS
	Rural Poverty		
Head count ratio	-1.44	5.30	-0.50
Poverty gap index.	-2.55	6.35	-0.76
Squared poverty gap index	-3.42	6.53	-0.93
	Urban Poverty		
Head count ratio	-0.73	2.14	-0.10
Poverty gap index.	-1.21	3.05	-0.25
Squared poverty gap index	-1.57	3.67	-0.28

Note: For *rural poverty equations* the independent variables are NDPAGRI = Real NDP from agriculture at 1960-61 prices per rural inhabitant; RELFDPR = Relative food to general consumer price index for agricultural labourers (1960-61 = 100); PDS = Proportion of PDS offtake of foodgrains to total net availability of foodgrains.
For *urban poverty equations* the independent variables are NDPNAGRI = Real NDP from non agricultural sector at 1980 - 81 prices per urban inhabitant; RELFDPR = Relative food to general consumer price index for industrial workers (1960 = 100); PDS= Proportion of PDS off take of foodgrains to total net availability of foodgrains.

Table 9: Elasticities of Inter-State Incidence of Rural and Urban Poverty levels in India with respect to Selected Variables during 1987–88 (Pre-Reform year) and 1993–94 (Post-Reform year)

Poverty Indicators	Independent variables		
	SDPAGRI or SDPNAGRI	**RELFDPR**	**PDSFP**
	Rural Poverty		
	1987-88		
Head count ratio	-0.54	1.04	-0.03
Poverty gap index.	-0.72	1.11	-0.12
Squared poverty gap index	-0.84	1.37	-0.20
	1993-94		
Head count ratio	-0.46	2.63	-0.07
Poverty gap index.	-0.61	3.22	-0.18
Squared poverty gap index	-0.70	3.12	-0.27
	Urban Poverty		
	1987- 88		
Head count ratio	-1.02	0.63	-0.01
Poverty gap index.	-1.52	1.24	-0.04
Squared poverty gap index	-1.60	1.05	-0.02
	1993- 94		
Head count ratio	-0.91	0.96	-0.08
Poverty gap index.	-1.56	0.68	-0.17
Squared poverty gap index	-2.77	-0.75	-0.21

Notes: For *rural poverty equations* the independent variables are: SDPAGRI = State domestic product from agriculture per state rural inhabitant; RELFDPR = Relative food to general consumer price index for agricultural labourers (1960-61 = 100) for rural areas (statewise series); PDSFP = Number of fair price shops per 100000 people for rural areas;
For *urban poverty equations* the independent variables are: SDPNAGRI = State domestic product from non-agricultural sector per state urban inhabitant; RELFDPR = Relative food to general consumer price index for industrial workers (1960 = 100) for urban areas (state wise series); PDSFP = Number of fair price shop per 100,000 people for urban areas.

Table 10: R Square Values of Stepwise Regressions showing the Contribution of Selected Variables to Variations in Rural and Urban Poverty Levels in India during 1969 - 70 to 1993 – 94

Poverty Indicators	**Independent variables**		
	NDPAGRI	**NDPAGRI + RELFDPR**	**NDPAGRI + RELFDPR+ PDS**
	Rural Poverty		
Head count ratio	0.79	0.82	0.91
Poverty gap index.	0.84	0.86	0.93
Squared poverty gap index	0.86	0.88	0.93
Poverty Indicators	**NDPNAGRI**	**NDPNAGRI + RELFDPR**	**NDPNAGRI+ RELFDPR+ PDS**
	Urban Poverty		
Head count ratio	0.86	0.92	0.93
Poverty gap index.	0.86	0.92	0.92
Squared poverty gap index	0.89	0.92	0.93

Note: For a description of the independent variables refer the text or table 8.

Table 11: R Square Values of Stepwise Regressions showing the Contribution of Selected Variables to Variations in the Inter-State Incidence of Rural and Urban Poverty levels In India during 1987- 88 (Pre-Reform year) and 1993–94 (Post-Reform year).

Poverty Indicators	**Independent variables**		
	SDPAGRI	**SDPAGRI+RELFDPR**	**SDPAGRI+ RELFDPR+ PDSFP**
	Rural Poverty		
	1987-88		
Head count ratio	0.52	0.55	0.56
Poverty gap index.	0.40	0.43	0.47
Squared poverty gap index	0.30	0.32	0.40
	1993-94		
Head count ratio	0.33	0.45	0.46
Poverty gap index.	0.25	0.33	0.37
Squared poverty gap index	0.21	0.26	0.35
Poverty Indicators.	**Independent variables**		
	SDPNAGRI	**SDPNAGRI + RELFDPR**	**SDPNAGRI+ RELFDPR+ PDSFP**
	Urban Poverty		
	1987-88		
Head count ratio	0.60	0.61	0.63
Poverty gap index.	0.55	0.56	0.56
Squared poverty gap index	0.47	0.48	0.49
	1993-94		
Head count ratio	0.45	0.46	0.48
Poverty gap index.	0.40	0.40	0.44
Squared poverty gap index	0.34	0.34	0.38

Note: For a description of the independent variables refer the text or table 9.

Table: 12: Rural Poverty Trends in Haryana and Punjab under *With* and *Without Reform Scenarios* during 1969-70 to 1993-94

State and Poverty Indicators.	With Reform Scenario		Without Reform Scenario
	Pre-Reform Period	Post-Reform Period	Overall Period
Haryana			
Head count ratio	-0.76*	+10.90	-0.55*
Poverty gap index.	-0.24*	+2.16	-0.18*
Squared poverty gap index	-0.10*	+0.85	-0.07*
Punjab			
Head count ratio	-0.70*	+1.87	-0.62*
Poverty gap index.	-0.24*	+0.79	-0.22*
Squared poverty gap index	-0.10*	+0.29	-0.09*

Notes:

1. Pre-Reform Period - 1969-70 to 1990-91; Post-Reform Period - 1991-92 to 1993 -1994; Overall Period-1969-70 to 1993-94.
2. Trends computed here are linear trends.
3. * - Statistically significant at 1 percent level of significance.
4. In the equations for *With Reform Scenario*, trends have been computed using the model explained in the text wherein a dummy variable is included to account for the pre and post reform period. From the estimated equation we can derive equations for the pre and post reform period as indicated in the text. In the *Without Reform Scenario* trends have been computed for the period from 1969-70 to 1993-94 omitting the dummy variable; in other word, the trends are computed assuming a without reform scenario. Under this alternate case we have only one equation for the whole period.

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