INDIA'S ECONOMIC REFORMS:
IMPACT ON POVERTY

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India's economic reforms are now more than a decade old. Naturally, the reforms have attracted the attention of economists, planers, academics and technocrats alike, both in India and outside. Particularly policy makers and researchers are concerned with the evaluation of economic-reforms to find out how the reforms

have affected the country's growth, development and ultimately the standard of living of its countrymen.

Despite sincere efforts made to put the country's economy of a growth-path, India remained trapped in a low level growth of the economy (typically, called the Hindu rate of growth). The rate of growth remained at 3 to 4 percent between three decades of planning 1950-1980. The economy shifted towards a high growth path during the early eighties and crossed the barrier of 5% growth for the first time. (See T**able 1)**

Table 1: Growth Performance of the Five Year Plans

(Percent per annum)

Plan		**Target**	**Actual**
First	(1951-56)	2.1	3.6
Second	(1956-61)	4.5	4.21
Third	(1961-66)	5.6	2.72
Fourth	(1969-74)	5.7	2.05
Fifth	(1974-79)	4.4	4.83
Sixth	(1980-85)	5.2	5.54
Seventh	(1985-90)	5.0	6.62
Eight	(1992-97)	5.6	6.68
Ninth	(1997-02)	6.5	5.35

Source: Tenth Five Year Plan (volume I)

The remarkable growth rate of 5.54 percent during 1980-85 was significant as it sort of freed the economy from the stagnation. However, the picture was not as rosy as it appeared. The 'impressive' performance was at the cost of some disturbing trends observed in a number of macro economic indicators. This 'Simmering crisis' in the mid-eighties was attributed to the unmindful borrowings, both domestic and foreign. Current account deficit was mounting. Foreign exchange reserves shrank to only two weeks import bill. Inflation went into double digit. In short a first class economic crisis followed the exit of the congress-government in 1989.

Thus came the economic reforms, primarily meant to stabilize the economy and revert it back to the growth path. It is not that India was first country to face an economic crisis and therefore adopt a reform- process. But the crisis in India was so serious that the reform – process was not gradual but came with a heavy dose of liberalization, Privatization and Globalization (LPG) measures.

For any economy of India's nature, the long term objective of the planning would not only be to achieve growth but also to ensure equality as well as eradication of poverty. Since the forty-years planning did not deliver on poverty, unemployment and inequality front for 1950-1990, high achievement of the economy from large scale reforms became inevitable.

The success of any economic reform process should be judged by the social and economic objectives it achieves. In country like India reducing poverty level is the most important manifestation of socio-economic progress It signifies improvement in standard of living and thereby a better health and education. Labour force of improved standard contributes more to the economic well being by producing more/better .An impoverished worker. Skilled or unskilled, is not likely to perform as well as a worker who is well-fed/off. Poverty level, therefore affect all spheres of economic activities, and hence deserve more attention than any other aspect of economic reforms. Thus, this paper aims at investigating the impact of last 14 years reforms process of India in removing/reducing the extent of poverty, bringing about economic equality by bridging the large gaps which existed in the beginning of the reforms, and lastly, to examine the inter-state levels of disparity in standard of living.

This paper is divided into four parts. In the first part we survey the literature and present the research works carried out by scholars in this field and their key findings along with the approaches used to study the impact of reforms. In the second part, we examine the changes observed in macro-economic indicators after 1990-91. In this part an attempt is made to examine the role and the impact of certain economic indicators on levels of per-capita expenditure in the economy. Here this relationship is examined separately for pre-reforms and post-reform periods to see whether there is any change in the determinants and their impact. **Simple and Multiple regression** analysis has been used in this part only to identify the causal variables and to establish the relationships among these variables.

In the next part of this paper the trends and patterns in consumption expenditure, per capita income and (several types of) human-development indexes have been examined to check whether the countrymen are relatively better or worse off after the reforms. Due to non-availability of a time series based data on these 'indicators' no quantitative analysis was possible. However, these trends are also used to see if regional disparities are consistently observed in macro-level indicators of well being of countrymen belonging to different states and union-territories.

In the last part of this paper, we have made an attempt to examine the differential impact which a decade long reform process has made in different geographic regions of the country. Several inequality measures will be used to find out whether the disparities which existed at the beginning of the reform process have undergone any change or not. While examining the changes in the state Domestic Product (SDPs) of different states in India, an attempt has also been made to build a causal relationship between SDPs and infrastructure indicators.

Reforms or no reforms, the subjects of poverty, income distribution and regional disparity have drawn the attention of the researchers for a long time. Soon after the reforms, certain researchers raised the question about their success. In fact any

research study on the topics mentioned here did not fail to relate the findings to the process of the economic reforms in India.

In India the poverty measurement has been traditionally based on NSS data **(1)**. Since the large scale survey data is collected every five years and it take about 2 years **(2)** time lag to publish it, researchers had to wait till 1995 to get the NSS data on consumption expenditure pertaining to year 1993-94, before any meaningful analysis of reforms impact on income/expenditure/poverty levels could be initiated. The second source of national level data on these indicators is NAS (National Accounts Statistics) **(3)** After revision, the new series of macro level NAS data was also available only in 1995 (for the year 1993-94 onwards). Thus, due to limitation of the data availability form NSS, the reform – poverty relationship/impact studies had to wait. NCAER **(4)** was quick to come out with the analysis of income data- changes therein and the levels of disparity etc. as the Council regularly collects its own data. (NCAER is one organization, which conducts all India surveys to collect income data whereas NSS collects only expenditure data).

LITERATURE SURVEY

Tendulkar and Jain (1995) were first to evaluate the impact on economic reform on poverty as early as 1995. This paper analyzed NSS consumption expenditure data of 1993-94 and concluded that the expenditure has reduced in real terms (at constant prices) thereby suggesting that the poverty levels have not changed significantly in the period 1987-89 to 1993-94. Sen (1997), using the same set of data form NSS confirmed the above conclusion regarding levels of poverty. Chandrashekhar and Sen (1996) did not have 1993-94 NSS consumption expenditure data, but estimated that in 1991-92, the poverty level was 35 percent, while that in rural areas was 44 percent. According to Tendulkar and Jain (1995) the states of Andhra, Assam, Bihar, Karnataka, Maharastra & Rajasthan witnessed a significant decline in per capita consumption expenditure (at constant prices) thus indicating an upward movement in poverty.

The World Bank estimates for different years (Pre and Post reform periods) based on NSS data (regular consumption expenditure surveys and also annual surveys based on thin samples) suggested (Sen 1997) that the Head-count ratio (HCR (**5**)) of rural poverty increased from 36.4 percent in 1990-91 to 38.7 percent in 1993-94. This and other similar studies mentioned above confirm that the reforms were affecting rural population more severally than the urban population which is apparent from the higher levels of rural poverty.

According to the NSS 'quinquennial' round in 1993-94 (50^{th} round), the head count ratio for the country was 36 percent. The next quinquennial round was only in 1999-2000 (55^{th} round, the latest full round for which consumption data was based on a large sample). In between 50^{th} and 55^{th} round there were thin rounds, involving smaller samples and of course different sample designs and estimation procedures. Because of these changes in methods of data collection and the estimation procedures, the data is not 'exactly' comparable. These thin rounds data suggested that not only poverty remained more or less unchanged between 1993-

94 and 1998 but also that average per capita expenditure stagnated during this period of economic reforms. (See Angus Deaton (2002)).

Datt (1999) used the NSS data on consumption expenditure after deflating and estimated three sets of poverty measures head count ratio, poverty gap and squared gaps. The author did not find any change in rural poverty figures for pre and post reform periods. However, the analysis shows a sharp decline of poverty levels in urban areas during pre-reform period and a much slower decline later.

Tendulkar and Sundaram (2003a) attempted to probe the social class which is relatively more beneficiary of reforms fruits, if any. SCs & STs are identified as most vulnerable groups having high incidence of poverty levels but this study suggests it is the STs which fared badly, while other groups experienced decline at par with others. Tendulkar and Sundaram (2003 b) show that the average annual reduction in poverty was higher in the last six years of the 1990s than that recorded during the ten and a half years preceding 1993-94.

Pant and Patra (2001) used NCAER survey data to estimate the rural poverty and concluded that the rural poverty declined in 1993-94 (after 2 years of reform), after showing initial increase due to other reasons (including reduced rural per capita expenditure on poverty alleviation programs). Significantly this analysis finds evidence that reducing the poverty level has also led to reduction in depth and intensity of poverty also.

Deaton (2002) decomposes the change in the head count ratios into two component – a growth component and a distribution component. The growth component reflects the increase of per capita expenditure, while the distribution captures that may take place in the distribution of per capita expenditure over households. According to him the 'net' or 'actual'; change in HCR, between 1993-94 and 1999-2000 is 5.9 percent for all India. This exercise conducted state –wise, shows wide disparity (a reduction of more than 10 percent for Gujarat, Tamil Nadu, Haryana, Karnataka & Maharashtra while a less than 2 per cent for Assam and Orissa).

Sen (2004) using NSS data has come to the conclusions that the reforms have only benefited the elite and affluent classes(. Analysis of per capita consumption expenditure since 1980 in rural and urban India, the author has shown that top 20 percent richest persons have increased there consumption by around 40 percent over period 1989-90 onwards. This observation both, for rural and urban population is indeed surprising as it is totally contrary to the findings of these economic classes during the period 1965-66 to 1987-88. Chaturvedi A. (1990) in his study for BERF using NSS consumption expenditure data for rural India concluded that 'growth in consumption of non food items specially the industrially produced consumer items, is contributed to mainly by lower – middle, middle and upper middle classes, the size of which is continuously growing.

Although almost all consumption expenditure studies have used NSS data, the data it self has never been above the controversy for two reasons. One, for changing the research design between quinquennial surveys and thin surveys and two for

ever changing measurement of data based on 30 day recall and 7 day recall. This controversy was paid attention to by Tendulkar and Sundaram (2001) by studying four sets of data two from NSS and two form NAS (pre-revision, and post revision). The authors come to conclusion that it is not correct to dub NAS estimates as 'superior' and more-reliable than NSS estimates. It was also observed that the item groups that accounted for a very large proportion of the aggregate discrepancy between NAS and NSS estimates had a much smaller budget share in the consumption basket. Tendulkar and Sundaram (2003 c), however, found that NAS data has inherent 'fluidity', thus NSS data is preferable.

Bhalla (2003) has reached conclusion which are totally different from other researches. By positing out to the errors in estimation, the author arrives at different conclusions. It says that the poverty declined between 1983 to 1999 sharply and stood at less than 15% in 1999-00. Whereas World Bank found it at 35 to 40 percent and Government of India measured it at 26 percent.

'Growth' is the key word in economic planning and has been the same for ages. After a setback, in later period of eighties, the reform process had set a high 'growth' target (which was achieved in the first phase of reforms). Growth also has 'political' overtones to gather popular support. The outgoing NDA government in India had planned for a 8-10% growth rate (Vision Document NDA (2004)). To counter the campaign of India shining, the new power political combination of UPA, also has targeted an 8 percent growth of the economy a while (CMP, UPA (2004). But larger question is whether 'growth' alone is enough for a society? Evidence has proved otherwise. A World Bank report **(6)**, reveals no direct association between growth and changes in per capita income. These has been sufficient evidence in this data, to show that growth does not necessarily lead to higher levels of income expenditure or savings.

The second key issue is the association between the per capita income and inequality. In several cases the researchers have shown that the two do not have simple cause and effect relationship.

Though the major objective of reforms was to uplift the standard of living by bringing down the poverty level, reforms were also aimed at bringing down the regional disparity among regions and states/union territories. Economic reforms are generally praised to be able to bridge the regional disparities in the society. A parallel .case could be considered here is that of China, which also introduced reform (a little earlier than India did). Several studies conducted there Yanrui Wu (1999), Zhang (1998) and several others have confirmed the widening inequalities and regional disparities after reforms. Research studies after the reforms in other economies **(7)** have also come to similar conclusion.

There are concerns that regional inequality in India has increased after the economic reforms of 1991. This concern is supported by various researchers with empirical support. Here , we briefly survey some findings and conclusions of previous work on growing inequality across the Indian states.

Regional Disparity: Have all states progressed?

An examination of income inequality will suggest us that very little has changed. Some others have a have a differing conclusions of disparity question.

We citesome of the studies undertaken to study the disparity among States.. Dasgupta et al (2000) using SDP data for 1960-61 to 1995-96 finds a clear tendency for Indian states to diverse in per capita SDP, but converge in shares of different sectors in SDP. Rao, Shand and Kalirajan (1999), examining the period 1965-95, found that SDPs for the 14 major states were diverging (using standard growth regressions for conditional convergence),. Ahluwalia (2002) similarly found private investment flows to be a significant factor in explaining cross-sectional variations in states' growth. While he did not examine divergence through regression analysis, his calculations of population weighted Gini coefficients for the 14 major states showed a substantial increase, from 0.175 in 1991-92 t0 0.233 in 1998-99.

Table : Disparity in states' Growth and related Studies

Study	Period	No. of states	Main results
Dasgupta et al	1970-95	21	Diverge in per capita SDP but converge in share.
Nagaraj, Varoudakis and Veganzones (1998)	1970-94	17	Absolute divergence, conditional convergence,
Rao, Shand and Kalirajan (RSK, 1999)	1965-95	14	Absolute and conditional divergence in the period 1990s.
Aiyar (2001)	1971-96	19	Conditional convergence; infrastructure, private investment
Ahluwalia (2002)	1981-99	14	Gini Coefficient of per capita SDP) increased from late 1980s, through 1990s.
Singh and Srinivasan (2002)	1991-99	14	No clear evidence of conditional convergence or divergence.
Bhattacharya and Sakthivel(2004)	1980-2000	17	Regional disparities have widened after reforms. Nc divergence attempted
Sachs, Bajpai and Ramiah (2002)	1980-98	14	Divergence for all states (and for rich group but not poor group) for 1990-98

Singh Nirvikar et al (2002)			NHDR data used to test the convergence in Consumption expenditure .

The fourth aspect of reforms related studies, which has attracted researchers attention, is human development. Prabhu (2000) has studied the human development indicators and analysed the impact of reforms on this aspect. Kundu, Shariff and Ghosh (2002) have attempted to construct a comprehensive index of human development, which is beyond the changes in income and regional levels of disparity.

Patnaik and Vasudevan (2003) have also made a similar attempt to measure the improvement in human development index and suggested some changes in UNDPs HDI, with the ornament that these is a need to measure the effects of public policy not merely by income alone but by indicators of human development".

It is not only the analysis of economic policies and their impact on well being of country men, which has been focus of the researchers, there are other dimensions too Pant and Pradhan (1999) have develop a 'predictive model' for poverty levels. Using the primary survey data on income and expenditure and the macro economic indicators, these researchers developed. 151 equation econometric model for India, and then used the NCADER survey 1994-95 (MIMAP – India project) data to predict levels of poverty for different socio-economic groups. The poverty ratios estimated by them are based on Kakwani and Subbarao (1990) & Kakwani (1989) decomposition method as used by Angus Deaton (2002) where changes in poverty is decomposed into (i) the impact of growth and (ii) effect of income distribution, assuming the total income of the society remains unchanged. Using 1993-94 survey data the authors have estimated poverty by FGT measure **(8).** The authors conclude that during 94-95 to 2000-01 the incomes will be augmented but rural urban inequality will widen.

BALANCE SHEET OF ECONOMIC REFORMS IN INDIA

Indian economy has made significant progress in the last decade and half, but surely all the credit cannot be given to the process of economic reforms. The growth and progress of the economy is reflected in macro-economic indicators and an analysis of these indicators will enable us to judge the depth of progress. If we just examine the growth rate, we find the highest growth rate was achieved during 1992-97, which was 6.68 percent. This was the first phase of reforms process. Due to discontinuation of the same political regime in 1996 onwards, the policies were the first victims and had a bearing upon the economic growth as well.

Even after the change in the political structure, the reforms process did continue, albeit, slowly. The process of liberalization, privatization and globalization (LPG) has continued despite change in the pace and speed of the process. It is the change of speed which slowed down economy during Ninth Plan period (1997-2002), which recorded a 5.35 percent growth rate.

The biggest hallmark of the economy under the reforms process is openness and reduced government control liberalized imports, reduced tariffs and industrial policy should have given boost to the economy but the performance has not been up to the expectation.

Despite many apparent achievements such as privatizing telecommunication, insurance and banking sector, disinvestments in public sector units, heavy emphasis on infrastructure, attracting foreign investments, taxation reforms etc, the results on the life and standard of living on the common men's life are yet to be seen. Even if they are visible for some sections, reforms process has left much to be desired. Agriculture and rural economy has not witnessed any significant changes. In fact the agriculture sector is almost untouched by spate of reforms. Adequate water for Irrigation is still a mirage. Power shortage has also affected the agricultural production. Farming is not yet a profitable enterprise due to lack of adequate support prices to the farmers. Unlike other developing economies, India has a very large workforce engaged in farming and the productivity of this huge workforce remains very low despite long drawn reform rhetoric.

Areas such as subsidies still stare at our face. If the subsidies are cut policy makers are damned and if they don't, economy is doomed.

The mixed bag of positive and negative reactions notwithstanding our major concern in this research is the impact of reforms on levels of poverty. Many countries have lifted the level of life after common-men-oriented reforms process. Let us try and answer this question in the next section, whether common-men has benefited from reform or not. Is average Indian better off now as compared to pre-reforms period?

ECONOMIC REFORMS AND QUALITY OF LIFE IN INDIA

The success or failure of any economic program is manifested in the well-being or the qualify of life of the citizens. Whether the economic reforms in India could be dubbed as successful or not is a question, which could be debated and endlessly. Same is true with the 'extent' of such 'success' or 'failure';. The key question, however ,is whether there is any empirical evidence to prove or disprove the points and counter-points.

The most important indicator to consider is per-capita income. Among the ten largest economies of the world India ranks fourth in terms of GDP (when expressed in purchasing-power-parity i.e. PPP terms).

In the last twenty or thirty years India has made rapid progress on GDP terms when considered in billion dollars of PPP. But alongside this growth the population of India has also grown by a compounded rate of growth of nearly 2 percent (it came down considerably in 1991-2001 period). It is the growth in human numbers, which has negated the economy's achievement. At constant prices India's Per-Capita Income (PCNNP) Index has grown to 291 as compared to 100 in 1950-51, but our population has recorded a similar growth (from 359

million in 1950-51 to more than 1937 in 2000-01). The per capita income, thus has recorded significant growth.

Table: Ten Largest Economies

GDP PPP (International Billion dollars)

	2001		1980	
	GDP	**Rank**	**GDP**	**Rank**
USA	9792	1	2957	1
China	5111	2	421	9
Japan	3193	3	1085	2
India	2930	4	529	5
Germany	2057	5	803	3
Italy	1430	6	544	4
UK	1420	7	498	7
France	1420	8	518	6
Brazil	1269	9	467	8
Canada	843	10	274	11

Source: WDI 2003

If we consider the reform period alone the PCI Index has gone-up from 198-5 in 1990-91 to 291.7 in 2001-02. In terms of Rupee value the PCI has gone up from Rs. 464 in 90-91 to Rs. 842 in 2001-02.

Barring the first year of reform (corroborated by many research studies) the PCI has had positive rate of growth every year, highest (6.1 percent) being in 1996-97 and lowest (2.4 percent) in 2000-01. This growth does not really prove reduction in poverty levels as it is not the total or average (at macro level), but the distribution, which defines poverty.

When we examine yet another indictor PFCE (Private final consumption expenditure), we get a slightly different picture. [This data comes from National Accounts Statistics (NAS), whereas National Sample Survey Organization (NSSO) presents survey based NSS data which is used to calculate poverty ratios in the country – see note (**3**)). In the last 30 years (1970-71 to 2000-01), the Per capita PFCF (at constant prices) has gone up from Rs. 4637 to Rs. 7960. During the reference period of economic reforms the per capita PFCE went up from Rs. 6273 in 1991-92 to Rs. 7960, a change 232 equivalent to 127 percent. Here again the highest growth (7.92 percent) was recorded for 1996-97 and lowest (2.20 percent) to 2000-01.

From both these counts, it is clear that on an average the real income (and hence expenditure) for average countrymen is going up but the uniformity of the income distribution is under question. The levels of 'poverty' or 'impoverishment' cannot be said to be reduced until we find that the growth is uniformly recorded for all income-classes or expenditure-classes.

The real-test, therefore, is the examination of per capita expenditure separately for each expenditure class. NSS data is available for 13 different expenditure classes for all these years to enable us to do the kind of analysis, sufficient to answer our question on the Reforms impact on well-being. After the Task Force **(9)** fixed a calorie-requirement for men women and children of different age-group and different occupation in 1973-74, an monthly income level of per capita Rs. 45.09 for rural areas and Rs. 56.64 for urban areas, was considered a poverty lien for NSS 28th round survey that year. These poverty liens thus conform to a consumption basket that satisfies the above calorie norm and meets a minimum of non-food requirements.

The poverty ratios (Head-Count ratios) are being calculated using the same norms by NSS. (Although many researches have suggested improvements and modifications). The HCRs or the poverty ratios (percentage of persons living below the poverty line) for India have changed from 54.88 (in 1973-74) to 26.1 (in 1999-00). [It is debatable whether this reduction in poverty ratio is all due to reforms or not, as there is large degree of disagreement between researchers]. What is significant is that this ratios have been going down, both in rural and urban areas (more sharply is urban areas, an expected). For Rural Areas 20 percentile value of month per capita consumption expenditure [MPCE] has been shifting from Rs. 91 in 43rd round (1987-88) to 167 in 50th round (1993-94), and has

Table 2: Estimates of Incidence of Poverty in India

Year	Poverty Ratio (%)			No. of Poor (Million)		
	Rural	Urban	Combined	Rural	Urban	Combined
1973-74	56.4	49.0	54.9	261.3	60.0	321.3
1977-78	53.1	45.2	51.3	264.3	64.6	328.9
1983	45.7	40.8	44.5	252.0	70.9	322.9
1987-88	39.1	38.2	38.9	231.9	75.2	307.1
1993-94	37.3	32.4	36.0	244.0	76.3	320.3
1999-00	27.1	23.6	26.1	193.2	67.1	260.3
2006-07*	21.1	15.1	19.3	170.5	49.6	220.1

*Projection of 10th Plan

Source: 10th Five Year Plan (Volume I)

gone upto Rs. 325 in 58th round (2002). In urban areas these corresponding figures are Rs. 123, Rs. 233 and Rs. 491 respectively.

Considering the expenditure changes at constant prices, the poverty ratios show the reduction in poverty levels. It is not enough to say that the poverty ratio has gone down from pre-reform level of 38.86 (in 1987-88) to 36 (in 1993-94) and to 26.1 (in 1999-00. Due to change in the data collection procedure, survey design, estimation procedures, these poverty ratios have been a subject of controversy since the time these changes were effected in 1997. Thus we must look at other comprehensively unambiguous indicators to conclude whether the economic reforms have been effective in poverty reduction or not.

Fight against hunger

In last 20 years the number and proportion of people who do not get sufficient food every day is constantly going down. It may not be so much by increase in income of the poorest but by some specific program to provide who get enough food every day has gone up from 93.3 percent (38th round 1983) to 99.6 percent (58th round 2002) for urban areas. The corresponding improvement is rural areas is from 81.1 (38th round) to 98.4 (58th round). The post reform period (1991-2002) saw this improvement from 97.3% to

Table 3: Percentage distribution of HH by Food Availability Status

NSS Round	Enough Food Every day	Not enough food		Not Recorded
		Some months	All months	
38th (1983)				
Rural	81.1	16.2	2.4	0.3
Urban	93.3	5.6	0.8	0.3
48th (1992)				
Rural	92.3	7.0	0.7	-
Urban	97.3	2.3	0.4	-
49th (1993)				
Rural	93.8	5.4	0.8	-
Urban	97.7	2.1	2	-
50th (1993-94)				
Rural	94.5	4.2	0.9	0.4
Urban	99.1	0.6	0.3	-
51st (1995)				
Rural	96.5	2.8	0.7	-
Urban	99.1	0.6	0.3	-
55th (1999-00)				
Rural	96.2	2.6	0.7	0.5
Urban	98.6	0.6	0.3	0.4

56th (2000)				
Rural	97.5	1.9	0.6	-
Urban	99.3	0.4	0.2	-
57th (2001)				
Rural	97.9	1.6	0.5	-
Urban	99.6	0.3	0.1	-
58th (2002)				
Rural	98.4	1.1	0.5	-
Urban	99.6	0.2	0.2	-

Source: NSS reports (various volumes)

99.3% (urban) and 92.3% to 97.5% (Rural). These figures suggest that the proposition of population which goes to sleep hungry everyday is going down, since the introduction of reforms process NSS Expenditure data

Various rounds of NSS data has been presented in NSS reports. These data are disaggregated to rural/urban, 13 different expenditure group wise, specific socio-economic groups, and occupational groups. All this data on expenditure is available at current prices only. Therefore the figures have to be deflated for the price-index to check whether the expenditure has gone up in 'real' terms or not. Using Consumer Price Index for Agricultural Labors (CPIAL) for rural areas and Urban Non-manual employees for urban areas, the NSS rounds wise 'expenditure' has been worked out at constant prices (to compare) separately for rural and urban areas. **Table 4** shows that for rural areas average MPCE went up from Rs. 135 in 1991 to Rs. 172 in 2002, whereas the corresponding increase for urban areas has been from Rs. 202 to Rs. 298 in 2002. This corroborates the earlier note that during the reform period 'on an average' the 'expenditure' has gone up (in real terms is at constant prices).

Table 4: Monthly per capita expenditure and quantity of cereals consumed

NSS Round	**MPCE (Rs.)**				**Qty. total cereal (Rs.)**	
	Rural		**Urban**		**Rural**	**Urban**
43 (87-88)	158	134	246	195	14.4	11.2
44 (88-89)	175	131	266	196	14.6	11.1
45 (89-90)	189	135	298	206	14.0	11.0
46 (1990)	202	134	327	203	14.1	10.8
47 (1991)	244	135	370	202	13.8	10.7

48 (1992)	247	122	399	198	13.8	10.7
49 (1993)	244	117	382	177	13.6	10.5
50(1993-94	281	124	458	193	13.4	10.6
51 (1995)	309	132	508	196	13.2	10.7
52 (1996)	344	134	599	515	12.99	10.56
53 (1997)	395	150	645	214	12.82	10.27
55 (1999-00)	486.1	159	854.9	243	12.72	10.42
56 (2000-01)	494.9	162	914.6	246	12.43	10.08
58 (2002)	531.5	172	1163.6	298	12.08	9.83

Source: NSSO data (51st round), Sarvekhana (86th issue)

* Urban non-manual employees (1984-85 =100)

** CPIAL (1986-87 = 100)

Different states /UTS can be clubbed into different categories as follows:

A: Poverty Level Below 10%:	Haryana, Punjab, Delhi, Goa, Himachal, J& K, Chandigarh
B: Between 10% & 20% :	Andhra Pradesh, Gujarat, Kerala, Rajasthan, Mizoram, Lakshdweep, Dadra and N. Haveli.
C. Between 20% & 30%:	Karnataka, Maharastra, Tamil Nadu, west Bengal , Pondichery, A&N, Manipur.
D Above 30%:	Assam, Bihar, Madhya Pradesh, Orissa, Uttar Pradesh, Sikkim, Nagaland, Arunachal, Meghalaya & Tripura.

Where is the increased income/expenditure going?

An analysis of food and non-food break-up of consumption expenditure suggesting a constant decline in the share of food expenditure. By and large, it is across all the income expenditure groups. An analysis of NSS expenditure data upto 1987-88 by Chaturvedi Arvind (1990) had shown the secular shift in the pre-reform period. The same continues during the post-reform period also. This is one indication that the almost all income/expenditure group households are now earning more than their 'basic food requirement'. NSS (58th round) data for July – Dec. 2002 shows that the share of food is only 42.5% for urban house holds and 55% for rural households.

Table 5: NSS: 58th Round : July –Dec. 2002

MPCE(Rs.) and Percentage Distribution of Food Major states.

State	Rural		Urban	
	Food share	MPCE (Food)	Food share	MPCE (Food)
Andhra Pradesh	53.5	307	41.7	412
Assam	64.1	341	49.2	466
Bihar	61.5	261	49.2	340
Gujarat	55.1	325	42.3	520
Haryana	52.9	371	40.0	450
Karnataka	53.5	274	429	411
Kerala	50.2	443	40.3	468
MP	53.7	234	45.7	324
Maharashtra	51.6	281	40.3	468
Orissa	58.7	229	44.4	385
Punjab	47.3	373	39.2	435
Rajasthan	55.9	321	45.4	376
Tamil Nadu	55.25	299	40.7	436
UP	54.1	263	42.7	487
West Bengal	60.9	300	45.7	487
Jammu & Kashmir	53.8	423	48.3	513
North East	56.2	352	46.5	497
UTS	49.9	401	37.2	552
Delhi	-	-	41.9	472
All India	54.99	292	42.5	430

(Rounded off to nearest Rupee), Source: NSS (58^{th} round) report

The shift from food to non-food is also verified by NAS data. An analysis of per capita PFCE shows that in 1970-71 the food share was 57.87 percent (all India), which declined to 55.57 (in 1980-82), 51.14 (1990-91) and to 42.84 percent in year 2000-01. (2002 NSS data puts it at 42.5 per cent). This is even more interesting trend within the 'Food' items, but that would be a digression from this point).

Among the non-food items, which at a macro level have shown an increased share over a period of time are shown in Table 6.

The items shown in the lower part of the table 6 surely point about towards maturity of the society as far as wants and needs are concerned, materialistic items are more in demand, as compared to food items share. One can clearly are a trend towards progress and better standard of living.

The figures presented in the table 7 show a gradual upward mobility of the population (both rural and urban).It clearly supports the trends shown by NSS and NAS data. Although the above analysis is based on NCEAR survey data, the results of the analysis show remarkable convergence.

The up gradation of households is constantly taking place, the pace may, however, be slower than desired for an up looking economy. It is also reflected in growing size of the middle , upper middle and upper class. NCAER study estimates the proportion of households in this category as about 27% in the country (about 48% in urban and 18% in rural India). Great market indeed ! This is once again supported by the industrial production of the household durables.

Economic Survey (2002-03) shows that the production of certain durable household items has expanded sharply during the reform period.

Table 6: Percentage share of some non-food items

	Non food items	Percentage share in PFCE			
		1970-71	1980-81	1980-91	2000-01
Drop during reform period	Clothing & footwear	3.72	4.64	5.31	4.88
	Rent, fuel, power	13.08	13.34	12.22	10.94
	Kerosene oil	0.41	0.41	0.53	0.45
Increase during reform period	Electricity	0.25	0.24	0.55	0.89
	LPG	0.06	0.06	0.22	0.45
	Furniture, appliances & services	3.31	2.87	3.26	3.67
	Refrigerator, cooking, washing appliances	0.11	0.10	0.28	0.40
	Medical	3.42	4.3	3.51	5.02
	Transport & communication	4.12	5.76	10.08	13.94
	Recreation, education and cultural	2.60	2.43	3.02	3.93
	MISc. Goods/Services	4.42	4.76	5.94	.06

Table7 : Shifting of Income-groups towards better

		Annual Income Groups (Rs) at 1998-99 prices					
		Less than 5000	35001-70000	70001-105000	105001-110000	140000 +	
	Period	Lower	Lower middle	Middle	Upper middle	High	Total
Rural	1989-90	67.3	23.9	7.1	1.2	0.5	100.0
	1995-96	57.2	29.0	8.6	3.1	2.0	100.0
	1998-99	47.9	34.8	10.4	3.9	3.0	100.0
Urban	1989-90	37.1	34.8	17.9	6.5	3.8	100.0
	1995-96	27.9	34.9	20.3	9.6	7.3	100.0
	1998-99	19.0	33.8	22.6	12.2	12.5	100.0
Total	1989-90	58.8	26.9	10.1	2.7	1.4	100.0
	1995-96	48.9	30.7	11.9	5.0	3.5	100.0
	1998-99	39.7	34.5	13.9	6.2	5.7	100.0

(Source: NCAER, IMDR)

Table 8: Production of certain items in India

Item	Production		
	Units	1990-91	2001-02
Commercial vehicles and other automobiles	000	366.3	748.2
(of which) cars, jeeps etc.	000	220.8	619.1
Motor cycles	-do-	1842.8	3932.4
Bicycles	-do-	7084	10834
Electric fans	Million	4.2	5.0
Radio/Transistors	000	685	NA

Source: Economic Survey (2002-03)

Many of the items listed in the above table are used by all classes. This indicates that the market size is growing for household goods, be it consumable, semi-durable or durable.

Analysis and findings

In this section we present the plan for the quantitative analysis and the key findings. First we present the analysis plan. The findings are presented in the next sub-section.

First we examine the association of Per-Capita Income (PCI) with certain human –life indicators (**Table 9**) and also with certain infrastructure indicators of the economy.

These correlations will help us identify certain variables, to be studied as predictor variables in later sections of this paper.

In order to examine how the PCI has grown over time in both pre and post reform periods, the trend rates of growth are analyzed. Here we have studied the trends of PCI and per capita private final consumption expenditure (PCCE). We have attempted both simple linear trend and also a semi – log trend in time to get compound rate of growth. The equations used are:

$$PCI_t = a + b\,t$$

$$\text{Log } PCI_t = a + b\,t$$

$(PCCE)_t = a + b\ t$

$Log\ (PCCE)_t = a + b\ t$

These simple trend equations suggest us the growth rates in PCI and PCCE. Since our study aims to examine the impact of economic reforms on income/expenditure we must examine the rates of growth in PCI & PCCE, separately for pre and post reform periods. We, must also compare trends rates of growth during the two different periods. We have used a joint equation for two periods (where separation is done using dummy variables). The model is:

$$Log\ PCI_t = a_1 D_t^{P1} + a_2 D^{P2}{}_t + b_1 t D_t^{P1} + b_2 t D_t^{P2}$$

$$PCI_t = a_1 D_t^{P1} + a_2 D^{P2}{}_t + b_1 t D_t^{P1} + b_2 t D_t^{P2}$$

Here $D_t^{P1} = 1$ for pre reform period and equals to zero for post reform period. The reverse is the case for D_t^{P2} where it takes a value of 1 for post-reform period and zero otherwise. The two similar equations have been attempted for per capita PCCE. The regression coefficients (b_1 & b_2) obtained thus have to be checked. If both of them are not significantly different from each other, it will indicate that the growth in income and consumption – expenditure have not changed and remained static. Our null hypothesis is that they are static. If it gets rejected, it will imply that the growth has either gone down or gone up. The regression coefficient(b) of simple linear trend for the entire-period will suggest the direction of change.

Having identified certain macro-economic indicators through correlation matrix mentioned earlier and after comparing pre and post-reform rates of growth, we have carried out a causal relationship between PCI on one hand and taking macro-economic indicators as predictor variables. The variables, which have been used here, are assumed to be having a lagged effect on the PCI. The lag is assumed to be of two years. We have tried two different forms of regression equations. First is a simple lagged regression equation

$$PCI_t = a + b\ M_{t-2}$$

The second one is a semi-log relationship of the following type

$$Log\ PCIt = a + b\ M_{t-2}$$

Where M_{t-2} represents lagged (2 year) macro-economic variables. The variables used here are Exports, Employment, Industrial Consumption of Electricity (Suggesting the production index and thereby generating demand and higher incomes), Subsidies (supposed to benefit certain sections of the society) and Indirect taxes.

Here again we have tried to build the same model used earlier, to find out the impact/contribution of these variables, separately for pre and post reform periods. The semi-log equation used for the macro-economic variables M_{t-2}, is as follows:

$$Log\ (PCI)_t = a_1 D_t^{P1} + a_2 D_t^{P2} + b_1 M_{t-2} D_t^{P1} + b_2 M_{t-2} D_t^{P2}$$

Like the trend rates of growth explained earlier , our attempt here also is the same i.e. to examine the difference between b_1 and b_2. The regression coefficient (b) of the simple equation (for the entire period: pre and post- reform periods combined), should help us in identifying the direction of difference of contribution of these variables.

Poverty Ratios

In the inter correlation-matrix mentioned earlier, the degree of association has also been studied between poverty ratios on one hand and human life indicators on the other. The explanatory variables attempted here are Literacy rate, Infant-mortality rate, Life-expectancy at birth, Percentage expenditure in the state on Education and Health and Human Development Index (2001) for the state. We have used poverty ratios in 15 major states only as data on some indicators were missing for smaller states.

As expected the infrastructure variables should contribute to reduction in poverty levels . To examine whether it is true for the major states or not, correlation coefficients are worked out. We have also attempted Spearman's Rank –correlation to find out the association between these variables.

Next is the causal analysis of 'Poverty ratios'. Using a state cross- section data for year 2000-01 and 2001-02, simple linear and multiple-linear regressions have been attempted. The explanatory variables used in these equations are both types -the infrastructure variables as well as human development variables.

For our further analysis of poverty ratios, we have tried to examine the inequality of extent of poverty in different states and UTs. For different periods (four pre-reform years and two post-reform years), we have compared the average poverty –ratio and the variation across states.

The analysis of impact of reforms is not completed unless an attempt is made to measure the level of inequality among various states/UTs in India. To examine the regional disparity, we have used per capita Net State Domestic Product (NSDP) as the variable. The analysis here includes the degree of association between NSDP and other economic and human development variables. This has been done with the help of Karl Pearson's coefficient of correlation and also using Spearman's Rank Correlation.

A comparison of decadal growth –rates of NSDP for four different time periods has been done through coefficient of variations. Semi-log rates of growth have been worked out for different states and UTs. These semi-log trend equations are of the following type.

$\text{Log } Y_t = a + b\,t$

These equations have been tried for post-reform periods only.

These trend rates of growth suggest the variation across the states, which is depicted through coefficient of variation. Since these growth rates have been calculated for post-reform periods , this analysis shows us whether the 'fruits' of

development in post-reform period have been shared equally by all the states or there is imbalance.

To compare the inequalities over a period of time three indicators have been used. We have used unweighted C**oefficient of Variation (CV), Theil Index and Gini Coefficient**. These indicators, have been used for different time periods (pre-reform as well as post reform).

Coefficient of variation (CV) $\sqrt{\sum_{1}^{}(X_i - \bar{X})^2} \Big/ \bar{X}$

Theil Index $\sum X_1 \log\left(Xi / \bar{X}\right) \Big/ n\bar{X}$

Gini Coefficient $\left[\frac{2}{n^2\bar{x}}\right] \sum_{i=1}^{n} iX_i - \frac{n+1}{n}$

Where Xi is per capita NSDP (or poverty -ratio) , 'X bar' is the average. This analysis has been carried out for different groups of states. While the first group consists of 15 major states, the other groups are 23 states for Theil Index and 31 States and UTs for Gini Coefficient

Rankings of various States

In the race of development some states have moved faster than others, it is evident from the growth rates of semi-log equations. We have used yet another measure '**Coefficient of Concordance'** to see whether the states have 'retained' the rankings over the period of time. This analysis has been carried out for the states' rankings based on poverty ratio (for different periods) and also for per capita NSDP.

Coefficient of Concordance is defined as follows

$$W = \frac{12S^2W}{J^2(I^3 - I)}$$

where $$S^2W = \left[\sum_{i=1}^{I} Rji - \frac{J(I+1)}{2}\right]^2$$

J (I – 1) W follows a Chi-square distribution (X^2) with (I-1) degrees of freedom. We have tested the null hypothesis that there is no 'agreement'/'retention' of the same rankings over time.

Findings

Correlations: Barring some surprises, the correlation coefficients were found on expected lines. NSDP shows a very low correlation with the human-development variables . It also shows a negative correlation with the expenditure related variables. Poverty ratio (PR) shows a high correlation with Infant Mortality rate, perhaps because 'reverse' cause-and-effect relationship. The same can be said for the high-negative degree of relationship between PR and Life expectancy at birth .the interrelation among the other human development related variables confirm general beliefs. **(Table 9)**

PRs show a negative correlation with almost all infrastructure variables, thereby suggesting that when the infrastructure improves, the poverty levels decline. **(Table 10)**

In **Table 11** and **Table** 12 we also present the Spearman's Rank Correlation between the PR and Human development indicators. The same are examined for infrastructure indicators. Here we have used more indicators as compared to earlier analysis involving Coefficient of Correlation . The rank correlation by and large confirms our results in the previous paragraphs . It is to be added that Poverty ratios have positive relationship with both the Birth rates and the death rates.

Perhaps while one is the cause ,the second one is effect. All infrastructure indicators show a negative rank correlation with PR.

Table 9: Inter-Correlation Matrix for Human Development Indicators

	Percentage below Poverty line	Per Capita NSDP	Literacy	Infant Mortality Rate	Life expectancy at birth	Percentage expend on Education	Percentage expend on Health	HDI value
99-00	99-00	2001	2001	1993-97	98-99	98-99	2001	
	X1	*X2*	*X3*	*X4*	*X5*	*X6*	*X7*	*X8*
X1	1.000							
X2	-0.240	1.000						

X3	-0.507	0.056	1.000					
X4	0.563	0.111	-0.727	1.000				
X5	-0.708	0.036	0.772	-0.933	1.000			
X6	0.447	-0.040	-0.121	0.030	-0.247	1.000		
X7	-0.116	-0.045	0.075	-0.122	0.038	-0.190	1.000	
X8	-0.688	0.065	0.911	-0.851	0.937	-0.232	0.050	1.000

Table 10: Inter-Correlation Matrix for Infrastructure indicators

	Percentage below Poverty line	Per Capita NSDP	Road length Per 1000 KM	Tele Density	Area Under One Post Office	Index of social-infra-structure	Railway densty	Per Capita Electricity Consumption	Decadal Growth rate of population
	99-00	99-00	2001	2000	99-00	1999	96-97	99-00	91-01
	X1	*X2*	*X9*	*X10*	*X11*	*X12*	*X13*	*X14*	*X15*
X1	1.000								
X2	-0.240	1.000							
X9	-0.174	-0.512	1.000						
X10	-0.758	0.071	-0.006	1.000					
X11	0.209	0.327	-0.651	-0.281	1.000				

X12	-0.719	-0.166	0.444	0.827	-0.606	1.000			
X13	-0.348	-0.440	0.934	0.196	-0.603	0.636	1.000		
X14	-0.624	-0.090	0.041	0.666	0.037	0.579	0.309	1.000	
X15	-0.526	0.461	0.081	0.292	-0.114	0.189	0.150	0.329	1.000

Table:11:Rank Correlations: Poverty Ratio and Human Life Indicators: State data

Indicator	**Rank Correlation**
Literacy	-0.6
Infact Mortality	0.468
Percentage Exp. On Education	0.329
Percentage Exp. On Health	-0.0133
Life Expectancy at Birth (male)	-0.5619
Life Expectancy at Birth (female)	-0.718
Birth Rate	0.284
Death rate	0.706
Enrollment (6-14 yrs)	-0.127

No. of Primary Schools	0.699
No. of Middle Schools	0.340

Trends of growth in Per capita Income and Expenditure: From the results presented in the **Table 13 ,** it is clear beyond doubt that the Per Capita Income (PCI) and also the Per capita Consumption Expenditure (PCCE) have gone up much faster during the post-reform periods as compared to pre-reform period. This is true for the simple growth rate as well as compound growth rate. The coefficients b1 and b2 are significantly different. All through the table, b2 (post-reform) is much higher than the b1 (pre-reform). This is also reflected in proximity of coefficients b (which shows the growth rates for the entire period) to b1 rather than b2. Higher growth of PCCE during the post-reform period is quite expressive.

Table:12: Coefficient of Rank Correlations: Infrastructure Indicators with Poverty Ration and Per Capita NSDP

Indicators	**With Poverty Ratio**	**With PC NSDP**
Per Capita Electricity Consumed	-0.733	0.805
Road Length Per '000 km	-0.703	0.085
Tele Density	-0.878	0.878
Area under one Post Office	0.146	-0.147
Index of Social Infrastructure	-0.791	0.771
Rail Length Per Unit Area	-0.421	0.223

TABLE:13: TIME TREND RATE OF GROWTH: USING SIMPLE AND MULTIPLE REGRESSION EQUATIONS

Dependent Variable	**Period**	**Intercept**	**Secular Rate**	**Regression Coefficient (Joint Equation)**				
				a_1 (Pre)	**a_2 (Post)**	**b_1 (Pre)**	**b_2 (Post)**	**R^2**
PCI	1970-71 to 2000-01	3777.76	184.07					0.90
Log PCI	1970-71 to 2000-01	8.36 (18.36)	0.026 (16.88)					0.947
Log PCI	1970-71 to 2000-01			8.42 (533.6)	7.96 (88.09)	0.019 (15.39)	0.041 (12.48)	0.99

PCI	1970-71 to 2000-01			4456.3 (42.83)	-993.3 (-1.66)*	113.07 (13.648)	368.03 (16.79)	0.98
PC PFCE	1970-71 to 2000-01	3935.57 (657.89)	115.23 (21.66)					0.94
Log PC PFCE	1970-71 to 2000-01	8.33 (657.89)	0.0196 (28.41)					0.96
PC PFCE	1970-71 to 2000-01			4193.76 (57.16)	1441.21 (4.59)	88.18 (15.09)	212.48 (18.05)	0.97
Log PC PFCE	1970-71 to 2000-01			8.36 (620.09)	8.06 (189.24)	0.0168 (15.72)	0.030 (18.79)	0.97

PCI = Per Capital Income, PFCE = Private Final Consumption Expenditure. Figures in parentheses denote 't' values of the coefficient. All values are significant at 5% level.

Per Capita Income and Macro-economic Indicators: In this analysis five such variable were used to see the lagged effect of these variables on PCI. Equations were fitted for pre, post and the entire period of time. Though all these indicators give a positive coefficient ,three of them (Employment, Industrial consumption of electricity and Subsidies) show a relatively 'higher' contribution in the post-reform period. Exports and Indirect taxes have shown a larger impact on PCI during the pre-reform period. (**Table** 14).

TABLE:14: LAGGED EFFECT OF MACRO-ECONOMCI INDICATORS ON PER CAPITA INCOME

Independent variable	**Unit**	**Period**	**Intercept**	**Coefficient**	**Regression coefficient (joint equation)**					
					R^2	**a_1**	**a_2**	**b_1**	**b_2**	**R^2**
Exports	Rs crores	1970-71 to 2001-02	5574.32 (43.5)	0.0376 (15.61)	0.90	4870.71 (26.68)	6224.85 (47.56)	0.086 (11.07)	0.0237 (12.58)	0.97
Employment	Million	-do-	-4488.245 (4.18)	466.95 (10.62)	0.80	-93.43 (0.148)*	-35071.86 (-5.77)	261.48 (9.39)	1589.86 97.20)	0.93
Industrial consumption of electricity	GWH	-do-	2698.99 (13.02)	0.0631 (21.28)	0.94	3380.26(19.31)	-1012.63 (0.10)*	0.0489 (14.25)	0.1007 (8.74)	0.95
Subsidies	Rs. crores	-do-	5106.76 (75.68)	0.1226 (31.95)	0.97	5015.63 (74.73)	6043.78 (7.11)	0.175 (15.43)	0.1028 (3.24)	0.72
Indirect taxes	-do-	-do-	51584.06 (71.63)	0.0299 (32.34)	0.97	4849.21 (83.29)	5816.32 (14.68)	0.0453 (20.08)	0.0247 (7.56)	

* In significant
All other 't' values (in parentheses) are significant at 5%

Table:15: Poverty Ratios and Macro Economic Indicators Simple and Multiple Regression Equations

Base: Cross-Section data for year 1999-2000

Indicator	**Intercept**	**Regression Coefficient**		
		I	**II**	**III**
Infrastructure Index	52.33 (6.56)	-0.25103 (3.72)		
Human D. Index	77.12 (4.90)	-114.66 (3.41)		
Percentage of Expenditure on Education	-8.65 (0.471)	1.81 (1.80)*		
Expenditure on Education and Health (Total)	-6.47 (0.25)*	1.78 (1.67)*	- 0.303 (0.90)*	
Electricity Consumption	37.31 (7.01)	-0.033 (2.87)		
Gross enrollment No. of primary schools No. of Middle schools	-2.77 (0.12)*	0.166 + (0.67)*	0.0003 - (2.25)	0.00009 (0.22)*
Enrollment of Age 6-14 yrs	31.82 (1.55)*	-0.0898 (0.38)*		

Figures in parantheses denote 't' values
* Insignificant at 5% level.

How are the Poverty Ratios affected and by which of the indicators mentioned above, we carried out simple and multiple regression analysis. Since most of these indicators in both the categories (infrastructure indicators and human development indicators) are inter-related a multiple regression analysis is likely to result in multi-co linearity. Thus we have restricted ourselves to the analysis which will show the individual indicator's contribution(+ve or –ve) to the PRs. **(Table 15) .**

The indicators which appear to be effective in bringing down the levels of poverty are : Enrollment in schools(primary and Middle level i.e. 6-14 years children), Human development Index , Infrastructure Index **(10)**. It is evident that these two indices mean development and naturally it is likely to bring poverty levels down. The other indicators showing contribution is electricity consumption. Again a case of effect and not the cause **! (Table)**

Poverty Ratios during different periods: Table 16 shows a clear downward trend in over-all poverty. This is evident when the 'average' (over various states and union territories)poverty ratios are checked for various years. The average PR

was 48.98 in 1973-74, came down to 32.28 in 1987-88 and down to 22.2 in 1999-2000. One knows the dangers of jumping to conclusion on 'average' figures. We must therefore look at Coefficient of Variation (CV), a relative measure of dispersion. Average and CVs present two opposite sides of poverty in India. While average poverty (a misnomer !) is coming down ,the inequality is widening. The CV was 0.22 (or 22 %) in 73-74, gradually it is increasing and was 0.54 in 99-00.

Table:16: Poverty Ratios: State-wise: Selected years extent of variations

	1973-74	**1977-78**	**1983-84**	**1987-88**	**1993-94**	**1999-2000**
Average	48.98	46.82	39.72	32.58	32.32	22.20
SD	10.63	14.02	14.69	14.50	10.78	12.01
CV	0.22	0.30	0.37	0.44	0.33	0.54
Skewness	-0.81	-1.02	0.53	-0.01	-0.16	0.18

Regional Disparity in growth: As mentioned in the analysis plan in earlier sub-section, our attempt is examine the variation in growth rates .This will enable us to answer the question whether regional disparity has widened after reforms. Let us first observe the decadal growth in NSDP and per capita NSDP. **Table 17** shows that the average decadal growth was only 3.47 % during sixties, it slightly increased during seventies (3.55%), more so in eighties (4.92%) and even higher in nineties(5.79 %).A similar trend is seen in per capita NSDP. What is also significant is that the standard deviation during these four periods is gradually declining (during reform period it slightly increased.

The CV was 0.63 in sixties has come down to 0.27 in nineties. The fall in CV for PC NSDP is even sharper, although it is always higher than the corresponding NSDP figure.
Not only this , the declining Skewness coefficient suggests that the distribution of growth is 'approaching' normality.
Now, one finer point ,which is very interesting to note. The average growth rate has gone up during reforms, but standard deviation (and the CV) has gone up ,although 'only marginally'. What does that mean ? To answer this, let us examine the state-wise growth rates during reform periods., which are presented in **Table 18** . (The table also presents the slopes obtained by Dasgupta et al (2000) for the period 1973-74 to 1995-96, for a comparison)
The states NSDP growth rates are further summarized as follows: **Average** rate of growth in the nineties is 7.35%,
Median rate of growth in the nineties is 7.4%
Modal rate of growth in the nineties is 6.2%
Maximum rate of growth in the nineties is 12.6 %
Minimum rate of growth in the nineties is 3%
(Standard Deviation is 2.12 %).
Coefficient of Variation is 0.29

Table:17: Decadal Growth Rates: NSDP and PC NSDP

	NSDP				PC NSDP			
	60-61 69-70	70-71 79-80	80-81 90-91	93-94 98-99	60-61 69-70	70-71 79-80	80-81 90-91	93-94 98-99
Mean	3.47	3.55	4.92	5.79	0.98	1.139	2.70	3.70
S.D.	4.85	1.38	1.21	1.56	2.12	1.13	1.06	1.68
C.V	0.63	0.391	0.246	0.269	2.15	0.99	0.39	0.45
Skewness	1.33	0.38	-0.19	-0.05	1.85	0.28	-1.52	0.139

These rates are much higher than those recorded in earlier periods. On an average the growth has been higher during the reforms. BUT the disparity has marginally gone up during nineties, since the reforms began.

Table 18 : Semi-log trend [Log Y = a + b T] PC NSDP Rate of Growth State Wise : Post Reform

State	1990-91 to 2000-01		R Sqr	Dasgupta et al (2000) comparative Slope (rate of growth) 1970-71 to 1995-96
	Intercept	Slope for Rate of growth		
Andhra Pradesh	8.499 (143.21)	0.071 (7.45)	0.87	0.0188
Arunachal Pradesh	8.75 (125.32)	0.0419 (3.71)	0.63	0.0484
Assam	8.42 (188.29)	0.031 (4.32)	0.70	0.0167
Bihar	7.94 (149.54)	0.0517 (6.04)	0.82	0.0178
Gujarat	8.70 (98.08)	0.095 (6.64)	0.84	0.0268
Haryana	8.96 (187.44)	0.0619 (8.03)	0.88	0.0301
Himachal	8.54 (170.41)	0.06 (7.89)	0.73	0.0182
J & K	8.19 (80.19)	0.0859 (5.221)	0.92	0.30114
Karnataka	8.49 (156.12)	0.085 (9.70)	0.82	0.0215

Kerala	8.41 (92.15)	0.09 (6.22)	0.86	0.0165
Maharashtra	8.95 (134.96)	0.077 (7.21)	0.78	0.0298
Manipur	8.20 (93.41)	0.0764 (5.40)	0.75	0.0222
Orissa	8.15 (129.48)	0.0505 (4.98)	0.81	0.0134
Punjab	9.122 (162.68)	0.0529 (5.86)	0.90	0.299
Rajasthan	8.32 (135.86)	0.0846 (8.57)	0.90	0.0188
Tamil Nadu	8.54 (113.38)	0.099 (8.17)	0.89	0.0242
Tripura	8.35 (88.5)	0.045 (2.97)	0.52	0.0251
Uttar Pradesh	8.21 (175.47)	0.0606 (7.95)	0.88	0.0178
West Bengal	8.43 (250.04)	0.0761 (14.0)	0.96	0.0260
Delhi	9.36 (165.62)	0.0797 (8.75)	0.90	0.0280
Pondichery	8.69 (118.33)	0.1197 (10.11)	0.92	0.0197
Madhya Pradesh	8.30 (115.03)	0.0721 (6.202)	0.82	-
Meghalaya	8.41 (150.3)	0.06 (96.94)	0.85	-

All 't' values (in parentheses) are significant at 5% Insignificant at 5%.

Theil Index confirms increase in disparity : Table19 presents values of Theil Index for different time points both pre and post reform periods. This is a measure to check the disparities and lies between **zero** (perfect equality) to **log n**, (where n is no. of observations compared).For PC NSDP , the index shows a higher value as compared to pre-reform average . Two years ,94-95 and 95-96 were worse as the inequality stood highest in these two years. A group of 31 states show a higher inequality in 99-00 (true for all years but one) as compared to 15 Major States. This suggests that the bigger states have not been so much affected by inequality as smaller (and poorer?) states have. A conclusion which has been shared by other studies on this .

Table:19: Theil Index for Different States

Indicator	PC NSDP	PC NSDP	Poverty Ratio	Poverty Ratio
Group of States/ Year	23 Major	15 Major	31states/ UTs	15 Major
73-74			0.025	0.031
77-78			0.052	0.085
80-81	0.080	0.043		
83-84			0.067	0.058
85-86	0.071	0.043		
87-88			0.104	0.130
90-91	0.086	0.075		
91-92	0.070	0.051		
92-93	0.090	0.079		
93-94	0.101	0.055	0.058	0.054
94-95	0.110	0.110		
95-96	0.482	0.572		
96-97	0.079	0.063		
97-98	0.091	0.059		
98-99	0.525	0.572		
99-00	0.094	0.061	0.154	0.131

Gini Coefficient to check inequality : Table 20 the Gini ratios to check whether the regional disparity in poverty ratios and per capita NSDP is reflected as shown by growth rates, CV and Theil Index. While for Per capita NSDP the figures are not showing any consistency (both for a group of 15 major states and a group of 23 states). The increase in disparity is clear for Poverty ratios. Similar results were seen in earlier sections with descriptive statistics including CV.

Table:20: Gini Coefficient for Disparity Among Different States

Indicator	PC NSDP	PC NSDP	Poverty Ratio	Poverty Ratio
Group of States/Year	23 Major	15 Major	32states/ Uts	15 Major
73-74			0.158	0.135
77-78			0.199	0.202
80-81	0.204	0.161		
83-84				0.188
85-86	0.191	0.162		
87-88			0.238	0.251
90-91	0.224	0.211		
91-92	0.196	0.178		
92-93	0.221	0.211		
93-94	0.233	0.188	0.1837	0.18
94-95	0.242	0.239		
95-96	0.419	0.475		
96-97	0.216	0.2		
97-98	0.227	0.193		
98-99	0.444	0.495		
99-00	0.235	0.198	0.305	0.287

Coefficient of Concordance: The coefficient of concordance of 15 states' ranking ,according to poverty ratios for different periods from 1973-74 to 1999-00 was calculated as 0.807, which is tested against chi-square distribution . Putting I=14, and J-6, the variable J(I-1) W is equal to 67.85, which is larger than the critical value of Chi Sqr at 14 degrees of freedom (23.68) at 5 % level. The null hypothesis of " no concordance" in rankings gets rejected.

The ranks of 21 major states according to Per capita NSDP were tested for the reform period only i.e. 1990-91 to 2001-02.For I=21, J= 12, the W value was found to be 0.851.
J(I-1) W= 214.52, which is much higher than the critical value of Chi square statistic at 21 degrees of freedom (at 5 %) level as 32.07. It is concluded that the rankings have been maintained by the states.

CONCLUSION

A time series based regression analysis of Per Capita Income (PCI) has shown that the PCI has consistently recorded higher growth during the post-reform period as compared to pre-reform period.

Majority of variables which affect PCI have also shown higher contribution to PCI during post-reform period.

The growth of Per capita Consumer Expenditure has also been higher in post-reform period. The Indians, bye and large , have earned more and also spent more !
Poverty ratios ,on an average have fallen, but the disparity is widened. The same could be conclusively said about various States. During the reform period, the growth has certainly been higher ,but the disparity also has widened . Growth has not led to equality.
The larger (or better off) states have maintained their supremacy. The major states have by and large maintained the rankings in poverty ratio and also in NSDP.

Notes

1. National sample survey organization conducts All India level surveys to estimate consumption expenditure. The expenditure estimates are derived fro so called large surveys covering a large sample. These are conducted every five years. To compare the data on a continuous basis, NSS also conducts annual surveys which are called surveys based on 'thin sample'. The last large survey was conducted in 1999-2000, whereas last thin sample was in 2003.
2. Now the situation has improved but only slightly. The latest NSS data on consumption expenditure relates to year 1999-2000, which was only published in late 2001.
3. NAS: National Accounts Statistics: Earlier NAS data was available with a base year of 1980-81. Recently a new series of NAS data has been introduced with a new base year 1993-94. since the base year has now been changed, the old data is not available beyond 1996-97. Using the chain index the old data has to be updated before it could be used.

4. NCAER: National Council of Applied Economic Research, a New Delhi based research organization, has been conducting. Research projects based on huge sample surveys. It conducts rural household surveys, which use largest sample

5. HCR: The most commonly used measure of poverty is headcount ratio (HSR), which is the proportion of the population below the poverty line.

   PR = q/n

   Where q = No. of persons with consumption expenditure less than the poverty line

   n = total number of persons

6. Thailand related study (Levis & Kapur-1990) gave similar findings as that in China. "Updating a country study: Thailand's Needs and Prospects in 1990s" World Development, vol. 18, No. 10.

7. Quoted in R Nagaraj (2000): World Bank (2000). 1999 Annual Review of Development Effectiveness, World Bank, Operations Evaluation Department, Washington DC.

8. FGT Measure: Foster, Green and Thorbecke (1991) computed a poverty measure by combining the poverty ratio, the income distribution of the poor (basically, coefficient of variation) and the intensity of the poverty measured by Income-Gap Ratio. "Sub-groups consistent Poverty Indias Econometrica, 59, 1991, pp. 687-709.

9. Task Force: The Task force set up to identify the minimum subsistence level under the Chairmanship of Prof. Y.K. Alagh, recognized that poverty line should be based on minimum consumption requirement different categories of persons based on their age, sex and type of work, the persons are involved in.

10. This it self is based on a host of variables. This was devised by 11th Finance Commission for the year 1999. For details of this index : see Tenth Five Year Plan, Planning Commission, New Delhi)

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