PUBLIC EXPENDITURE AND SOCIAL SECTOR IN INDIA: AN INTERSTATE ANALYSIS

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CERTIFICATE

I, **ASHISH KUMAR SINHA**, certify that the dissertation entitled "PUBLIC EXPENDITURE AND SOCIAL SECTOR IN INDIA: AN INTERSTATE ANALYSIS" submitted for the degree of **MASTER OF PHILOSOPHY** is my bonafide work and may be placed before the examiners for evaluation.

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Ashish Kumar Sinha

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Aberration Used

BIA Benefit Incidence Analysis

BIMARU- Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh

BOP- Balance of Payment

CDR- Crude Death Rate

CMP-96-Common Minimum Programme (1999)

DPEP-District Primary Education Programme

FDI- Foreign Direct Investment

GER- Gross Enrollment ratio

GNP- Gross Net Product

GSDP- Gross State Domestic Product

IMR- Infant Mortality Rate

NEP-91- New Economic Reforms (1991)

NHP-2000- National Health Policy (2000)

NPE-86- National Policy on Education (1968)

NREP- National Rural Employment Programme

NSS- National Sample Survey

PRT- Pupil Teacher Ratio

PROBE-99 Public Report on Basic Education in India (1999)

RLEGP- Rural Landless Employment Guarantee Programme

SSA- Sarva Shiksha Abhiyan

ST/SC- Schedule Tribe/ Schedule Caste

TRF- Total Fertility Rate

WDR- World Development Report

Data Sources

The data used has been collected from a various sources. The National Accounts data of Central Statistical Organization (CSO) has been utilized to calculate the per capita expenditure as percentage of GSDP for all States. Census data (population) has been used to calculate the per capita of different states. All data pertaining to state wise social sector expenditure, education and health in particular have been taken from States Finances – A Study of Budgets and earlier issues of RBI Bulletin.

The time series state wise data on number of hospitals, dispensary and number of bed (per 1000) have been collected from Statistical Abstracts. The main sources of information for state wise time series data on Total Fertility Rate (TFR), Crude Death Rate (CDR) and Infant Mortality Rate (IMR) are Health Information of India, central Bureau of Health Intelligence, Directorate of Health Services, Ministry of Health and Family Welfare, Government of India and Sample Registration Bulletin, Registrar General India, Ministry of Home Affairs.

The time series data on Gross Enrollment Ratio (GER) for all categories of student (ST/SC) and number of institutions (Primary, Middle/Upper primary) has been collected from various issues of Selected Education Statistics. Literacy data has been collected from Census of India, various issues.

Introduction

I. The Context

Economic development is defined as harmonious interaction of the social and economic forces that strengthen the performance of the economy, thereby providing an efficient means of enhancing the quality of life. Typically, a high and sustained growth in per capita income (PCI) should be accompanied by rapidly declining poverty and inequality, better education and health attainment via human capital formation, and continuous enhancement in the infrastructure facilities that support the cycles of economic growth. However, economic growth alone cannot help in reduction of economic and social disparity in India. Vibrant economic reforms strengthen the performance of economic indicators by increasing PCI, increasing the inflows of foreign direct investment (FDI), greater employment generation and good quality of infrastructure whereas increased public expenditure for social goods like education and health has larger re-distributive effect on income, inequality and poverty. Therefore, the prerequisite of sustainable development calls for social goods like education and health along with employment generation.

The task of reducing social and economic inequalities in India involves the expansion of social security provisions, broadly understood as social arrangement to protect all members of the society from extreme deprivation and insecurities[1]. Public intervention in social sectors like health and education, particularly at the primary level,

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[1] J Dreze and A Sen: (1995), India Economic Development and Social Opportunities: Page-no 87.

is often justified on the basis of its impact on access and distribution of resources within the society. The Poor remain poor due to lack of education and equal economic opportunities *(Sen, 1995)*. This adversely affects the nutritional and health profile of the poor population as their poverty profile does not improve significantly. If social goods like education and better health facilities are made available to the lower spectra of the population, it indirectly enhances their chances of improvement in the quality of life. Thus, public provision of social goods is therefore considered as an effective instrument to promote equity by providing equality of opportunity to the masses.

Health and education, in addition to PCI, form integral part of overall socio-economic development of a nation. International experiences suggest that improvement in the social expenditure has positive impact on the quality of life, increases productivity of work force, leads to higher growth and reduce poverty[2]. The re-distribution of income via public provision of social good has a deeper impact on poverty reduction[3]. Greater literacy and educational achievement of the weaker section increases their ability to reap the benefits of economic reforms. Further, improvement in the standard of living has direct relation with performance of the social attainment indicators[4]. Thus breaking the inter-generational transmission of poverty requires a far-reaching action in the education and health sector of weaker section.

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[2] Dorte Vernern (2004): 'Education and Its Poverty-Reducing Effects: The Case of Paraíba, Brazil' World Bank Policy Research Working Paper-3321, World Bank.

[3] Davoodi, H.R., E.R.Tiongson, and S.S. Asawanuchit (2003): 'How Useful Are Benefit Incidence Analyses of Public Education and Health Spending,' IMF Working Paper 03/227.

[4] Kurian N.J., (2000): 'Widening Regional Disparities in India – Some Indicators', Economic and Political Weekly, Vol. XXXV, No. 7, February 12-18.

II. Pattern of Socio-Economic Growth

"The New Economic Policy of 1991 (NEP-91) were introduced with the objectives of setting the platform for sustainable long-run economic growth of Indian economy by ensuring that India achieves a higher growth path, creates greater employment opportunities and reduces inequality across regions and classes"[5]. It brought about major changes in the policies and the developmental strategies adopted by the Government of India. Though the partial economic reforms began in 1980's, it accelerated only after 1992 in response to the severe balance of payment (BOP) crisis of 1991. The structural changes in the Indian economy, such as, deregulation of investment – both domestic and foreign – and liberalization of trade, exchange rate, interest rate, capital flows and prices along with good infrastructural facility, strengthened the economic forces, which are well reflected in the performance of the economic indicators.

The performance of Indian economy has improved after the introduction of reforms. The Indian economy grew from 5.2 per cent in the pre reform period (1980-81 to 1990-91) to 5.9 per cent in the post reform period (1991-92 to 1999-00) *(Ahluwalia, 2000)*. On the other hand, the current account has turned into surplus, and foreign exchange reserves have crossed the $79 billion mark. Food grain stocks with the government, at 50 million metric tons, are three to four times more than what would be required for the operational and buffer stock needs. Liberalization really impacted the economic growth of Indian economy in a numerous ways, where the foundations of

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[5] Ahluwalia, Montek S. (2000): 'Economic Performance of States in Post-Reforms Period', Economic and Political Weekly, May 6, pp. 1637-1648

economic growth are based on the fundamental principles of globalization and privatization.

Economic realities have had a deep impact on the political economy of growth and the political economy of trade. These developments have been accompanied by fundamental changes in India's institutional framework, as the economy has transformed from a closed to a relatively open economy. It is well known that in a large economy, different regions with different resource bases and endowments would have a dissimilar growth path over time. One would expect considerable variation in the performance of the individual states, with some growing faster than the average and other slower. The neo-classical convergence theorem *(Barro, 1991)* postulates that when the growth rate of an economy accelerates, initially some regions with better resources would grow faster than others. But after sometime, when the law of diminishing marginal returns set in, growth rates would converge, due to differential marginal productivity of capital (higher in poorer regions and lower in richer regions), and this in turn would bridge the gaps in the levels of income across regions.

If we take a closer look at the performance of social and economic indicators, social indicators have failed to put up a good scorecard relatively to that of the economic indicators. It is widely viewed that disparity in terms of socio-economic factors (investment, PCI, infrastructure, employment and poverty) have widened. The well-off states have done better in terms of attracting FDI compared to the less developed region. The investment differential has sharply increased and poses a great challenge of the

government. Gross public investment fell from 6.9 per cent (1980-81 to 1989-90) to 3.2 per cent (1990-91 to 2000-01). Between the periods of 1983-94 and 1994-00 the average annual growth rate of total employment recorded a steep fall from 2.04 to 0.98 percent (*Economic Survey, 2000*).

On examining, India's educational development and health pattern reveal a mix of remarkable successes and glaring gaps. States like Tamil Nadu, Kerala, Maharashtra, Punjab and Haryana have already taken the lead, leaving behind other states. In the post-independence period, the pace of educational and health development were not up the standards as compared to the developing countries. Even after 50 years of planned effort in education sector, nearly one-third of the population or close to 300 million persons in the age-group of 7 years and above is illiterate[6]. The health status in India is low inspite of significant amount of resources being spent on health as compared to that of countries with similar income. The pattern of disparity between rural and urban poverty remains significant while rural poverty is higher to that of urban areas[7]. Indicators that measure the depth and severity of poverty suggest that the decline of poverty did not touch only those just below the poverty line while leaving the remaining poor unaffected. States like Bihar, Orissa, Madhya Pradesh (MP) and Uttar Pradesh (UP) have low economic growth with high presence of poverty accompanied by low levels of health and educational

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[6] National Human Development Report (2001) 'Educational Attainments and Well-Being', Chapter 4: http://planningcommission.nic.in/reports/genrep/nhdrep/nhdch4.pdf

[7] Deaton, A. and Drèze, J.P. (2002): '*Poverty and Inequality in India: A Reexamination*' Economic and Political Weekly, September 7, 2002.
Also see- Tendulkar Suresh D & Sundaram K (2003): 'Poverty in the 1990s:An Analysis of change in 15 Indian States' EPW, April 5, 2003

attainment[8]. Poverty has a negative causal relation with education, health and employment and directly affects the overall development of the individual at micro-level and nation at macro-level (aggregate of poor individuals). Poverty is clearly declining but slowly and it still remains widespread. This is because poverty eradication programmes like National Rural Employment Program (NREP)[9] and the Rural Landless Employment Guarantee Program (RLEGP) lacked momentum, right focus and missed the audience that was targeted in these states. One of the main reasons why a fervent trickle down effect did not work in case of Indian growth experiences is because the investment in social over head capital are much below the optimal levels[10].

III. Research Objectives

The question is: Why India has failed to improve the overall education and health status? Why there is much of disparity across the states? States like Kerala have accomplished such high social development standards while state like Bihar is nowhere in the scene. The question is "what should be done?" Since India displayed a high degree of complex regional heterogeneity in the levels of social and economic development, the government adopted planning and a strategy of state-led industrialization after independence *(Nagaraj at el, 1998)*. This was envisaged to have balanced growth in the country so as to minimize the inter-state disparities. However social overhead capital

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[8] In the BIMARU states, a third to a half of girls between the ages 6-14 is out of school **(Source- Drèze and Sen, 2002)**

[9] The National Rural Employment Program (NREP) was introduced in 1980 with the aim of at creating additional wage employment opportunities in rural areas along with the creation of community assets. Later in 1983, it was added to the Rural Landless Employment Guarantee Programme (RLEGP). The NREP and RLEGP are two very similar rural employment schemes, differing mainly in the arrangements for sharing the cost between the Centre and the States.

[10] Gupta, S P (1999): 'Trickle Down Theory Revisited: The Role of Employment and Poverty', V B Singh Memorial Lecture (mimeo), November 18-20

continued to be low and lacked momentum and political rigor. This adversely affected the government balanced regional growth strategy. The cost effectiveness and efficiency of public social expenditure depends on the socio-economic and political conditions of the state. Better socio-economic development not only affects the design and pattern of delivery of public funded programmes that are implemented but also improves the overall performance of the social sector. This is an important reasons why states with better set of infrastructural facilities (access to electricity, clean cooking gas, roads and sanitation) coupled with good standard of living (high female literacy, low infant mortality and high girl enrollment) gained the most from economic development and economic reform in particular.

After independence, the Indian parliament adopted a constitution by virtue of which India became a democratic federal republic and a welfare state. The preamble of the constitution sets out the objective of social, economic and political justice and equality of status and opportunity for all the people. In contrast to this view, liberalization has brought significant changes in the role of the government-especially with introduction of fiscal reform. It has not only reduced the degree of control exercised by the centre but has further widened the inequality[11] within states and region. From the above argument, there is a clear understanding that such objectives can only be met if the government focuses on weaker sections of the society through provisioning of public goods that help them in breaking the vicious circle of poverty. Increased public

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[11] "When an economy is liberated, especially after controls on investment are lifted, then regions with better infrastructure have attracted more investment, especially foreign capital, through market mechanism, and this in turn has lead to greater regional inequity, at least in the early phase of reforms" Ahluwalia, 2000.

expenditure in social goods (public good) can check and reduce severity of inequality if the government has well-defined objectives and a planned growth formula. It would be interesting to explore the experience of Indian states from the view point of economic development, poverty and attainment of health and education indicators. It is in this pretext that the role of government is imperative in reducing the extent of regional disparity-in attainment on education and health indicators, especially after the introduction of reforms. The dissertation examines the following hypothesis,

1. Has regional disparity reduced across states with introduction of economic reforms?

2. Has economic reforms brought improvement of health and educational attainment across regions?

3. How far an increase in education and health expenditure by the state help in reducing poverty?

No doubt, that the increase in economic development leads to higher per capita disposable income, thereby making education and health affordable, provided other things remains constant. However, provision of social opportunities like basic education and primary health has a larger re-distributive effect on income distribution and inequality. Provision of basic public goods like education and health has positive externalities which in terms has a positive impact on the growth path of the individuals and on the nation at an aggregate level. Hence, the government's positive role in expanding these social opportunities has a direct impact on poverty and a widespread

effect on overall social-economic conditions of the economy and therefore makes a strong case for increased expenditure for these social goods.

CHAPTER-1

Empirical Linkages between Economic Growth, Education and Health

1. 1 Linkages of Education and Health in Economic Development

Public goods and services are commonly perceived as uniform and egalitarian and have often been defended on normative grounds. In fact, universal public provision of primary and secondary education and basic health services are viewed as the main vehicle for achieving sustainable economic growth *(Charu C. Garg, 1998)*. Education and health play a key role in increasing social capital and fostering the inclusion of underprivileged people in society (reduction of poverty). It not only helps in increasing the overall productivity of the nation but also helps in promoting fairness across all sections of the society *(Sen, 2002)*.

Education and health are main inputs in raising earning potentials of individuals thereby improving the productivity of the economy. A more educated and healthy workforce produces high value output, which contributes to growth and poverty reduction. Low literacy levels have resulted in critical gaps in educational accomplishment across regions, gender and population segments in India. Figure-1 shows the inverse relationship of educational achievement and economic opportunities that occurs to the different section of the society. The base indicates that majority of the

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population i.e. low income group has low levels of economic opportunities as they have primary or no formal schooling and vice-versa.

Figure 1- Inverse Relationship between Social Class and Educational Achievements
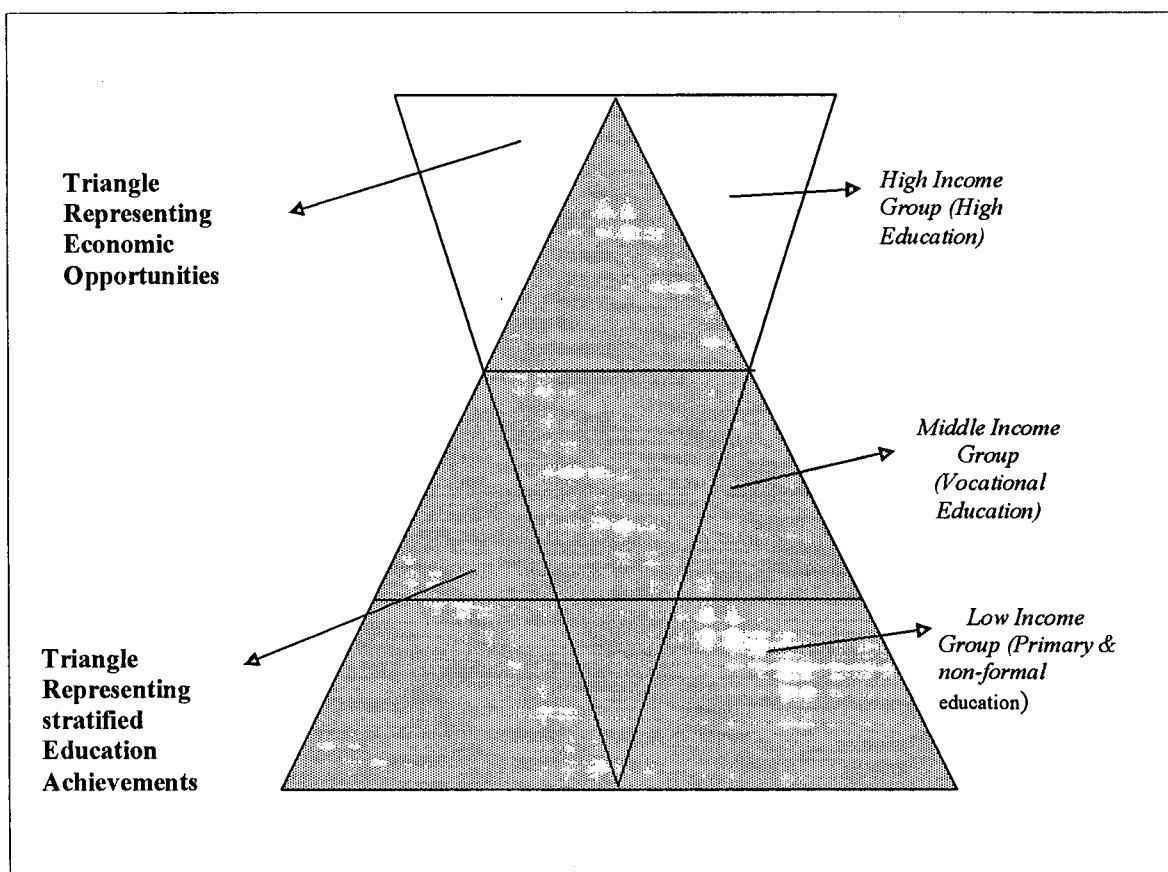
Secondly, low-quality schooling leads to low income, which in turn perpetuates poverty. Poverty profile often indicates that household heads that have completed secondary or more education are much better off than those with no or primary education only. Widespread poverty not only affects the students' health, nutrition level, performance and also their availability to attend school. Therefore far-reaching actions in education and health sector can help in breaking inter-generational transmission of poverty *(D Vernern, 2004).*

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Thirdly, education and health are merit goods *(Musgrave, 1959)* and its consumption needs to be promoted. Although the people may be ignorant of the benefits or may not appreciate investing in these services, it is the government's responsibility (better informed) to take strategic decisions regarding investing in people (subsidizing these services).

Lastly, education and health are advocated on the grounds of providing equality of opportunity. Ensuring equality of opportunity in education and access to health facilities to everyone irrespective of social background and economic background is considered an important function of the modern state. The provision for making elementary schooling and primary health services–compulsory in several national legislations is based on the same principle.

1. 2 Literature Review

The links between education, health and economic growth are now well accepted and an impressive volume of literature has accumulated over the years outlining the role of education and health on economic development and growth. In this chapter, an attempt has been made to summarize the relevant work (empirical and theoretical) on health, education and growth. The aim is to build a theoretical background to test the hypothesis mentioned in the first chapter.

Sen Amartya and Jean Dreze (1995) have identified education and health as the two promoting 'factors' of economic opportunities and calls for investing in human

resources. The positive role of the government in expanding these social opportunities has a widespread impact on poverty. Further, provisioning of social opportunities has redistributive effect on the income distribution. They emphasized on improving the quality and accessibility of primary education, especially for the weaker section of the society.

The need to "invest in people" is the cornerstone of the new consensus on antipoverty strategies. *Gupta Sanjeev at el (2001)* in his paper finds evidence in more than 70 developing and transition economies that the poor are have significantly worse health status than that of the non-poor and are most affected by public spending on health care in comparison with the non poor. Further, they estimated the impact of the public spending on the poor's health status, thereby inferring that the relationship is stronger in low-income countries than in higher income countries.

Emanuels Baldacci, at el (2002) paper demonstrates[1] the relationship between government spending on health care and education, and social indicators. The finding suggests that social spending is an important determinant of social indicators, particularly in the education sector. The normative view of government or public expenditure on health and education is that-once the right policy or intervention has been found for correcting market failures and externalities or achieving a more desirable distribution of income - the government is assumed to implement it as designed, and the desired effects will follow. However, *E Ablo and R Ritva (2002)* argues that budgetary allocations can

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[1] Unlike previous studies, where social indicators are used as proxies for the unobserved health and education status of the population, this paper estimates a latent variable model.

be quite misleading in explaining outcomes and making policy decisions in a weak institutional context, particularly in Africa. The study reveals that actual service delivery (output) is much worse than budgetary allocations because public funds (inputs) do not reach the intended facilities as expected, and hence the outcome doesn't improve. The competing priorities at various levels of government can be one of the possible reasons of the misuse of the funds.

Ramon Lopez, et al (1998) in their paper constructs an asset allocation model, which elucidates the importance of the distribution of education for economic development[2]. The impact of schooling on growth is greatly affected by the economic policy environment. Unequal dissemination of education tends to have a negative impact on the PCI of most countries. Controlling for education distribution leads to positive and significant effects of average education on PCI. The paper further elucidates the importance of policy environment matters- such as reforms of trade, investment, and labor policies that increase the returns from education.

Further, widespread poverty affects both students' performance and their ability to attend school. *Dorte Vernern* (2004) highlights that low-quality of schooling leads to low income, which in turn perpetuates poverty. Furthermore, low levels of education affect growth low labor productivity. He calls for far-reaching actions in the education sector for breaking the inter-generational transmission of poverty. By using probit analysis, he reveals that education attainment is the most important poverty-reducing

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[2] They use panel data from 12 Asian and Latin American countries for 1970 to 1994, to investigate the relationship of education, policy reforms, and economic growth.

factor. All levels of education from primary to tertiary are significant and negatively associated with the probability of being poor.

To improve the educational attainment, particularly enrollment, the government introduced mid day meal programme. *Jean Drèze and Aparajita Goyal (2003)* in their article examine the role of cooked mid-day meals in primary schools, introduced in many states. The article further reports the findings of a recent survey which suggests that this initiative could have a major impact on child nutrition, school attendance and social equity. This programme has really helped in accelerating the primary enrollment ratio except in some state like Bihar, Haryana and UP were it failed miserably as the programme was not implemented seriously. However, the authors raise serious concerns about the quality and implementation of the programme. They call for urgent attention and restructuring of mid-day meal programmes to realise its full potential. Universal and nutritious mid-day meals would be a significant step towards the realisation of the right to food.

Literacy rates in India, especially in the younger age groups, for both boys and girls are on an upward trend. However, rising literacy rates have been accompanied by unevenness of achievements: across Indian states and across various socioeconomic groups. *N Bajpai and S Goyal (2004)*[3] in their study indicate that the Western and Southern zones of India outperform those in the East and Center. Moreover, the densely populated states of UP, Bihar and Rajasthan continue to lag behind the rest of India.

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[3] N Bajpai and S Goyal, (2004) "Primary Education in India: Quality and Coverage Issues", Center on Globalization and Sustainable Development, Working Paper No. 11.

Literacy rates for girls, rural residents, and especially members of scheduled castes and scheduled tribes also lag behind those for boys, urban residents and the upper castes. A similar result is quoted by *C Vermeersch and M Kremer (2004).* He examines the effects of subsidized school meals on school participation, educational achievement, and school. He uses data from a program that was implemented in 25 randomly chosen preschools in a pool of 50. The meals program not only led to grater participation but also resulted in higher curriculum test scores (where the teacher was relatively experienced). The school meals displaced teaching time and led to larger class sizes.

Gupta, Indrani and Arindam Datta (2003) highlight that accomplishment of health indicators has been very uneven across the rural-urban divide and between the better-performing and low-performing states. The access to public health services is nominal and health standards are grossly inadequate for the vulnerable sections of the society in several states (National Health Policy 2001). The outcome of the health policy is continuously facing the challenges of dealing with different needs of the population, with limited resources and is trying to find the right balance in allocating the health services. The paper attempts to draw upon the existing evidence, as well as use the latest round (52nd) of the National Sample Survey (NSS) on health to understand the dimensions of the problem and the possibilities that exist for a respite for the poor in India.

The health *system* of India is misdirected in its efforts and is inadequately designed. This is because India has relatively poor health outcomes, despite having a

well-developed administrative system, good technical skills in many fields, and an extensive network of public health institutions for research, training, and diagnostics. *M D Gupta and M Rani (2004)* identify three fundamental weaknesses of Indian health system-it overlooks some of the fundamental public health functions such as public health regulations and their enforcement. Secondly, the deep management flaws have hindered the effective use of resources. Thirdly, the central government functions too much in isolation and needs to work much more closely with other key actors, especially with sub-national governments, as well as with the private sector and with communities

Charu C. Garg (1998)[4] examines the mixes of public and the private financing and the delivery of health care in India from viewpoint of equity. Inequity in delivery of health care is analyzed on the basis of utilization of health services by people in different income quintiles, and in different geographical locations. The paper shows that even though the government sources of financing are mildly progressive, the large proportions spent by the household on health care makes it overall regressive. Both government and private expenditures are higher for higher income quintiles and for people living in urban areas and working in organized sector. On the other hand, people in lower income quintile and in rural areas bear higher burden of health expenditure as a proportion of their income. Delivery of health care is also found to be biased in favor of urban areas.

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[4] C.C Garg (1998), "Equity of Health Sector Financing and Delivery in India", Takemi Research Paper No.144, Harvard School of Public Health, 665, Huntington Avenue, Boston, MA 02115.

***B V D Klaauw and L Wang (2004)*[5]** in their focuses on infant and child mortality in rural areas of India. They have used Flexible Duration Model[6] framework to find the interaction between the child's age and individual, socio-economic and environmental characteristics. Estimated result indicates that social-economic condition and environment have significantly different impact on mortality rates at different age. The study also suggests that improvement in the edification of woman along with access of electricity and sanitation can significantly reduce the mortality rate under fine.

Hamid R. Davoodi, et al **(2003)** in his paper provides a primer on benefit incidence analysis (BIA) for macroeconomists and a new data set on the benefit incidence of education and health spending across 56 countries over the period 1960-2000. His paper demonstrates the usefulness of BIA in two dimensions. Firstly, the paper finds that the overall education and health spending are poorly targeted; benefits from primary education and primary health care go disproportionately to the middleclass. Secondly, simple measures of association show that countries with a more pro-poor incidence of education and health spending tend to have better education and health outcomes, good governance, high PCI, and wider accessibility to information.

***B Kaur and S Misra (2003)*[7]** in their paper examines the level and effectiveness of social sector expenditure in the field of education and health[8]. Empirical findings of Indian states establish that public spending on schooling has been productive, though it

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[5] B V D Klaauw and L Wang (2004), Child Mortality in Rural India, World Bank, Working Paper.
[6] In this study they have used National Family Household Survey data (1998-99) for the estimation.
[7] Balbir kaur and Sangita Mishra: Social Sector Expenditure and Attainments: An Analysis of Indian States, RBI Occasional Paper, summer and Monsoon, 2003.
[8] The study covers a sample of 15 non-special category states over the period 1985-86 to 2000-0.

has been more at the primary than at the secondary level of education. The relationship is stronger for poorer than non-poorer states. On the other hand, relationship between public spending and health outcome turns out to be weaker as it is ineffective. Regression results further establish that infrastructure availability have played a significant role in influencing the health and education indicators. State spending has played a less important role in case of health than education in narrowing down the gender and rural-urban disparities.

Dorte Vernern (2004) highlights some key policy issues regarding the performance of public expenditure and proposes an analytical framework for its assessment. His framework distinguishes three economic objectives of policies in the pursuit of better performance of public expenditure: macroeconomic sustainability, allocative efficiency (better outcomes per unit of public expenditure) and technical efficiency (less resource inputs per unit of public output). Against this backdrop, his paper discusses the experiences of governments of the OECD countries with various policy instruments, including fiscal rules, medium-term fiscal frames, market-based allocation mechanisms and flexible management and control.

Thorvaldur Gylfason and Gylfi Zoega (2003) underline that education is one of the key determinants of economic growth around the world (cross country study). In this paper, they explored three different measures[9] of education and established their relationship to the distribution of income as measured by the Gini coefficient as well as to

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[9] The three measures are: (a) gross secondary-school enrolment, (b) public expenditure on education relative to national income and (c) expected years of schooling for girls.

economic growth across countries. In a sample of 87 countries at all income levels, they also found that more and better education encourages economic growth directly as well as indirectly through increased social equality and cohesion.

Based on the primary household level data obtained from a survey on income[10], expenditure, poverty measures of 1994-95 and HDI for 1996 in rural and urban India, *B K Pradhan et al (2000)[11]* found regional disparity in standard of living and performance of social indicators. They showed wide disparities in levels of living in terms of economic and social indicators in rural and urban India. All the social pointers are more favourable in urban areas than in rural areas. This is because the health services, educational and infrastructural facilities are concentrated in urban areas. Further, the comparison of the distribution with a similar survey conducted in 1975-76 shows the changes in the pattern of income distribution and the gap between the shares of income in rural and urban areas during the last two decades.

Kurian (2000) finds widening regional disparities among the Indian states and a clear dichotomy between what he calls the forward[12] and backward states. The former having higher levels of PCI, better infrastructure, higher per capita resource flows and private investment and better social and demographic indicators. He clearly spells out the

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[10] The results are based on the conclusions of the Micro Impact of Macro and Adjustment Policies (MIMAP) India project.

[11] B K Pradhan, P K Roy, M R Saluja, S Venkatram (2000), Rural-Urban Disparities Income Distribution, Expenditure Pattern and Social Sector, Economic and Political Weekly.

[12] The forward group consists of Andhra Pradesh (AP), Gujarat, Haryana, Karnataka, Kerala, Maharashtra, Punjab and Tamil Nadu (TN). The backward states are Assam, Bihar, MP, Orissa, Rajasthan, UP and West Bengal (WB).

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poor attainment of health and education indicators in the (backward group) 'BIMARU' states.

RH Dholakia (2002) examined the trends in regional disparity in the economic and human development in India over the last two decades. While PCI does not show any significant trend in regional disparity over the last two decades, seven out of nine HDI[13] display a declining trend. Similarly, social and human development indicators show a marked decline in regional disparity during 1981-91. The papers examined the direction of causality between economic development and human development and found that Indian regional data suggest a two-way causality between human and economic development. HDIs positively influence PCI with a lag of about eight years, whereas PCI affect the HDIs within two years.
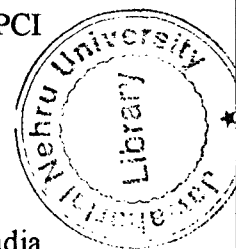
The study by **N Singh, at el (2002)**[14] examines: if the regional inequality in India has increased after the economic reforms of 1991. This concern is supported by various statistical analyses. They show that the conclusions are sensitive to measures of attainment that are used particular for human development indices (HDI)[15] as they do not show the increase in regional inequality. Furthermore, they examined the of consumption and credit indicators for regions disaggregated below the state level to suggests that inequality trends is not as bad as suggested by SDP data.

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[13] The indicators used are Inflation, inequality, adjusted per capita consumption expenditure, Unemployment rate, Proportion of population below poverty line, Literacy rate, Adult literacy rate, Dropout rate for class and Death rate.

[14] S Nirvikar, L Bhandari, A Chen and A Khare (2003): 'Regional Inequality in India: A Fresh Look', *Economic and Political Weekly*, Vol XXXVIII, No 11, March 15-21, pp 1069-73.

[15] They used the same calculation for measuring the HDI as used by Planning Commission.

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1. 3 Conclusion

The above empirical studies spell out the vital role of schooling and health in growth and human development. In case of Indian states, economic growth had a positive impact on the performance of the education and health indicators, but their experience varies immensely across states. States like Kerala and Tamil Nadu have shown a strong commitment in improving their standard of living and human development. They have almost achieved hundred percent literacy with TFR close to 2 were as Bihar and Orissa are far behind. Literature sources suggest that human development is not uniform across the states of India. States like Bihar, Orissa and UP have not raised the standard of living substantially though improvement in literacy is noticeable. There is a broad consensus in favor of increased public expenditure in the social sector, helping in improving the overall welfare of the society. But, again the cost effectiveness and efficiency of public social expenditure depends on the socio-economic and political conditions of the state. Better set of infrastructural facilities (access to electricity, clean cooking gas, roads and sanitation) coupled with good standard of living (high female literacy, low infant mortality and high girl enrollment) not only affects the design and pattern of delivery of the programmes that are implemented but also improve the overall performance of the social sector.

Education and health programme have strong forward linkages and can only be strengthen if there is a high degree of integration and convergence in planning. However, some studies suggest that increased public spending alone will not be sufficient to reduce

disparity across different classes of the society[16]. Public spending on education and health are weakly targeted; benefits from primary schooling and primary health care go disproportionately to the middleclass. A part from public expenditure, the performance of social indicators heavily depends on the infrastructure facilities, effectiveness of the public expenditure, growth in income and quality-design of the policies implemented. Further, the strong social intermediation by government acts as an instrumental variable in improving the education and health attainment.

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[16] See- Sanjeev Gupta (2001), "Public Spending on Health Care and the Poor" IMF Working Paper, Fiscal Affairs Department- WP/01/27.

CHAPTER-2

Education and Health:
Performance of Indian States

2. 1 Introduction

As discussed in last chapter, investing in human capital is now well recognized as the prime motive behind the various development and poverty alleviation initiatives. The role of public policy is supported on the premises that expansion of health care, education and social securities can directly improve the quality of life, increase productivity of work force, lead to higher growth and reduce poverty. Apart from social and welfare concern, the justification for the state action in provision of education and health services is based on public good character of these services.

Assessing the impact of public expenditure on schooling and health attainment in India is a complex process because the data are fragmentary and incongruent in nature (scope and reliability). To capture the performance and disparity of educational and health indicators, Indian states have been classified into five different groups i.e. Northern, Central, Eastern, Western and Southern regions covering a period of 20 years (1980-2000). The study focuses on improving our understanding of the key determinants of education outcomes like gross enrollment ratio (GER) and health outcomes variables like infant mortality rate (IMR), total fertility rate (TFR) and crude death rate (CDR) by identifying the principle causes of the social attainment gap between the poor and the better off states.

The first section of the chapter throws light at sources of education and health expenditure, its composition and allocation. In second section the chapter outlines the inequality pattern across the regions; focusing on gender and different social class (ST/SC). The trend analysis of some of the key determinant form both the sector has been done. In the last section some estimation has been done to capture the rural and urban gap and its impact of education and health indicators.

2. 2   Financing of Public Education and Health Expenditure

Education and health in India are constitutionally a concurrent subject with responsibility shared between central and state governments. It is estimated that constitution of India has clearly defined the roles and responsibility of the union and the state government to insure smooth financing of these sectors.

Financing of public education in India involves a complex interaction between the state governments, households and the central government. The state governments collectively contribute over 60 percent of the total expenditure on providing and accessing education while the households contribute a significant amount -approximately 30 percent. The rest is taken up by the central government. The household contribution is spent mainly on attending non-fee charging schools as well as on fees for private schools[1].

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[1] V Sipahimalani (2003): "Financing of Elementary Education in India in the 1990s", South Asia Education Sector Technical Working Paper No. 2.

Intra-sectorally, elementary schooling accounts for a major proportion of total education expenditure, presently around 50 per cent *(Geetha Rani, 2003)*. It has marginally increased over the years particularly after the formulation of the *National Policy on Education-1986(NPE-86)*. The share of secondary education has been stable around 30 per cent and the share of higher education has also remained stable around 13 per cent.[2] Government finances education to a large extent. Elementary – primary and middle (upper primary) – education is nearly totally financed by the government – central, state and local bodies.

Table-:2.1 Growth in Education Expenditure in Different Phases

States	1980-85	1986-90	1991-95	1996-00	1980-90	1990-00	1980-00
AP	20.79	17.52	13.53	17.44	16.49	13.55	13.98
Bihar	15.75	22.62	7.29	16.49	15.95	13.55	14.79
Gujarat	22.73	15.63	14.18	15.91	18.29	15.54	16.14
Haryana	16.36	19.82	13.23	16.67	17.90	16.11	15.92
HP	12.77	22.34	12.09	21.88	17.33	18.19	16.50
Karnataka	17.98	17.29	15.81	16.02	17.82	15.82	16.12
Kerala	12.95	10.55	15.13	13.63	13.24	13.34	13.50
MP	19.09	19.16	10.49	12.28	17.77	12.81	15.56
Maharashtra	15.55	18.37	14.88	19.98	17.36	17.11	16.78
Orissa	14.57	18.97	15.39	15.51	15.81	15.31	15.77
Punjab	12.33	22.58	10.39	16.97	15.45	15.01	14.56
Rajasthan	18.91	20.32	15.70	14.88	17.87	15.85	17.20
Tamil Nadu	17.09	16.62	10.76	16.22	17.03	14.06	15.92
UP	24.55	18.17	11.48	6.64	14.27	5.66	10.60
WB	15.31	15.27	7.14	21.17	15.37	14.47	14.78
All India	17.34	18.20	12.59	16.73	16.22	15.04	15.48

Public expenditure on education as a proportion of GDP has been far below the national target of spending 6 per cent and in recent years declined from above 4 per cent in 1990-91 to about 3.9 per cent in 1998-99. The share of education in the total government expenditure has also declined, though marginally. Public expenditure on

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[2] This intra-sectoral allocation is based on expenditure incurred by the Departments of Education only. Expenditures incurred by other departments on education are not included here, as required data are not available.

education has increased remarkably in India during the post-independence period. However, growth in terms of expenditure in real prices[3] and per student has not been impressive. The growth also has not been smooth across the last five decades *(Tilak, 1995)*. Table: 2.1 indicate that the growth in government expenditures has been very slow ever since the new NEP-91 was introduced. Since the primary education is free (charging no fees of any kind), government meets 99 per cent of the total recurring expenditure at primary level and 96 per cent at upper primary level, while fees, endowments and others, account for the rest.[4] In case of secondary education, student fees accounted for 3 percent in 1992-93, and in case of higher/senior secondary education it accounts for 10 per cent[5].

Financing of health expenditure in India is jointly taken up by the central government and the state government. Though the major finances come from the center, it is primarily the state's responsibility to provide health care. Nearly 90 percent of all health spending is routed through the state governments since the Indian constitution specifies that a large number of health related activities should be run by the states *(Reddy and Selvaraju, 1994)*. Financing of health expenditure at state level arises from three sources:

1) State's own non-plan budgets
2) State's own plan budgets and
3) Budget of the centrally sponsored programs.

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[3] Conversion into real prices is based on national income deflators (GNP at 1993-94 prices). Source: Government of India (2002).

[4] No break up is available between fees and endowments and others at primary and upper primary levels.

[5] J B G Tilak (2004): "Public Subsidies in Education in India": Economic and Political Weekly.

States depend on the shared taxes from central government revenue and government's specific and general-purpose grants and loans. It is mainly financed through tax and non-tax revenue of the government or through revenues of public enterprises. An important component of non-tax revenue from health services are user fees for use of public facilities, though the extent of resources raised through this mechanism is very small. The average cost recovery for medical, public health and family welfare services is only about 5% of government's expenditure on health.

Government financing[6] of health care includes variety services such as curative care in government hospital and clinics, public health services like disease control program, development of medical education, family welfare programs to control fertility, and insurance scheme for low salaried corporate workers. Health expenditures on hospitals, primary health care facilities and insurance are almost entirely financed from the state's budget while planning, maternal and child health and immunization are almost entirely funded by central government budget. Private expenditure on health contributes a major portion of the total health expenditure in India. Out of the 6 percent of GDP spent on health, private sector accounts for 4.7 percent or 78.5 per cent of the total health expenditures *(WDR, 2001)*

2. 3 State wise Trends Analysis of the Education and Health Expenditure

Education and health expenditure forms a major component of total social expenditure. Over the plan periods, there has been a consistent increase in the proportion

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[6] Though ideally we must also consider expenditure on family welfare, nutrition, water supply and sanitation, child health and expenditure made by other government departments, in the view of resources and time constraints I have restricted to medical and public health only.

of the education expenditure while the contribution of the health expenditure has reduced

drastically (12.75 % to 5.2%). After the introduction of NEP-91, the decline in health

expenditure has been sharper and significant (almost 50%). This is due to the

introduction of fiscal reforms at state level.

Table: 2.2 Plan Outlays of Centre, State and Union Territories on Social Sectors

Plan	Education	Medial & Health Care	Social Services	% Of Social Services	
				Education	Medial & Health Care
First Plan (1951-56)	149.0	65.2	472.6	31.5	13.8
Second Plan (1956-61)	273.5	140.8	854.8	32.0	16.5
Third Plan (1961-66)	588.7	225.9	1491.8	39.5	15.1
Annual Plans (1966-69)	306.8	140.2	975.9	31.4	14.4
Fourth Plan (1969-74)	774.3	335.5	2985.2	25.9	11.2
Fifth Plan (1974-79)	1710.3	760.8	6833.9	25.0	11.1
Annual Plan (1979-80)	263.0	223.1	1967.5	13.4	11.3
Sixth Plan (1980-85)	2976.6	2025.2	15916.6	18.7	12.7
Seventh Plan (1985-90)	7685.5	3688.6	34959.7	22.0	10.6
Annual Plan (1990-91)	2316.5	1040.8	9606.6	24.1	10.8
Annual Plan (1991-92)	2599.0	924.8	10298.7	25.2	9.0
Eighth Plan (1992-97)	21598.7	8137.6	88806.6	24.3	9.2
Ninth Plan (1997-2002)[7]	51343.2	17379.7	175214.6	29.3	9.9
Annual Plan (1997-98)	7656.6	2641.5	26867.2	28.5	9.8
Annual Plan (1998-99)	9684.1	5411.9	38735.3	25.0	14.0
Annual Plan (1999-2000)	10018.4	3568.7	37013.9	27.1	9.6
Annual Plan (2000-01)	17644.5	4346.6	45710.8	38.6	9.5
Annual Plan (2001-02)	6339.6	1411.0	26887.4	23.6	5.2

Source: Indian Public Finance Statistics, various issues, Government of India   Figures are in Rs. Crores

Per capita education expenditure for majority of the states remained constant over

the years. Haryana has slipped the high state to middle spending state while AP has

moved from middle to low spending state after the economic reforms. At the same time,

western states like Rajasthan and Gujarat have increased their expenditure showing their

continued commitment in human capital formation.

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[7] Latest information relating to plan outlays during the Ninth Plan places the actual plan expenditure at Rs. 24,908.38 crore.

Table: 2.3 State wise Per Capita Education Expenditure and its Movement across Years

	High Spending State				Middle Spending State				Low Spending State		
	1980	1990	2000		1980	1990	2000		1980	1990	2000
1	Har	Guj	Guj		TN	Mah	TN		Raj	AP	AP
2	Mah	TN	Mah		Guj	Raj	Raj		MP	MP	MP
3	Ker	Ker	Ker		AP	Har	Har		Bih	Bih	Bih
4	HP	HP	HP		Kar	Kar	Kar		Ori	Ori	Ori
5	Pun	Pun	Pun		WB	WB	WB		UP	UP	UP

Further, table: 2.4 gives a clearer picture of the per capita public expenditure on education; indicating that there has not been much of change in the relative ranking of the states. The top five states for both 80s and 90s remained the same. HP and Kerala remain the top two states. It is mostly the BIMARU state that figures in the bottom five states. In 90's Rajasthan has increased its education expenditure while AP has seen a decline in the same. State like Kerala (147.41) spends almost six times higher than that spends by UP (25.90).

Table: 2.4 Ranking of States in Terms of Per Capita Expenditures on Education

Ranking	Education Expenditure			
	80's	90's	80's	90's
	Top Five		Bottom Five	
1	H Pradesh (193.96)	H Pradesh (680.76)	Rajasthan (87.22)	Orissa (285.16)
2	Kerala (147.41)	Kerala (468.17)	Orissa (75.97)	A Pradesh (259.94)
3	Punjab (139.38)	Punjab (445.43)	Bihar (70.21)	M Pradesh (231.06)
4	Maharashtra (115.20)	Maharashtra (430.65)	M Pradesh (67.18)	Bihar (216.88
5	Gujarat (113.83)	Gujarat (412.39)	U Pradesh (25.90)	U Pradesh (58.17)

*Parenthesis indicates per capita education expenditure (Rs)

On examining the per capita health expenditure, one can find a similar trend to that of education expenditure. The per capita health expenditure varies greatly across Indian states. Per capita health spending of northern states and the southern states, have been more than the national average while state western states have been almost around the national average in all the phases. Central and the eastern states have been spending abysmally low around 50% of national figures. States like HP spends more than 5 times

to that of Bihar. Overall there has been an upward trend of per capita health expenditure, showing a significant increase in percentage change in the per capita health expenditure. In the period 1999-2000, Bihar has the lowest per capita health expenditure (Rs. 48.91) while a state like HP spends Rs. 237.45 per year, which is almost five times that of Bihar's health expenditure.

Table: 2.5 Ranking of States in Terms of Per Capita Expenditures on Health

Ranking	Health Expenditure			
	80's	90's	80's	90's
	Top Five		Bottom Five	
1	H Pradesh (100.95)	H Pradesh (237.45)	A Pradesh (34.22)	A Pradesh (79.18)
2	Punjab (50.50)	Punjab (128.47)	Orissa (31.93)	Orissa (66.35)
3	Kerala (49.31)	Kerala (116.63)	M Pradesh (30.92)	M Pradesh (64.24)
4	Maharashtra (48.37)	Tamil Nadu (111.21)	U Pradesh (27.17)	U Pradesh (59.44)
5	Haryana (44.82)	Gujarat (100.49)	Bihar (21.63)	Bihar (47.88)

*Parenthesis indicates per capita health expenditure (Rs)

Table: 2.6 State wise Per Capita Health Expenditure and its Movement across Years

	High Spending State				Middle Spending State				Low Spending State		
	1980	1990	2000		1980	1990	2000		1980	1990	2000
1	Har	TN	TN		MP	Kar	Kar		Ori	Ori	Ori
2	Raj	WB	WB		Mah	Mah	Mah		UP	UP	UP
3	HP	HP	HP		WB	Har	AP		Bih	Bih	Bih
4	Ker	Ker	Ker		Guj	Guj	Guj		Kar	MP	MP
5	Pun	Pun	Pun		TN	Raj	Raj		AP	AP	Har

Northern states have high per capita health expenditure while BIMARU states have low per capita spending. MP, Haryana and Rajasthan have seen a decline in per capita health spending while TN and AP have augmented their health expenditure. Haryana is only state which has witnessed a decline in expenditure from high spending states to low spending state (table: 2.5).

2. 4 Ranking of States: Per Capita Expenditure in Education and Health

o There are eight states, which had higher per capita education expenditure in 80's compared to all India average while there were nine states in 90's.

o In the case of education and health, the last four positions kept changing between the states of Bihar, MP, UP and Orissa and there was no substantial change in their ranking during this period.

o HP, Kerala and Punjab have remained among top five states in terms of per capita expenditure during the period 1980-2000 for education and health.

o Haryana has seen deterioration in its ranking for both the sectors.

o There has been a slight improvement in ranking of Rajasthan and Karnataka in the case of education expenditure while the ranking of Maharashtra has remained unchanged in terms of per capita expenditure on education.

2. 5 Examining Regional Disparity in Educational and Health Attainment

In order to achieve distributive justice, the Government of India has showed a strong commitment to the development of social sector. Over the past two decades, the government has made concerted efforts[8] to improve the education and health status both in rural and urban area (*Charu C. Garg, 1998*). NPE-86 provides for a comprehensive policy framework for the development of education up to the end of the century and a Plan of Action (POA) 1992, assigning specific responsibilities for organizing, implementing and financing its proposals. NEP-86 mainly focused on improving the quality of education with more equitable expansion of educational facilities for girls and weaker section (ST/SC) of the society to reduce the inequality between the gender and classes. At the other hand, health has been given a prominent place in the first of the five

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[8] The Government announced the Common Minimum Program in June 1996 and particularly, in the health sector, the strategy of "Health for All" which is further reoriented towards "Health for Under Privileged" (GOI, 1997).

priorities enumerated in Common Minimum Programme (1996) by the government. In CMP, the strategy of "Health for All" was further reoriented towards "Health for Under Privileged". The government announced National Health Policy (2000) in which various innovative incentives were introduced for health sector to disparity across different section of the society.

a) Gross Enrollment Ratio

In the last ten years, the government has launched two large-scale programs-District Primary Education Programme (DPEP, 1994) and Sarva Shiksha Abhiyan (SSA, 2001)[9]–with the goals of universalizing elementary education *(Bajpai & Goyal, 2004)*. The SSA is an ambitious program funded entirely by domestic resources and is a major initiative on the part of the central government. It is an umbrella program that includes the DPEP in its ambit. It is crucial to link education expenditures with educational outcomes in the various states in order to answer the following question - *do more children go to school in states that spend more on elementary education?*

The table below (Table-no-2.7) classifies states according to growth in spending in education and growth in gross enrollment ratio[10]. The majority of states demonstrate the close relationship between financing and enrollment. In the last twenty-year the southern states have done exceptionally well compared to the northern states in general (refer Table-). It is worth emulating the experiences of states like Kerala and HP where strong social intermediation by government, social capital and community participation

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[9] Appendix- **Box: 1**

[10] In the absence of information on net enrollment I have used Gross Enrollment Ratios. It is problematic to use Gross Enrollment Ratios (GERs) as an indicator of enrollment status in the states as it does not account for underage/overage children attending primary school, drop out ratio etc. Ideal should have been the Net Enrollment ratio as it truly captures the effect of education expenditure on enrollment.

played a key role in achieving high growth in enrollment and literacy. HP, Karnataka, Maharashtra and Rajasthan have substantially increased their financial commitment to fund education, especially elementary education. Rajasthan, a traditionally backward state, had the highest spurt in enrollment in 1980's.

Table: 2.7 Public Expenditures and Gross Enrollment Growth 1980-90

Growth in Education Expenditure	Growth in Enrollment	
	High	*Low*
High	Gujarat, Haryana, Karnataka, Maharashtra, TN and Rajasthan	HP, MP and WB
Low	AP and Orissa	Bihar, Kerala, Punjab and UP

Table: 2.8 Public Expenditures and Gross Enrollment Growth 1990-2000

Growth in Education Expenditure	Growth in Enrollment	
	High	*Low*
High	Gujarat, Karnataka, Orissa, Punjab, Rajasthan, and Maharashtra	Haryana, HP and WB
Low	AP, MP, and UP	Bihar, Kerala, TN

However states like Bihar, UP, MP, Orissa, AP and Rajasthan failed substantially in improving the GER. According to World Bank staff estimates, three quarters of children who are out of school live in AP, Bihar, MP, Rajasthan, UP and WB *(V Sipahimalani, 2003)*. The Public Report on Basic Education in India **(PROBE-99)**[11] claims that the main reason for the malfunctioning of primary education is because of low level of teaching activity in the government schools, high-teacher pupil ratio, unsupportive management and lack of accountability in the schooling system.

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[11] *Appendix* - **Box: 2**

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The all India enrollment trends are in fovour of boys[12]. For all the states, the enrollment rate is higher for boys than that of girls across the years. The gender gap in enrollment is highest in Haryana, Rajasthan, MP, UP and Bihar while state like Kerala, TN and Karnataka had reduced the gap significantly. This is true even for the literacy transition[13] across gender in all the states.

Another significant factor that led to sharp increase in the primary enrollment ratio during nineties was the National Programme of Nutrition Support to Primary Education[14], a centrally sponsored scheme. Under this programme, cooked   mid-day meals were introduced in all the government school and government-aided primary schools. The brighter side of this programme was that it acted a check point for drop out ratio. Midday meal programme is very successful in states like TN and Karnataka because of high degree of social awareness with better supporting infrastructure whereas Bihar, Orissa and UP lacked social and political commitment in implementing the programme.

A part from demand side constraints, improvement in the supply factors has positive impact on enrollment. For example- availability of local schools, quality— including the pupil-teacher ratio, supplies available, and percent of trained teachers, and efficiency—the proportion of children who advance a level each year improves the primary enrollment ratio. To have a qualitative impact on the primary education, the education expenditure for appointing trained teachers should be increased. This is

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[12] *Appendix-* **Table: E & Table: F**
[13] *Appendix -***Table: A**
[14] *Appendix –* **Box: 3**

because enrollment ratio is sensitive to the trained teachers with better gender composition of teaching staff[15]. Although pupil-teacher ratio may not have a strong effect on the initial enrollment decision, but it is an important factor in the number of grades that students complete before dropping out.

b) Infant Mortality Rate

IMR declines with improvement in the performance of the economic growth. Better economic growth leads to high PCI-leading to better quality of life. A similar pattern is also observed in case of Indian states like Kerala, Punjab and Maharashtra which have witnessed substantial growth in SDP and have really done better in controlling the IMR. TN and Bihar have witnessed a decline in the IMR and have moved to low and medium IMR states respectively. AP is the only states that performed extremely poor in controlling IMR. On the other hand states like Orissa, MP and UP have failed miserably because their economy did not perform splendidly. These states are also characterized by high population explosion, high TFR and low level of human development.

Throughout the world, child mortality is higher in males than in females, with only a few exceptions like China, India, Nepal and Pakistan. In Indian states mortality in girls exceeds that of boys. These inequities are thought to arise from the preferential treatment of boys in family health care-seeking behaviour and in nutrition *(B V D Klaauw and L Wang, 2004)*. The rural and urban gap in IMR has followed a consistent trend. In the last 20 years the IMR has come down significantly but has been unsuccessful as compared to

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[15] Trained female teachers are more likely to impact the enrollment vis-à-vis male trained teachers.

other developing countries, especially the South East Asian countries *(World Development Indicators 2003)[16]*. We can see a sharp disparity in the regional context i.e. the rural areas has not done well in comparison to the urban India[17]. Since the per capita health expenditure is very low, whereas this has resulted in low quality of health infrastructure. Secondly, the public health expenditure is highly skewed towards the urban areas *(B K Pradhan et al, 2000)* leading to market failure.

Table: 2.9 Ranking IMR based on Low, Medium and High States

	Low IMR State				Medium IMR State				High IMR State		
	1980	1990	2000		1980	1990	2000		1980	1990	2000
1	Ker(1)	Ker(1)	Ker(1)		TN(6)	Har(6)	Bih(9)		Bih(12)	Bih(11)	AP(11)
2	Mah(3)	Mah(2)	Mah(2)		WB(7)	AP(7)	Kar(6)		Guj(11)	Raj(12)	Raj(12)
3	Pun(4)	Pun(4)	Pun(4)		HP(8)	Kar(8)	Guj(8)		UP(15)	UP(13)	UP(13)
4	Kar(2)	TN(3)	TN(3)		Har(9)	Guj(9)	HP(7)		MP(13)	MP(14)	MP(14)
5	AP(5)	WB(5)	WB(5)		Raj(10)	HP(10)	Har(10)		Ori(14)	Ori(15)	Ori(15)

Examining the group performance of the states **(see appendix Table: A)**, one can find a clear trend. The southern and western states have done extremely well in bringing down their IMR. While northern, eastern and central have failed measurably in reducing the IMR. States like MP, UP, Rajasthan and Orissa still has higher IMR ranging from 80-85. One of the most important factors of high range of IMR in these states is the high population growth rate. Due to low economic opportunities, poor states have lower standard of living resulting in higher fertility and mortality rate[18].

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[16] *Appendix* -**Table: B**
[17] See appendix: A1 An attempt has been made to explain the real problem pay off matrix.
[18] T K Roy, V Jayachandran and S K Banerjee (1999), "Economic Condition and Fertility -Is There a Relationship?" Economic and Political Weekly.

c) Total Fertility Rate

International experiences suggest that with increased health expenditure, the TFR come down. Evidence across the world suggests that high level of literacy have helped raised growth rates and reduced fertility rates over time. Per capita growth and net fertility tends to move inversely. For example, a higher initial stock of human capital (primary and secondary enrollment ratio) leads to a higher growth and lower fertility. The effect on fertility involves an increases in the value of the parent's time and thereby a rise in the cost of raising the children. More generally, any change that increases the cost of raising children tends to reduce fertility and to increase desire saving per children. In effect, people shift from saving in the form of Children to saving in the form of physical and human capital. The increase in desired saving raises the per capita growth rate of the SDP.

Table: 2.10- Five Yearly Trends of TFR

1985	1990	1995	2000
High Health Expenditure and High CDR			
Gujarat	Gujarat	Gujarat	Haryana
		Rajasthan	
High Health Expenditure and Low CDR			
Himachal Pradesh	Himachal Pradesh	Himachal Pradesh	Himachal Pradesh
Kerala	Karnataka	Kerala	Karnataka
Maharashtra	Kerala	Maharashtra	Kerala
Punjab	Punjab	Punjab	Maharashtra
Tamil Nadu	Tamil Nadu	Tamil Nadu	Punjab
West Bengal	West Bengal		Tamil Nadu
Low Health Expenditure and High CDR			
Bihar	Bihar	Bihar	Bihar
Haryana	Haryana	Haryana	Gujarat
Madhya Pradesh	Madhya Pradesh	Madhya Pradesh	Madhya Pradesh
Orissa	Orissa	Orissa	Orissa
Rajasthan	Rajasthan	Uttar Pradesh	Rajasthan
Uttar Pradesh	Uttar Pradesh		Uttar Pradesh
Low Health Expenditure and Low CDR			
Karnataka	Andhra Pradesh	Andhra Pradesh	Andhra Pradesh
	Maharashtra	Karnataka	West Bengal
		West Bengal	

The trends for TFR are quite similar to that of IMR as they are positively correlated to each other. The rural and urban divide remains to very high in all the states except Kerala and TN (refer appendix- Table: A2). With high development and focused family planning, the population tends to stabilize, bringing TFR close 2. Southern states like Kerala and TN have already achieved TFR below 2. States like AP, HP, WB, Maharashtra and Karnataka are on the verge of achieving the TFR close to international standards. UP, Rajasthan and Bihar have the highest TFR more than four while states like Haryana, Assam and MP have TFR more than 3.

d) Crude Death Rate

In India the CDR has come down drastically. This is mainly due to better medical facility and greater access to public health care system. Kerala is ranked highest in the attainment of the health indicator.

Table: 2. 11- Correlation between Health Expenditure and Crude Death Rate

1985	1990	1995	2000
High Health Expenditure and High CDR			
Gujarat	Gujarat	Gujarat	
		Himachal Pradesh	
		Rajasthan	
High Health Expenditure and Low CDR			
Himachal Pradesh	Himachal Pradesh	Kerala	Haryana
Kerala	Karnataka	Maharashtra	Himachal Pradesh
Maharashtra	Kerala	Punjab	Karnataka
Punjab	Punjab	Tamil Nadu	Kerala
Tamil Nadu	Tamil Nadu		Maharashtra
West Bengal	West Bengal		Punjab
			Tamil Nadu
Low Health Expenditure and High CDR			
Bihar	Andhra Pradesh	Bihar	Andhra Pradesh
Haryana	Bihar	Madhya Pradesh	Bihar
Madhya Pradesh	Madhya Pradesh	Orissa	Madhya Pradesh
Orissa	Orissa	Uttar Pradesh	Orissa
Rajasthan	Rajasthan		Rajasthan
Uttar Pradesh	Uttar Pradesh		Uttar Pradesh
Low Health Expenditure and Low CDR			
Andhra Pradesh	Haryana	Andhra Pradesh	Gujarat
Karnataka	Maharashtra	Haryana	West Bengal
		Karnataka	
		West Bengal	

For some state like Haryana, UP and TN, there has been a considerable decline in CDR where Punjab and AP the gap has widened. One can see that policy variables i.e. state spending seems to play a less important role of health indicator at rural and urban areas. On the other side, rural and urban divide has still not come down to a great extent (appendix- table-A3). The obvious reason being the disparity in the dissemination of the health infrastructure.

2.6 Conclusion

The performance of the social indicators have an upward trend but have failed to match the standard of the as compared to the developing countries. In spite of giving so much of importance to the development of social indicators, there are still large differences in the performance of the health and education indicators- across the states and with the different sections of the society. Even after 50 years of planned effort in education sector, nearly one-third of the population or close to 300 million persons in the age-group of 7 years and above is illiterate[19]. The health status in India is low inspite of significant amount of resources being spent on health as compared to that of countries with similar income.

Although, the government is committed towards achieving these national goals, there is a critical gap between the present budgetary allocations and the required budgetary allocation. The allocation of public funds for health and education sector has been abysmally low. Such low levels of public expenditure have negatively affected the education and health outcome. It is suggested in literature that one of the fundamental

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[19]National Human Development Report (2001) "Educational Attainments and Well-Being", Chapter 4: http://planningcommission.nic.in/reports/genrep/nhdrep/nhdch4.pdf

weaknesses of the state finances in India can be attributed to the increase in the non-developmental expenditure, particularly the revenue component of the non-developmental expenditure, and interest payment as a proportion of revenue receipts *(Charu C. Garg, 1998)*.

The government has failed to establish a fair dissemination of resources between the rural and urban areas. Much of the mismatch in the resources and the poor functioning of the education and public health care system, has led to huge variation in health achievement, especially in the rural areas.

Lastly, the most disturbing factor is the disproportionate increase in the education expenditure across Indian states which have further worsened the relative performance of the education and health attainment indicators. There has been greater increase in the health expenditure of the high growing states vis-à-vis the low growing states[20]. The allocation of government expenditure and its provision between the center and the states tend to be biased in favor of better off states, which affects the poor in the poorer states adversely.

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[20] In our analysis AP, Bihar, HP, MP, Orissa, Rajasthan, UP and WB are low growing states while Gujarat, Haryana, Maharashtra, Punjab, Kerala, TN and Karnataka are high growing states.

Appendix

Table A: Regional Movement of IMR (Rural and Urban Break Up)

States	Phase-I (80-85)			Phase-II (86-90)			Phase-III (91-95)			Phase-IV (96-00)		
	T	**R**	**U**	**T**	**R**	**U**	**T**	**R**	**U**	**T**	**R**	**U**
All India	105.6	120.8	64.8	94.6	103.2	60.4	77.4	84.0	50.6	70.8	77.2	45.6
North States												
Haryana	97.8	105.2	59.0	85.8	91.6	55.8	69.6	58.4	55.8	68.0	70.4	60.2
H Pradesh	88.8	79.8	44.6	82.0	67.6	37.6	69.8	70.6	37.6	61.7	63.8	38.6
Punjab	78.2	85.4	53.2	65.4	69.2	55.6	55.6	60.6	40.0	52.3	56.2	39.2
Rajasthan	108.2	117.2	62.8	103.2	117.2	68.0	83.8	88.0	58.0	83.2	86.6	60.4
Average	93.3	96.9	54.9	84.1	86.4	54.3	69.7	69.4	47.9	66.3	69.3	49.6
Central States												
M Pradesh	132.8	137.4	78.2	132.8	123.0	80.6	107.2	114.4	66.6	94.0	101.0	58.0
U Pradesh	153.2	162.2	98.8	153.2	137.6	80.4	95.2	99.6	70.2	84.5	88.6	66.2
Average	143.0	149.8	88.5	143.0	130.3	80.5	101.2	107.0	68.4	89.3	94.8	62.1
Eastern States												
Bihar	109.2	109.8	65.4	99.2	101.8	67.0	70.8	72.6	48.6	67.8	70.4	54.0
Orissa	133.4	139.2	70.2	124.8	129.0	76.2	114.8	119.2	70.6	93.3	101.4	65.2
West Bengal	87.8	94.8	49.8	78.4	79.0	48.4	54.0	68.4	41.4	54.0	75.0	42.6
Average	110.1	114.6	61.8	100.8	103.3	63.9	79.9	86.7	53.5	71.7	82.3	53.9
Western States												
Gujarat	110.4	121.6	79.8	95.6	108.4	64.6	68.4	72.2	51.4	62.0	69.2	46.0
Maharashtra	75.8	85.4	53.8	64.8	73.8	46.8	56.4	66.8	38.4	48.7	59.2	31.8
Average	93.1	103.5	66.8	80.2	91.1	55.7	62.4	69.5	44.9	55.3	64.2	38.9
Southern States												
A Pradesh	81.8	88.4	52.4	81.6	87.4	58.0	68.2	73.2	50.4	65.5	73.4	38.6
Karnataka	70.0	78.2	44.2	74.2	84.0	45.6	70.8	80.2	43.8	56.5	54.2	28.2
Kerala	33.8	35.4	27.2	27.0	28.2	22.4	15.8	16.4	13.2	13.7	13.8	15.4
Tamil Nadu	86.4	99.0	56.4	75.8	87.2	51.0	57.8	66.2	41.4	51.8	59.2	40.2
Average	68.0	75.3	45.1	64.7	71.7	44.3	53.2	59.0	37.2	46.9	50.2	30.6

Key- T- Total, U- Urban and R- Rural

Box: 1 Sarva Shiksha Abhiyan

In an effort to universalize elementary education by community-ownership of the school system, the government launched Sarva Shiksha Abhiyan in 2000. The program calls for promoting social justice through universal elementary education in a clear time frame in response to the demand for quality basic education all over the country.

- *The Sarva Shiksha Abhiyan is to provide useful and relevant elementary education for all children in the 6 to 14 age group by 2010. There is also another goal to bridge social, regional and gender gaps, with the active participation of the community in the management of schools.*
- *Realizes the importance of Early Childhood Care and Education and looks at the 0-14 age as a continuum. Effectively involving the Panchayati Raj Institutions, School Management Committees, Village and Urban Slum level Education Committees, Parents' Teachers' Associations, Mother Teacher Associations, Tribal Autonomous Councils and other grass root level structures in the management of elementary schools.*
- *A partnership between the Central, State and the local government and underlines the states to develop their own vision of elementary education*

Objectives of Sarva Shiksha Abhiyan

- *All children in school, Education Guarantee Centre, Alternate School, 'Back to School' camp by 2003;*
- *All children complete five years of primary schooling by 2007;*
- *All children complete eight years of schooling by 2010;*
- *Focus on elementary education of satisfactory quality with emphasis on education for life;*
- *Bridge all gender and social gaps at primary stage by 2007 and at elementary education level by 2010;*
- *Universal retention by 2010.*

Box 2: Public Report on Basic Education in INDIA (PROBE-1999)

PROBE Report looks at primary education in four states—Bihar, Madhya Pradesh, Uttar Pradesh and Rajasthan to give a useful picture of the relative merit of public and private schools for the poor. The report claims that the government schools are in bleak condition. It describes the 'malfunctioning' in these schools for the poor. The schools suffered from poor physical facilities and high pupil–teacher ratios, but what was most disturbing is the low level of teaching activity. The random sample indicates only in 53 per cent of the schools was there any "teaching activity" going on. The underlying problem in the government schools is 'deep lack of accountability in the schooling system'. Teachers are burdened with excessive paperwork, and there is 'unsupportive' and inadequate management.

Table B: The Literacy Transition of Indian States-Census 1991 and 2001

Literacy Rates	Males	Females	Persons
> 80% **2001**	Kerala, Maharashtra, HP, TN, Gujarat	Kerala	Kerala
1991	Kerala	Kerala	Kerala
70-80% **2001**	Haryana, Rajasthan, WB, MP, Karnataka, AP, UP, Orissa, Punjab		Maharashtra, TN
1991	Gujarat, HP, Maharashtra, TN		
60-70% **2001**	Bihar	HP, Maharashtra, TN, Punjab, WB	Gujarat, Punjab, WB, Haryana, Karnataka, MP, Orissa, AP, Rajasthan
1991	Haryana, Karnataka, Orissa, Punjab, WB		Maharashtra, HP, TN, Gujarat,
50-60% **2001**		Gujarat, Karnataka, Haryana, AP, Orissa, MP	UP
1991	AP, Bihar, Rajasthan, UP, MP,	HP, Maharashtra, Punjab, TN, D & D	Haryana, Karnataka, Punjab, WB
< 50% **2001**		Rajasthan, UP, Bihar	Bihar
1991		WB, MP, Gujarat, Karnataka, Haryana, AP, Orissa, Rajasthan, UP, Bihar	Bihar, UP, MP, Orissa, AP, Rajasthan

Key- West Bengal - WB, Andhra Pradesh - AP, Uttar Pradesh- UP, Madhya Pradesh- MP
Source: Educational Attainments and Well-Being, National Human Development Report 2001.

Box 3: Mid Day Meal

The National Programme of Nutritional Support to Primary Education commonly known as Mid Day Meals Scheme was launched in August, 1995. Three distinct arguments for mid-day meals are:

- *Nutritional argument;* concerned primarily with the potential of mid-day meals as a means of nutrition intervention, not with their present achievements in this respect.
- *Equity argument*; help to break caste barriers by teaching children to sit together and share a common meal, on the grounds. Restrictions on commensality (eating together) play a crucial role in the perpetuation of the caste system, and breaking these restrictions anywhere is a contribution to social equity.
- *Schooling argument*; the claim is that mid-day meals contribute in various ways to the advancement of education, e g, by fostering higher school enrolment, more regular attendance, and better learning achievements.

Table C- International Comparison of IMR

Countries	Infant Mortality Rate	
	1991	2001
China	38	31
Pakistan	96	84
Nepal	100	66
India	80	67
Bhutan	75	74
Thailand	34	24
Sri Lanka	19	17
Bangladesh	96	51
Republic of Korea	8	5
Indonesia	60	33
Malaysia	16	·8
Philippines	45	29

Source: World Bank. 2003. World Development Indicators 2003.

Appendix-A1 - *Game Theoretical Approach*

Assumptions

1. Two Players- Government and Private Sector

2. Two Markets- Rural and Urban Area

3. Private sector moves are based on profit maximization conditions while government move is governed by social obligation of providing equitable allocation of health facilities.

4. Per capita Income/ and Health Expenditure of Rural people is lower than that of the urban areas.

Simultaneous Game-1

Players	Private Sector		
	Market	Rural	Urban
Government Sector	Rural	(3, -2)	(3, 4)
	Urban	(3, -2)	(3, 4)

The government enters both the market irrespective of the profit consideration, as it has to meet the social responsibility. The pay off of the government is same in all the markets (3). Private sector moves are totally governed by the profit concern. Rural people have less spending of health, as health expenditure is directly proportional to the total income. In case of the private sector the pay off is high in case of urban areas (4) while negative in they enter (-2).

NE (Nash equilibriums) is

- Government in rural area and Private in Urban area (3,4)
- Government in Urban area and Private sector in Urban area (3,4)

Sequential Game-2

Additional assumptions

1. The government gives incentives to the private sector to enter the rural market (free land, tax rebate, free medicine, infrastructure)

2. The government can't penetrate in both the market as it resources are constrained

Under the above set on conditions, the private sector has enough incentives to move into rural areas. Secondly, the government has to the first move to the rural market as it will put a ceiling to the prices for the private sector; there by reduce the degree of exploitation.

Players	Private Sector		
	Market	Rural	Urban
Government Sector	Rural	(3, 6)	(3, 4)
	Urban	(3, 0)	(3, 4)

Table A2- Regional Movement of TFR (Rural and Urban Break Up)

States	Phase-I (80-85)			Phase-II (86-90)			Phase-III (91-95)			Phase-IV (96-00)		
	T	R	U	T	R	U	T	R	U	T	R	U
All India	4.5	4.8	3.4	4.1	4.4	3.1	3.6	3.9	2.7	3.3	3.6	2.4
North States												
Haryana	5.0	5.3	3.7	4.4	4.7	3.0	3.8	4.1	3.0	3.4	3.5	2.7
H Pradesh	3.9	4.1	2.6	3.5	3.7	2.2	3.1	3.2	2.2	2.4	2.5	1.8
Punjab	4.0	4.1	3.4	3.4	3.6	3.1	3.1	3.2	2.7	2.7	2.8	2.2
Rajasthan	5.5	5.8	4.4	4.9	5.8	3.8	4.5	4.8	3.5	4.2	4.5	3.0
Average	4.6	4.8	3.5	4.1	4.4	3.0	3.6	3.8	2.8	3.2	3.3	2.4
Central States												
M Pradesh	5.2	5.5	4.0	5.2	5.2	3.6	4.5	4.8	3.1	4.0	4.3	2.5
U Pradesh	5.8	6.1	4.4	5.8	5.8	4.1	5.2	5.5	4.0	4.8	5.0	3.7
Average	5.5	5.8	4.2	5.5	5.5	3.8	4.8	5.1	3.5	4.4	4.7	3.1
Eastern States												
Bihar	5.8	5.8	4.2	5.3	5.4	4.2	4.6	4.7	3.5	4.4	4.6	3.2
Orissa	4.3	4.4	3.7	3.8	3.9	3.0	3.3	3.4	2.5	2.9	3.0	2.3
West Bengal	4.1	4.7	2.4	3.6	4.1	2.3	2.5	3.5	2.0	2.5	3.8	1.8
Average	4.7	5.0	3.5	4.2	4.5	3.2	3.5	3.9	2.7	3.3	3.8	2.4
Western States												
Gujarat	4.3	4.6	3.6	3.7	3.9	3.2	3.2	3.3	2.9	3.0	3.2	2.5
Maharashtra	3.7	4.1	3.1	3.5	3.8	3.0	3.0	3.3	2.5	2.7	2.9	2.3
Average	4.0	4.3	3.4	3.6	3.9	3.1	3.1	3.3	2.7	2.8	3.1	2.4
Southern States												
A Pradesh	3.9	4.1	3.2	3.5	3.7	3.0	2.9	2.9	2.5	2.5	2.6	2.1
Karnataka	3.6	3.9	3.0	3.4	3.7	2.8	3.0	3.2	2.5	2.5	2.7	2.1
Kerala	2.7	2.8	2.5	2.2	2.2	2.1	1.8	1.8	1.8	1.8	1.8	1.8
Tamil Nadu	3.3	3.6	2.8	2.6	2.8	2.3	2.2	2.3	2.0	2.0	2.1	1.8
Average	3.4	3.6	2.9	2.9	3.1	2.6	2.4	2.6	2.2	2.2	2.3	1.9

Table A3- Regional Movement of CDR (Rural and Urban Break Up)

States	Phase-I (80-85)			Phase-II (86-90)			Phase-III (91-95)			Phase-IV (96-00)		
	T	R	U	T	R	U	T	R	U	T	R	U
All India	12.3	13.5	7.9	11.0	12.1	7.6	9.7	10.5	6.9	8.8	9.5	7.0
North States												
Haryana	10.5	11.3	7.1	9.3	9.8	7.4	8.4	8.7	7.4	7.9	8.2	6.7
H Pradesh	10.3	10.6	5.4	9.1	9.4	5.2	8.7	9.0	5.2	7.7	7.9	5.6
Punjab	8.9	9.7	6.4	8.4	8.9	7.0	7.9	8.5	6.4	7.4	7.9	6.1
Rajasthan	13.6	14.8	8.4	12.2	14.8	8.8	9.8	10.2	7.4	8.7	9.1	6.7
Average	10.8	11.6	6.8	9.7	10.7	7.1	8.7	9.1	6.6	7.9	8.3	6.3
Central States												
M Pradesh	15.2	16.6	9.1	15.2	14.8	9.2	12.3	13.3	8.0	10.7	11.4	7.7
U Pradesh	16.4	17.6	10.5	16.4	15.2	8.9	11.9	12.8	8.4	10.4	10.9	8.2
Average	15.8	17.1	9.8	15.8	15.0	9.1	12.1	13.0	8.2	10.6	11.2	7.9
Eastern States												
Bihar	14.2	14.9	8.3	13.4	13.8	8.4	10.7	11.1	7.2	9.5	9.8	7.0
Orissa	13.5	13.9	8.7	13.0	13.6	7.9	11.5	11.9	7.6	10.8	11.2	7.3
West Bengal	10.7	12.1	7.9	8.9	9.8	6.6	7.4	9.0	6.9	7.4	9.8	7.0

Average	12.8	13.6	8.3	11.8	12.4	7.6	9.8	10.7	7.2	9.2	10.3	7.1
Western States												
Gujarat	11.5	12.5	9.1	10.4	11.1	8.6	9.0	9.6	7.6	7.8	8.6	6.1
Maharashtra	9.3	10.4	7.1	8.4	9.5	6.5	7.7	9.2	5.6	7.4	8.7	5.5
Average	10.4	11.5	8.1	9.4	10.3	7.6	8.3	9.4	6.6	7.6	8.6	5.8
Southern States												
A Pradesh	10.9	11.9	7.2	10.0	10.7	7.2	8.8	9.6	6.3	8.3	9.1	5.8
Karnataka	9.3	10.4	6.4	8.8	9.6	6.6	8.4	9.4	6.0	7.7	8.6	5.5
Kerala	6.5	6.5	6.6	6.2	6.2	6.3	6.2	6.1	6.5	6.3	6.4	6.2
Tamil Nadu	11.3	12.9	8.0	9.4	10.5	7.1	8.2	9.1	6.5	8.0	8.7	6.7
Average	9.5	10.4	7.0	8.6	9.3	6.8	7.9	8.5	6.3	7.6	8.2	6.0

Table D- Five Yearly Trend of (Schedule Tribe) Gross Enrollment Ratio across States and Region

States/ Region	Years	Gross Enrollment Ratio					
		Primary Education			Secondary Education		
		Boys	Girls	Total	Boys	Girls	Total
All India	1980-85	99.9	52.5	76.6	32.6	10.5	23.0
	1986-90	117.6	70.3	94.6	45.4	17.8	42.1
	1991-95	127.0	30.9	103.3	50.8	26.3	38.9
	1996-00	103.7	78.2	91.0	58.6	36.8	45.5
Northern States							
Haryana	1980-85	*	*	*	*	*	*
	1986-90	*	*	*	*	*	*
	1991-95	*	*	*	*	*	*
	1996-00	*	*	*	*	*	*
Himachal Pradesh	1980-85	135.0	64.7	97.8	81.4	25.4	52.2
	1986-90	121.1	81.3	100.8	86.1	39.7	62.8
	1991-95	115.2	87.8	102.6	85.4	42.7	64.3
	1996-00	102.9	73.6	87.4	73.8	57.4	65.7
Punjab	1980-85	*	*	*	*	*	*
	1986-90	*	*	*	*	*	*
	1991-95	*	*	*	*	*	*
	1996-00	*	*	*	*	*	*
Central States							
Rajasthan	1980-85	91.0	17.5	55.3	35.3	2.0	19.2
	1986-90	103.4	30.0	67.9	47.8	4.7	26.9
	1991-95	103.3	32.8	69.1	49.6	5.8	28.4
	1996-00	110.8	61.1	86.9	77.1	28.1	54.0
Madhya Pradesh	1980-85	71.2	29.1	50.7	21.8	5.1	13.6
	1986-90	106.1	49.8	78.8	37.2	10.3	24.0
	1991-95	106.1	43.4	78.0	42.5	20.7	31.9
	1996-00	100.4	70.4	85.4	51.9	29.8	41.1
Uttar Pradesh	1980-85	122.7	66.7	95.5	59.1	22.9	41.7
	1986-90	117.5	74.5	97.0	54.0	19.3	37.6
	1991-95	113.8	73.6	94.8	50.4	17.3	34.8
	1996-00	108.3	89.3	99.2	97.8	53.7	77.1
Eastern States							
Bihar	1980-85	103.6	48.6	77.0	29.0	10.2	19.7
	1986-90	106.9	53.6	80.7	36.4	13.6	25.1
	1991-95	107.3	57.2	82.6	41.1	16.5	28.8
	1996-00	94.5	69.8	82.5	51.8	31.3	42.1

States/ Region	Years	Gross Enrollment Ratio					
		Primary Education			Secondary Education		
		Boys	Girls	Total	Boys	Girls	Total
Orissa	1980-85	95.0	44.8	70.7	22.2	8.5	16.7
	1986-90	116.8	56.8	87.4	34.2	14.6	25.1
	1991-95	128.7	63.5	96.9	40.2	16.6	28.5
	1996-00	117.1	63.5	90.3	47.4	24.6	35.5
West Bengal	1980-85	68.1	38.4	53.4	16.1	7.1	11.6
	1986-90	116.8	58.9	88.2	32.5	11.4	22.0
	1991-95	150.6	66.0	108.9	37.0	12.8	24.9
	1996-00	97.9	94.7	96.3	71.2	35.8	53.3
Western States							
Gujarat	1980-85	125.3	7.8.4	102.5	35.2	15.4	25.7
	1986-90	136.3	97.1	117.3	48.0	25.5	37.1
	1991-95	149.7	111.0	130.7	62.6	35.7	49.4
	1996-00	116.2	106.7	111.2	62.9	49.1	56.3
Maharashtra	1980-85	122.5	74.5	98.9	33.0	13.5	23.3
	1986-90	132.9	95.7	122.2	59.2	33.6	46.6
	1991-95	134.5	105.6	120.5	63.3	34.9	49.4
	1996-00	117.9	109.5	113.7	74.8	55.1	65.2
Southern States							
Andhra Pradesh	1980-85	121.5	68.2	96.5	22.4	7.3	15.0
	1986-90	137.0	82.6	110.7	33.5	13.8	23.8
	1991-95	150.9	95.2	123.4	46.6	19.8	33.3
	1996-00	108.3	99.5	104.0	33.3	16.0	25.1
Karnataka	1980-85	173.6	99.7	137.6	232.3	140.9	148.9
	1986-90	84.3	67.6	76.1	117.7	81.8	100.1
	1991-95	92.2	79.6	86.1	47.4	32.8	40.2
	1996-00	103.8	86.8	95.6	101.1	80.2	90.8
Kerala	1980-85	107.4	102.3	104.8	59.7	51.9	55.9
	1986-90	125.0	118.7	121.8	79.6	72.6	76.2
	1991-95	135.0	127.6	131.4	88.1	85.6	86.9
	1996-00	104.9	104.2	104.6	83.5	81.6	82.5
Tamil Nadu	1980-85	74.1	55.9	65.4	25.8	14.0	20.1
	1986-90	104.5	81.0	93.0	48.2	30.9	39.7
	1991-95	119.2	94.3	107.1	63.8	41.1	52.6
	1996-00	112.1	88.0	100.4	79.8	57.6	69.2

Table E- Five Yearly Trend of (Schedule Tribe) Gross Enrollment Ratio across States and Region

States/ Region	Years	Gross Enrollment Ratio					
		Primary Education			Secondary Education		
		Boys	Girls	Total	Boys	Girls	Total
All India	1980-85	111.4	63.8	88.4	48.7	21.0	35.3
	1986-90	116.8	74.5	96.2	56.8	28.1	42.9
	1991-95	122.2	80.2	101.8	61.0	257.7	47.2
	1996-00	101.3	80.7	91.4	65.3	42.8	54.3
Northern States							
Haryana	1980-85	99.8	53.1	77.3	49.0	11.2	31.1
	1986-90	108.6	81.0	95.0	64.9	25.6	46.2
	1991-95	109.7	86.8	98.3	63.3	31.5	48.1
	1996-00	98.4	102.4	100.3	66.3	54.6	60.9
Himachal Pradesh	1980-85	138.7	90.1	113.3	81.0	32.0	55.8
	1986-90	127.8	96.2	111.8	91.2	53.5	72.2
	1991-95	126.9	104.4	115.7	92.5	59.0	75.9
	1996-00	101.2	79.2	89.5	78.7	69.8	74.3
Punjab	1980-85	134.9	107.5	121.7	61.9	37.0	48.7
	1986-90	127.7	106.6	117.6	61.7	40.7	51.7
	1991-95	130.3	111.4	121.3	64.8	47.2	56.5
	1996-00	101.1	104.9	104.1	73.2	63.1	68.3
Central States							
Rajasthan	1980-85	93.2	20.3	38.0	39.5	3.3	22.0
	1986-90	97.7	30.8	65.3	59.9	8.2	34.9
	1991-95	101.8	35.1	69.4	56.6	7.8	33.0
	1996-00	111.6	74.0	93.9	79.8	30.8	57.0
Madhya Pradesh	1980-85	98.8	39.9	70.5	46.3	10.4	29.0
	1986-90	117.7	66.3	104.5	75.1	51.0	63.4
	1991-95	138.5	71.5	106.2	70.8	7.3	52.7
	1996-00	119.4	94.1	107.2	87.4	36.6	58.0
Uttar Pradesh	1980-85	92.9	35.3	64.9	38.9	8.3	24.1
	1986-90	95.5	45.9	71.9	38.2	10.6	25.1
	1991-95	91.8	36.8	66.9	31.6	8.6	20.8
	1996-00	91.9	56.2	75.1	50.7	20.7	36.9
Eastern States							
Bihar	1980-85	87.7	26.3	57.8	23.8	4.3	14.4
	1986-90	100.3	40.8	70.0	33.9	9.5	22.2
	1991-95	101.7	41.0	70.8	37.4	9.5	23.5
	1996-00	95.1	65.5	81.1	55.8	29.5	42.2
Orissa	1980-85	102.6	59.9	81.9	35.8	12.3	24.3
	1986-90	126.9	78.3	103.0	50.3	19.7	35.1
	1991-95	158.4	105.9	132.8	69.5	27.5	48.6
	1996-00	111.7	87.2	99.6	65.3	40.5	53.0
West Bengal	1980-85	88.9	50.6	70.1	26.9	12.1	19.5
	1986-90	101.9	66.9	84.7	33.9	16.1	25.1
	1991-95	106.5	73.1	90.0	36.2	18.6	27.4
	1996-00	101.4	89.4	95.5	53.4	37.6	45.7
Western States							
Gujarat	1980-85	164.3	109.1	137.5	78.3	35.8	57.7
	1986-90	135.9	119.0	140.0	85.5	52.3	69.4
	1991-95	180.2	141.3	161.1	117.0	68.3	93.1
	1996-00	114.8	101.7	96.6	100.8	85.2	93.4

States/ Region	Years	Gross Enrollment Ratio					
		Primary Education			Secondary Education		
		Boys	Girls	Total	Boys	Girls	Total
	1980-85	287.6	217.0	252.2	140.9	68.4	105.5
	1986-90	246.6	197.3	222.6	146.4	85.8	116.9
	1991-95	267.4	230.0	249.2	181.1	117.2	149.9
	1996-00	120.4	113.5	117.0	107.9	76.8	88.9
Southern States							
Andhra Pradesh	1980-85	150.0	110.6	130.9	35.4	18.0	26.9
	1986-90	153.5	111.7	132.9	51.7	28.0	40.0
	1991-95	160.9	121.5	141.4	71.8	39.9	56.0
	1996-00	109.9	103.5	106.7	44.8	32.0	38.6
Karnataka	1980-85	67.0	47.7	57.6	73.5	48.6	61.2
	1986-90	81.7	66.2	74.1	82.6	55.4	69.2
	1991-95	120.3	102.5	111.6	63.5	41.5	52.6
	1996-00	103.4	96.8	100.1	80.3	65.2	72.8
Kerala	1980-85	119.7	117.9	118.7	103.5	101.2	102.4
	1986-90	124.0	121.9	122.9	104.4	98.6	100.7
	1991-95	120.3	117.4	118.8	116.7	112.4	114.5
	1996-00	93.6	90.3	92.0	98.8	76.9	85.8
Tamil Nadu	1980-85	145.4	78.2	132.9	68.0	40.2	54.5
	1986-90	145.5	122.4	134.2	87.3	57.8	72.8
	1991-95	154.4	132.8	143.8	105.9	76.3	91.4
	1996-00	109.7	97.5	101.3	84.2	73.8	79.1

CHAPTER-3

Education and Health Attainment in India:
Regional Analysis

3.1 Introduction

Increase in economic development leads to higher per capita disposable income, thereby making education and health affordable, provided other things remains constant. However, provisions of social opportunities like basic education and primary health have a larger re-distributive effect on income distribution and inequality. Public goods like education and health has a significant positive externality on the growth path of the individuals and on the nation at an aggregate level. Hence, the government's affirmative role in expanding these social opportunities has a widespread impact on poverty and therefore has a strong line of argument for increased expenditure in social goods.

In this chapter we will examine the role of public expenditure in attainment of education and health indicators. We have included GER at primary and secondary level as education attainment indicators while IMR and TFR as our dependent variables for health. The first section of the chapter focuses on the model specification, variables included in the model and its estimation. Panel regression technique have been applied to analyze the effect of public spending on education and health attainment indicators across 15 major states[1] of India for the period 1980-2000[2]. In the second section, we have

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[1] Fifteen major states cover 92% of the total population and 95% of the total land area in India. The other states have not been included in the analysis as data for all the variables included in the analysis is not available year wise.

[2] The data used for panel regression is for the following the five data points- 1980-81, 1984-85, 1989-90, 1994-95 and 1999-2000.

examined state wise performance of health and education attainment indicators across Indian states both in pre and the post reform period. Further, we also investigated regional pattern and structural changes in the performance of the education and health indicators.

3.2 Variables included in the model

Our model is framed from the arguments made in the first two chapters. Although a wide range of education and health variables are available to estimate the performance of public spending on these sectors but in our analysis the variables included are based on two factors:

a) Variables, which have been most frequently used by other empirical studies for inter-state and inter-country comparisons and

b) Variables for which reasonably up to date time series data are available.

Public education and health expenditure is taken as a proportion of GSDP. We have included per capita NSDP as a proxy variable for economic development of the states. Further, to map the effect of availability of infrastructure, we have also included variables like – number of primary schools per thousand population for education and number of hospitals per 100 square km. Other specific variables pertaining to education and health like pupil-teacher ratio and number of bed per thousand have been included. Tables 3.1 and 3.2 shows the variables included in our analysis with their expected signs and notation.

Table: 3.1 Variables included for Education Regression Model

Variables	Notation[3]	Expected Sign
A. Education Attainment Indicators (Dependent Variables)		
1. Gross Enrolment Ratio-Primary (6-13 years)	GER_PT	
2. Gross Enrolment Ratio-Secondary (14-18 years)	GER_ST	
Independent Variables		
B. Public Education Spending		
Expenditure on education as a % of GSDP	EDU_GSDP	(+)
C. Extent of economic development of the state		
NSDP per capita at constant prices	NSDP	(+)
D. Level of development of physical infrastructure of the state		
Number of primary schools per thousand population	P_SCH	(+)
Number of secondary schools per thousand population	S_SCH	(+)
E. Socio demographic factors		
Share of girls in total primary enrollment	GER_G (P)	(+)
Share of girls in total secondary enrollment	GER_G (S)	(+)
F. Other specific indicators		
Pupil-Teacher ratio- Primary	PTR_(P)	(+)
Pupil-Teacher ratio- Secondary	PTR_(S)	(+)

Table: 3.2 Variables included in Health Regression Model

Variables	Notation	Expected Sign
A. Health Attainment Indicators (Dependent Variables)		
1. Infant Mortality Rate (IMR)	IMR_T	
2. Crude Death Rate (CDR)	TFR_T	
Independent Variables		
B. Social Spending		
Expenditure on education as a % of GSDP	HEL_GSDP	(-)
C. Extent of economic development of the state		
NSDP per capita at constant prices	NSDP	(-)
D. Level of development of physical infrastructure of the state		
Number of hospitals per 100 square km	HOSP	(-)
F. Other specific indicators		
Number of beds per thousand population	BED	(-)

A. Model Specification and Estimation

Schooling (growth in enrolment) is one of the most powerful instruments for reducing poverty, unemployment, and inequality. It also helps in improving health and nutritional profile of the population and promotes human development leading to higher

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[3] 1 at the end of variable indicates ln of the individual variable. For example nsdp1 is ln (nsdp).

sustained growth. Increase in the enrollment ratio is one of the ways of capturing the improvement in the human development.

Equation for Primary Education Model

$$\text{GER\_PT}_{ij} = \alpha_i + \beta_{1i}\text{EDU\_GSDP}_{ij} + \beta_{2i}\text{NSDP}_{ij} + \beta_{3i}\text{P\_SCH}_{ij}$$

$$+ \beta_{4i}\text{GER\_G (P)}_{ij} + \beta_{5i}\text{PTR\_(P)}_{ij} + u_i \qquad\qquad \ldots\ldots\ldots\ldots\text{(i)}$$

Equation for Secondary Education Model

$$\text{GER\_ST}_{ij} = \alpha_i + \beta_{1i}\text{EDU\_GSDP}_{ij} + \beta_{2i}\text{NSDP}_{ij} + \beta_{3i}\text{S\_SCH}_{ij}$$

$$+ \beta_{4i}\text{GER\_G (S)}_{ij} + \beta_{5i}\text{PTR\_(S)}_{ij} + u_i \qquad\qquad \ldots\ldots\ldots\ldots\text{(ii)}$$

where i and j indicates time and state

Our regression results indicate that the primary enrollment ratio shows consistent sign to our expectation. Public education expenditure is significant while the PCI has a lower significance (significant at 5%). One of the possible reasons could be that the increase in the income may is compensated by increase in other competing expenses (housing, clothing, food, health etc.) rather than proportional increase for education.

Table: 3.3 - Primary Education Regression Results – Fixed Effect and Random Effect

	Lin-Log		Log-Log	
	RE	FE	RE	FE
EDU_GSDP	4.074261	10.0165*	0.043144	0.106061*
NSDP	-6.05152	-22.2351**	-0.04421	-0.21879**
P_SCH	0.310655	-1.69919	0.004107	-0.01705
GER_G (P)	26.048	7.96	0.298267	0.096389
PTR_(P)	-13.3153	-14.5831**	-0.14331	-0.15974**
Constant	198.6162	348.0459*	5.466166	7.085845*
N	64	64	64	64
F-value		4.38		4.01
P-value		0.0001		0.0002
Adjusted R square		0.0025		0.0090

* Significant at 1% ** Significant at 5% *** Significant at 10%

These coefficients (double log linear model) can be interpreted from the mean that is across the Indian states, the mean improvement in the primary enrollment ratio is 96.63. The average increase in enrollment would be

- Increase by 4.074261 if the share of education in GSDP is increased by Rs. 1000 lakh/ GSDP
- Decrease by 6.05152 if the per capita NSDP is increased by Rs. 1 lakh.
- Increase by 0.310655 if the number of schools is increased by 1 /1000 population.
- Increase by 26.048 if the share of girl's enrollment is increased by 1%.
- Decrease by 13.3153 if the PTR is increased by 1%.

Table: 3.4- Summary Statistics of Least Square Dummy Variable Model

Model	Unstandardized Coefficients B	Standard Error	Standardized Coefficients Beta	t	Significance	95% Confidence Interval for B	
						Lower Bound	Upper Bound
(Constant)	2.657	.268		9.90 *	.000	2.119	3.196
EDU_GSDP	4.744E-03	.003	.074	1.56 **	.123	-.001	.011
TPR1	-4.045E-03	.033	-.006	-.122	.903	-.071	.063
NSDP1	5.097E-02	.032	.110	1.612	.113	-.013	.114
PRISCH	5.240E-06	.000	.681	3.63 *	.001	.000	.000
PB_G	8.591E-03	.000	.813	20.0 *	.000	.008	.009
Andhra Pradesh	.315	.064	.448	4.96 *	.000	.188	.443
Bihar	.124	.059	.159	2.11 **	.040	.006	.243
Gujarat	.456	.115	.648	3.97 *	.000	.226	.687
Haryana	.473	.123	.671	3.86 *	.000	.227	.719
Himachal Pradesh	.459	.121	.651	3.79 *	.000	.216	.701
Karnataka	.473	.096	.671	4.93 *	.000	.280	.665
Kerala	.581	.118	.825	4.90 *	.000	.343	.819
Madhya Pradesh	.112	.038	.160	2.96 **	.005	.036	.189
Maharashtra	.369	.084	.339	4.39 *	.000	.200	.538
Orissa	.311	.072	.442	4.33 *	.000	.167	.455
Punjab	.495	.113	.703	4.38 *	.000	.269	.722
Rajasthan	.235	.086	.333	2.74 **	.008	.063	.407
Tamil Nadu	.446	.090	.633	4.93 *	.000	.264	.628
West Bengal	.300	.061	.426	4.94 *	.000	.178	.422

Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.211	19	.116	60.066	.000
	Residual	9.879E-02	51	1.937E-03		
	Total	2.310	70			

Model Summary

R Square	Adjusted R Square	F Change	df1	df2	Sig. F Change	Durbin-Watson
.978	.957	54.091	60.066	19	51	1.678

Of the control variables, the share of girls in the primary education is not significant as expected. In most parts of India, the female child is subject to differential treatment where they are given less preference for schooling, nutrition and economic opportunities. Other possible explanation in case of Indian states is that female students are given informal education. Global studies indicate that the education status of households, particularly that of females play an instrumental role in improving the enrollment rate. The pupil-teacher ratio is not significant (and signs are not as expected) in case of primary school. Increase in primary school (significant at 10%) is likely to have positive impact on enrollment. There has been significant increase in the number of school in the recent years under the SSA and DPEP programme, which has helped in bridging the gap of demand and supply. The combined effect of the variables- PTR and the number of school in case of primary education signals that the mode of expansion in India is more inclined towards quantity than that of quality. The model is able to explain more than 20% of the primary education. The "F- statistic" is significant at 1 per cent level.

Table: 3.5 - Secondary Education Regression Results – Fixed Effect and Random Effect

	Lin-Log		Log-Log	
	RE	**FE**	**RE**	**FE**
EDU_GSDP	7.209321	9.313496*	0.148095	0.224066*
NSDP	18.32105	-0.79971	0.391449	-0.11619
S_SCH	-1.69571	17.88423*	-0.02101	0.416868*
GER_G (/S)	-24.06	-34.5782*	-0.58401	-0.84019*
PTR_(S)	10.47562	11.19036	0.191441	0.2095***
Constant	-144.376	-164.391**	-0.34733	-0.12344
N	70	70	70	70
F-value		11.69		12.19
P-value		0.0000		0.0000
Adjusted R square		0.255		0.108

* Significant at 1% ** Significant at 5% *** Significant at 10%

In case of secondary enrollment ratio, all the dependent variables have the expected sign, unlike that of primary enrollment. The results indicate that the role of PCI is relatively higher in case of the secondary education vis-à-vis primary education.These coefficients (double log linear model) can be interpreted from the mean that is across the Indian states, the mean improvement in the secondary enrollment ratio is 57.57.

The average increase in case of secondary enrollment would be

- Increase by 7.209321 if share of education in GSDP is increased by Rs. 1000 lakh/ GSDP
- Increase by 18.32105 if per capita NSDP is increased by Rs. 1 lakh.
- Decrease by 1.69571 if the number of schools is increased by 1/1000 population.
- Decrease by 24.06 if the share of girl's enrollment is increased by 1%.
- Increase by 10.47562 if the PTR is increased by 1%.

Table: 3.6- Summary Statistics of Least Square Dummy Variable Model

Model	Unstandardized Coefficients B	Standard Error	Standardized Coefficients Beta	t	Significance	95% Confidence Interval for B	
						Lower Bound	Upper Bound
(Constant)	-1.988	1.562		-1.27	.209	-5.124	1.148
EDU_GSDP	4.934E-03	.018	.037	.280	.780	-.030	.040
TPR1	.292	.193	.212	1.510	.137	-.096	.679
NSDP1	.434	.184	.455	2.35**	.022	.065	.804
PRISCH	2.471E-06	.000	.156	.294	.770	.000	.000
PB_G	6.702E-03	.002	.308	2.68**	.010	.002	.012
Andhra Pradesh	-.180	.370	-.124	-.487	.629	-.922	.563
Bihar	-.235	.343	-.146	-.685	.497	-.923	.454
Gujarat	-9.619E-03	.669	-.007	-.014	.989	-1.354	1.334
Haryana	.168	.714	.116	.236	.815	-1.264	1.601
Himachal Pradesh	.484	.703	.333	.689	.494	-.927	1.896
Karnataka	.181	.558	.125	.324	.747	-.939	1.301
Kerala	.336	.690	.232	.488	.628	-1.049	1.722
Madhya Pradesh	-6.347E-03	.221	-.004	-.029	.977	-.450	.437
Maharashtra	.120	.489	.054	.246	.807	-.862	1.103
Orissa	.164	.418	.113	.392	.697	-.675	1.003
Punjab	.266	.658	.183	.404	.688	-1.054	1.586
Rajasthan	4.586E-02	.498	.032	.092	.927	-.954	1.046
Tamil Nadu	.276	.527	.190	.524	.603	-.782	1.334
West Bengal	-3.197E-02	.354	-.022	-.090	.928	-.742	.678

Analysis of Variance						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13.347	19	.702	54.091	.000

		Residual	.662	51	1.299E-02		
		Total	14.009	70			
Model Summary							
R Square	Adjusted R Square	F Change		df1	df2	Sig. F Change	Durbin-Watson
.953	.935	54.091		19	51	.000	1.731

The infrastructure variable 'number of school per thousand' turns out to be of lower significance (through the sign are not as expected). One of the possible reasons would be that merely increasing the number of school would not induce higher enrollment. It has to be well mapped with improvement in the quality of education, which is as significant as in the case of primary education. More importantly, decreasing the average distance to schools is substantially significant than increasing the number of schools. In other words reducing the travel time[4] is more significant than an increase in the number of schools. Pupil-teacher ratio is significant at 10% indicating that improvement in educational standards is more likely to improve enrollment. Share of girls in secondary education is insignificant and does not have the expected sign.

Of the regression analysis, one of the interesting results that have emerged is that, state spending turns out to be a very important factor in the case of primary education. However, its importance gradually fades out as we move to secondary education. In this case, PCI turns out to be a more important determinant of the outcome measured in terms of enrollment ratio.

B. Model – Health Attainment

We assume that there is improvement in health indicators (IMR and CDR) with an increase in health expenditure and increases in per capita NSDP. As per capita NSDP

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[4] Refer: Deon Filmer (2002) "If you build it, will they come? School Availability and school enrollment in 21 poor countries"- Development research Group, the World Bank.

increases, one would expect IMR to decrease because people can afford to spend more on health care, assuming that other factors remaining constant. It is also natural to expect that as health infrastructure improves it will directly affect the health outcome.

Equation for Infant Mortality Model

$$\text{IMR\_T} = \alpha_i + \beta_{1i}\text{HEL\_GSDP} + \beta_{2i}\text{NSDP} + \beta_{3i}\text{HOSP}$$

$$+ \beta_{4i}\text{BED} + u_i \qquad\qquad ....(iii)$$

Equation for Total Fertility Model

$$\text{TFR\_T} = \alpha_i + \beta_{1i}\text{HEL\_GSDP} + \beta_{2i}\text{NSDP} + \beta_{3i}\text{HOSP}$$

$$+ \beta_{4i}\text{BED} + u_i \qquad\qquad ....(iv)$$

where i and j indicates time and state.

The results of health regression (Table-no-5) indicate that public spending on health care is negatively associated with IMR. PCI is relatively less important factor vis-à-vis state spending in influencing the health attainment indicators. IMR and fertility are interrelated factors, one influencing the other. That is to say in a state, where IMR is higher; the TFR is correspondingly higher *(Kabir el at, 2002)*. Therefore, TFR has been dropped from the regression analysis due to serious multicolinearity problem.

Table: 3.7- Infant Mortality Rate- Panel Regression Results

	Lin-Log		Log-Log	
	RE	**FE**	**RE**	**FE**
HEL_GSD1	-14.6766	-19.0522*	-0.16292	-0.17854*
NSDP1	-17.5351	-9.97298	-0.31138	-0.2794*
HOSP1	9.709609	11.65231**	0.065189	0.081624
GER_G1	-18.8381	-12.2849**	-0.15655	-0.09918
BED1	-19.1969	-21.1482	-0.24394	-0.27762
TPR1	-9.5527	-8.74465	-0.03879	-0.03312
Constant	279.0405	205.5124*	7.646265	7.371388*
N	71	71	71	71
F-value		9.86		25.56
P-value		0.0000		0.0000
Adjusted R square		0.5357		0.4947

* Significant at 1% ** Significant at 5% *** Significant at 10%

These coefficients (double log model) can be interpreted from the mean that is across

the Indian states, the mean improvement in the IMR is 2.45. The average increase in

enrollment would be

- Increase by 4.074261 if share of health expenditure in GSDP is increased by Rs. 1000 lakh/ GSDP
- Decrease by 6.05152 if per capita NSDP is increased by Rs. 1 lakh.
- Increase by 0.310655 if the number of hospitals is increased by 1 /1000 population.
- Increase by 26.048 if the share of girl's enrollment is increased by 1%.
- Decrease by 13.3153 if the bed is increased by 1%.
- Decrease by 13.3153 if the TPR is increased by 1%.

Table: 3.8- Summary Statistics of Least Square Dummy Variable Model

Model	Unstandardized Coefficients B	Standard Error	Standardized Coefficients Beta	T	Significance	95% Confidence Interval for B	
						Lower Bound	Upper Bound
(Constant)	7.267	.726		10.00*	.000	5.809	8.725
HEL_GSDP1	-.188	.047	-.235	-3.98*	.000	-.284	-.093
NSDP1	-.262	.088	-.230	-2.96**	.005	-.439	-.085
BED1	-.324	.145	-.553	-2.23**	.030	-.616	-.033
HOSP1	0.0078	.052	.178	1.500	.140	-.026	.183
TPR1	-0.0034	.085	-.021	-.403	.689	-.206	.137
Andhra Pradesh	.143	.281	.082	.508	.614	-.421	.706
Bihar	.171	.284	.089	.604	.549	-.398	.740
Gujarat	.374	.275	.215	1.362	.179	-.177	.925
Haryana	0.00012	.121	.001	.011	.992	-.241	.244
Karnataka	.176	.282	.101	.622	.537	-.391	.743
Kerala	-.852	.320	-.491	-2.661*	.010	-1.495	-.209
Madhya Pradesh	.409	.212	.235	1.927	.060	-.017	.834
Maharashtra	.326	.399	.121	.816	.418	-.476	1.128
Orissa	.244	.172	.140	1.417	.163	-.102	.589
Punjab	-0.0032	.196	-.019	-.167	.868	-.425	.360
Rajasthan	.445	.226	.256	1.970	.054	-.009	.899
Tamil Nadu	.229	.302	.132	.759	.451	-.376	.834
Uttar Pradesh	.617	.337	.355	1.833	.073	-.059	1.292
West Bengal	.286	.327	.165	.873	.387	-.371	.943

Analysis of Variance						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13.347	19	.702	54.091	.000
	Residual	.662	51	1.299E-02		
	Total	14.009	70			

Model Summary						
R Square	Adjusted R Square	F Change	df1	df2	Sig. F Change	Durbin-Watson
.953	.935	54.091	19	51	.000	1.731

Table: 3.9- Total Fertility Rate- Panel Regression Results

	Lin-Log		Log-Log	
	RE	FE		RE
HEL_GSD1	-0.39776*	-0.49665*	-0.08538**	-0.10242**
NSDP1	-1.18791*	-1.23818*	-0.3907*	-0.43309*
HOSP1	0.054944	0.103074	0.010048	0.023569
GER_G1	-0.61421*	-0.51507*	-0.15568*	-0.11942*
BED1	-0.17174	0.076923	-0.06523	0.005779
TPR1	-0.06565	-0.07659	-0.01541	-0.01205
Constant	14.57852*	13.91676*	4.912996*	4.94854*
N	71	71	71	71
F-value		18.05		18.14
P-value		0.0000		0.0000
Adjusted R square		0.4747		0.4805

* Significant at 1% ** Significant at 5% *** Significant at 10%

Table: 3.10- Summary Statistics of Least Square Dummy Variable Model

Model	Unstandardized Coefficients B	Standard Error	Standardized Coefficients Beta	t	Significance	95% Confidence Interval for B	
						Lower Bound	Upper Bound
(Constant)	5.037	.555		9.07*	.000	3.923	6.151
HEL_GSDP1	-.114	.036	-.210	-3.16*	.003	-.187	-.042
NSDP1	-.412	.067	-.532	-6.11*	.000	-.547	-.277
BED1	-5.038E-02	.111	-.127	-.454	.651	-.273	.172
HOSP1	1.928E-02	.040	.065	.485	.630	-.061	.099
TPR1	-1.353E-02	.065	-.012	-.208	.836	-.144	.117
Andhra Pradesh	-.197	.214	-.167	-.917	.364	-.627	.234
Bihar	.101	.217	.077	.468	.642	-.334	.536
Gujarat	.110	.210	.093	.525	.602	-.311	.531
Haryana	.219	.092	.186	2.376*	.021	.034	.404
Karnataka	-.138	.216	-.117	-.639	.526	-.571	.295
Kerala	-.453	.245	-.384	-1.853	.070	-.945	.038
Madhya Pradesh	.144	.162	.122	.890	.378	-.181	.470
Maharashtra	6.919E-02	.305	.038	.227	.822	-.543	.682
Orissa	-.235	.131	-.200	-1.793	.079	-.499	.028
Punjab	4.066E-02	.149	.034	.272	.787	-.259	.341
Rajasthan	.283	.173	.240	1.642	.107	-.063	.630
Tamil Nadu	-.281	.230	-.238	-1.218	.229	-.743	.182
Uttar Pradesh	.232	.257	.197	.901	.372	-.284	.748
West Bengal	-9.915E-02	.250	-.084	-.397	.693	-.601	.403

Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.079	19	.320	42.214	.000
	Residual	.387	51	7.580E-03		
	Total	6.466	70			

Model Summary

R Square	Adjusted R Square	F Change	df1	df2	Sig. F Change	Durbin-Watson
.970	.940	54.091	42.214	19	51	1.925

These coefficients (double log model) can be interpreted from the mean that is across the Indian states, the mean improvement in the TFR is 1.72. The average increase in enrollment would be

- Increase by 4.074261 if share of health expenditure in GSDP is increased by Rs. 1 lakh/ GSDP
- Decrease by 6.05152 if per capita NSDP is increased by Rs. 1 lakh.
- Increase by 0.310655 if the number of hospitals is increased by 1/1000 population.
- Increase by 26.048 if the share of girl's enrollment is increased by 1%.
- Decrease by 13.3153 if the bed is increased by 1%.
- Decrease by 13.3153 if the TPR is increased by 1%.

Of the two-infrastructure variable–'number of hospitals per 100 square kilometer and number of the beds per 1000 population'-the first one turns out to be more significant in the improvement of IMR.

Both public health expenditure and NSDP have consistent signs for TFR and have negative impact. Unlike IMR, PCI has more impact on the reduction of TFR. PCI variable is significant at 1% while public health spending has lesser significance (5%). Gross enrollment of girls as ratio of the total enrollment has negative impact of TRF and is highly significant. Other variables like teacher-pupil ratio and number of hospitals per thousand are insignificant. In both the health regressions, the share of girls in secondary enrollment turns out to be significant. However, the significance is higher in case of TFR. This suggests that increase in the education of girls is more likely to reduce the fertility rate- thereby further reducing the IMR. Of the two infrastructures, variables-number of hospital turns out to insignificant while the number of beds is highly significant and has expected signs.

Regression analysis has its own limitations, as it does not capture the influence of the policy variables like change in the quality of education and health, design and

delivery of the social good. More importantly, other specific factors like role of government, accountably of public spending and accessibility of social infrastructure play an instrumental role in improving these social attainment indicators.

3.5 Poor and Rich States

Based on the per capita NSDP of 1980-81 and 1990-91 (at constant prices 1993-94 prices), we have divided the states into two groups- rich and poor states depending upon whether they are above or below the national average. Regression analysis[5] has been used to capture the effect of economic reform in two categories of states.

Health regression results indicate that decline in IMR is highly significant for percentage change in PCI rather than percentage change in per capita health expenditure. Increase in PCI improves the purchasing power of individual thereby making these services affordable. This also implies that IMR improves with an enhancement in the standard of living of individuals i.e. consumption of electricity, housing, access to sanitation facilities (*B V D Klaauw and L Wang*). In the other words, decline in poverty (measured in terms of quality of life) will inversely impact IMR. PCI is highly significant for poor and rich states. For developed states, the PCI is insignificant in 1980s. One of the possible explanations for insignificance of PCI could be due to the functional relationship[6] between the dependent and independent variables.

In developed states per capita health expenditure played significant role in reducing the IMR for 1980s whereas in case of 1990s it turns out to be insignificant. For

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[5] Double log simple regression analysis model is used. Hence, the coefficients indicate elasticity.
[6] The relationship between NSDP and IMR is nor linear one: as per capita NSDP increases, initially there will be a dramatic drop in IMR but the drop tapers off as per capita NSDP continues to increase.

poor states, per capita health expenditure turns out to be insignificant. Low levels of health expenditure could be one of the reasons.

Table: 3.11- Health Expenditure and IMR

		Rich	Poor
80's	Health Expenditure	-19.7*	-4.7
	Per Capita Income	-40.0*	-126.4*
90's	Health Expenditure	-2.4	-6.8
	Per Capita Income	-13.5***	-20.8*

* Significant at 1% ** Significant at 5% *** Significant at 10%

An increase in PCI is highly significant (table-8) for both rich and poor states for primary education in case of Indian states. This is true for eighties and nineties for both categories of states. Education expenditure is highly significant in case of poor states- suggesting that increase in educational expenditure has greater chances of improving the primary enrollment in less developed states. Secondly, the coefficients (elasticity) are higher for the poor states in all the phases, suggesting that public expenditure in education should be increased more for poor states.

Table: 3.12 Primary Enrollment Results

		Rich	Poor
80's	Education Expenditure	0.01	0.17*
	Per Capita Income	-0.123***	0.54*
90's	Education Expenditure	0.04***	0.09*
	Per Capita Income	-0.4*	0.37*

* Significant at 1% ** Significant at 5% *** Significant at 10%

For secondary education, PCI turns out to be more significant – rich and poor states. Educational expenditure is also significant but only for poor states in both 80's and 90's.

Table: 3.13 Secondary Education Results

		Rich	Poor
80's	Education Expenditure	0.21*	0.2*
	Per Capita Income	0.30**	1.7*
90's	Education Expenditure	0.04	0.07***
	Per Capita Income	0.11	0.66*

* Significant at 1% ** Significant at 5% *** Significant at 10%

Conclusion

The interesting results that have emerged for the education sector are that, state spending turns out to be a very important factor in the case of primary education. This holds true for developed and underdeveloped states for the entire period. However, its importance gradually fades away as we move to secondary education. In secondary education, PCI turns out to be a more important determinant of the outcome measured in terms of enrollment ratio.

Secondly, the share of girl's enrollment and teacher pupil ratio turns out to be insignificant in explaining the education attainment. This maybe attributed to the fact that the mode of expansion of education is more in terms of quality than in quality

IMR and TRF have the declining trend across all the states. However, there is stark regional disparity across states and regions. Southern and western states have done extremely well. The improvement in the health indicators is well explained by increase in PCI. It helps in improving the quality and standard of living. This is reflected as an increase in the consumption basket of individuals. Hence, we conclude that PCI is a better indicator for explaining the improvement of the IMR.

CHAPTER-4

Poverty and Social Attainment

4.1 Poverty Profile of Indian states: Pre and Post Reform Period

Indian states demonstrate a high degree of complex regional heterogeneity in the levels of social and economic development resulting in disproportionate outlines of poverty across the states. Theoretical underpinning suggests that public spending coupled with growth in personal disposable income plays a critical role in enhancement of social attainment and reduction of poverty. Since social expenditure has positive impacts on the distribution of income and access to essential goods and services, our argument further implies that improvement in social attainments should be accompanied by poverty reduction. In this chapter an attempt has been made to map the experiences of Indian states with social attainment and poverty reduction.

Poverty eradication has always been the most challenging task for the government since attainment of independence. At the time of India's independence, more than 70% of the population was below the poverty line and the rural environment was highly discouraging as the distribution of the productive assets was highly skewed in favor of rich. From time to time the Indian government has introduced a number of poverty eradication programmes and schemes which have their own success and failure stories. The latest poverty estimate (55th NSS round) reveals that poverty trends across Indian states have uniqueness in terms of gradual decline in the head count ratio. This is true in all the states. In case of urban areas (23.62) the poverty decline has been sharper as

compared to the rural areas (27.09). The disparity between the rural and urban area has reduced but still continues to be significant.

Table: 4.1 Number and Percentage of Population below the Poverty Line

All India	Rural			Urban			Combined	
	No of persons*	%	Poverty line**	No of persons	%	Poverty line (Rs)	No of persons	%
1983	2,519.5	45.65	89.5	709.4	40.79	115.65	3,228.97	44.48
1987-88	2,318.7	39.09	89.5	751.69	38.2	162.16	3,070.49	38.86
1993-94	2,440.3	37.27	205.84	763.37	32.36	281.35	3,203.68	35.97
1999-00	1,932.4	27.09	327.56	670.07	23.62	454.11	2,602.50	26.1

Source- Planning Commission, 2002   * In lakh   ** Rs monthly per capita

Many states have consistently high rate of poverty since independence and have not shown any sign of convergence. The southern states (except AP), western states and north eastern states have done well in reducing poverty levels. Five out of eight poorest states in 1983- MP, Bihar, UP, Orissa and WB are still among the eight poorest states. Low-growth states like Orissa, WB, Bihar, MP, Rajasthan and UP have high presence of poor and also have high population growth rate which further strains the poverty eradication programme. According to the 1999-2000 poverty estimates, Orissa has the highest level of rural and urban poverty among all Indian states. The high-growth states like Gujarat, Maharashtra, Punjab, Haryana, TN, Karnataka, and HP have a better poverty profile. These states have also reduced the rural urban divide. These states witnessed phenomenal growth in their services sector as they had better infrastructure and a large pool of human resources. AP is the only state, which has high poverty despite having good growth.

Table: 4.2 Poverty Ranking of Indian States (Rural, Urban and Combined) based in HDI

	1999-2000			1983		
	Rural	**Urban**	**Combined**	**Rural**	**Urban**	**Combined**
AP	5	11	7	4	5	4
Bihar	15	14	15	15	13	15
Gujarat	6	5	5	5	7	5
Haryana	3	3	3	3	3	3
HP	2	1	2	2	1	2
Karnataka	8	10	8	7	10	7
Kerala	4	7	4	8	11	8
MP	14	15	14	12	16	12
Maharashtra	10	12	10	9	8	9
Orissa	16	16	16	16	14	16
Punjab	1	2	1	1	2	1
Rajasthan	7	6	6	6	6	6
Tamil Nadu	9	8	9	13	12	13
UP	12	13	13	11	15	11
W. Bengal	13	4	12	14	4	14
All India	11	9	11	10	9	10

4.2 Poverty and Attainment Indicators

Looking at the poverty and IMR of the Indian state, significant disparity is observed with higher concentration[1] of poor and prevalence of high IMR in BIMARU states and AP as not much improvement has taken place over the years. Table: 4.3 suggest that states like Punjab and Kerala have done well while Maharashtra and TN have picked up in 1990's in reducing IMR. Low growth states including Orissa, Bihar, UP and MP have failed to bring down both the IMR and poverty. These states are also characterized by high growth in population and high poverty. AP is the only state that has failed in reducing both poverty and IMR. Inspite of substantial growth in GSDP and per capita income, states like Gujarat and Haryana still lacks behind in controlling IMR.

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[1] refer appendix Figure-2 to 5

Table: 4.3 Linear Relationship between IMR and Poverty and its Movement across Indian States

1983	1988	1993-94	1999-2000
High Poverty And High Infant Mortality Rate			
Bihar	Bihar	Karnataka	Andhra Pradesh
Madhya Pradesh	Madhya Pradesh	Madhya Pradesh	Bihar
Orissa	Orissa	Orissa	Madhya Pradesh
Uttar Pradesh	Uttar Pradesh	Uttar Pradesh	Orissa
			Uttar Pradesh
High Poverty And Low Infant Mortality Rate			
Andhra Pradesh	Andhra Pradesh	Andhra Pradesh	Karnataka
Tamil Nadu	Karnataka	Maharashtra	Maharashtra
West Bengal	Tamil Nadu	Tamil Nadu	
Low Poverty And High Infant Mortality Rate			
Gujarat	Gujarat	Bihar	Haryana
Haryana	Haryana	Gujarat	Rajasthan
Rajasthan	Rajasthan	Rajasthan	
	West Bengal	Haryana	
Low Poverty And Low Infant Mortality Rate			
Himachal Pradesh	Himachal Pradesh	Himachal Pradesh	Gujarat
Kerala	Kerala	Kerala	Himachal Pradesh
Karnataka	Maharashtra	Punjab	Kerala
Maharashtra	Punjab	West Bengal	Punjab
Punjab			Tamil Nadu
			West Bengal

A declining TFR trend[2] is observed across the Indian states. There has not been any change in the relative ranking of states having high poverty and TFR. Bihar, Orissa, MP and UP are the most populous and have TFR close to 3. Southern states have out performed the rest of the India- in particular Kerala and TN which have already achieved the international standards (less than 2) of TFR. TFR is higher in states which have failed to improve the educational attainment- especially in context to growth in female literacy.

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[2] See appendix (Figure-6, Figure-7, Figure-8 and Figure-9)

Table: 4.4 - Linear Relationship between TFR and Poverty and its Movement across Indian States

1983	1988	1993-94	1999-2000
High Poverty And High Total Fertility Rate			
Bihar Madhya Pradesh Orissa Uttar Pradesh	Bihar Madhya Pradesh Orissa Uttar Pradesh	Madhya Pradesh Orissa Uttar Pradesh	Bihar Madhya Pradesh Orissa Uttar Pradesh
High Poverty And Low Total Fertility Rate			
Andhra Pradesh Tamil Nadu West Bengal	Andhra Pradesh Karnataka Tamil Nadu	Andhra Pradesh Karnataka Maharashtra Tamil Nadu	Andhra Pradesh Karnataka Maharashtra
Low Poverty And High Total Fertility Rate			
Gujarat Haryana Rajasthan	Haryana Himachal Pradesh Rajasthan	Bihar Gujarat Haryana Rajasthan	Gujarat Haryana Rajasthan
Low Poverty And Low Total Fertility Rate			
Himachal Pradesh Karnataka Kerala Maharashtra Punjab	Gujarat Kerala Maharashtra Punjab West Bengal	Himachal Pradesh Kerala Punjab West Bengal	Himachal Pradesh Kerala Punjab Tamil Nadu West Bengal

Plotting poverty patterns with education achievement, the blueprint becomes clearer. States which have high poverty have lower levels of education attainment for primary and secondary education. Indicators that measure the depth and severity of poverty suggest that the decline of poverty did not touch people below the poverty line, leaving the remaining poor unaffected. This further increased the disparity between rural and urban areas in terms of educational attainment. States having high poverty have not done well in improving primary enrollment rate and controlling drop out ratio. Among the BIMARU states only MP and Orissa have witnessed high growth in enrollment rate.

The existing literature suggests that secondary education is more dependent on the growth of PCI rather than state spending. TN, MP and Rajasthan (Table-12) are the only states which has seen a sharp increase in the secondary enrollment rate; where as AP has seen a decline.

Table: 1.5 Relationship between Primary GER and Poverty and its Movement across Indian States

1983	1988	1993-94	1999-2000
High Poverty And High Gross Enrollment Ratio-Primary			
Andhra Pradesh Tamil Nadu	Andhra Pradesh Madhya Pradesh Tamil Nadu	Andhra Pradesh Maharashtra Orissa Tamil Nadu	Andhra Pradesh Karnataka Madhya Pradesh Maharashtra Orissa
High Poverty And Low Gross Enrollment Ratio-Primary			
Bihar Madhya Pradesh Orissa Uttar Pradesh West Bengal	Bihar Karnataka Orissa Uttar Pradesh	Karnataka Madhya Pradesh Uttar Pradesh	Bihar Uttar Pradesh
Low Poverty And High Gross Enrollment Ratio-Primary			
Gujarat Himachal Pradesh Kerala Maharashtra Punjab	Gujarat Kerala Maharashtra Punjab	Gujarat Kerala Punjab	Punjab West Bengal
Low Poverty And Low Gross Enrollment Ratio-Primary			
Haryana Karnataka Rajasthan	Haryana Himachal Pradesh Rajasthan West Bengal	Bihar Haryana Himachal Pradesh Rajasthan West Bengal	Gujarat Haryana Himachal Pradesh Kerala Rajasthan Tamil Nadu

Table: 4.6 Relationship between Secondary GER and Poverty and its Movement across Indian States

1983	1988	1993-94	1999-2000
High Poverty And High Gross Enrollment Ratio-Secondary			
Tamil Nadu	Andhra Pradesh Madhya Pradesh Tamil Nadu	Andhra Pradesh Maharashtra Tamil Nadu	Karnataka Madhya Pradesh Maharashtra
High Poverty And Low Gross Enrollment Ratio-Secondary			
Andhra Pradesh Bihar Madhya Pradesh Orissa Uttar Pradesh West Bengal	Bihar Karnataka Orissa Uttar Pradesh	Karnataka Madhya Pradesh Orissa Uttar Pradesh	Andhra Pradesh Bihar Orissa Uttar Pradesh
Low Poverty And High Gross Enrollment Ratio-Secondary			
Gujarat Himachal Pradesh Karnataka Kerala Maharashtra Punjab	Gujarat Himachal Pradesh Kerala Maharashtra	Gujarat Himachal Pradesh Kerala Punjab	Gujarat Kerala Rajasthan Tamil Nadu
Low Poverty And Low Gross Enrollment Ratio-Secondary			
Haryana Rajasthan	Haryana Punjab Rajasthan West Bengal	Bihar Haryana Rajasthan West Bengal	Haryana Himachal Pradesh Punjab West Bengal

4.3 Human Development

Economic reforms and the structural changes of Indian economy significantly helped it to become one of the world's fastest growing economies. In the last two decades, India economy witnessed a rapid economic growth as it moved up from the earlier ``Hindu rate of growth" of 3-3.5 per cent to a new rate of more than 6 per cent per annum. Economic liberalization and rapidly rising incomes have significantly impacted the living standards of the people. The table below shows the rank and value of HDI of Indian states at three time points (1981, 1991 and 2001). The Planning Commission of India (2002), calculated the HDI by incorporating eight different dimensions of development performance: per capita expenditure, headcount poverty rate, literacy rate, a formal education enrollment index, IMR, life expectancy, access to safe water, and access to housing constructed with relatively permanent materials.

A closer look of the tables reveals that the same group of states likes Bihar, UP; Orissa and AP which have failed miserably in improving the quality of health and education have low levels of human development. MP and Rajasthan have shown improvement in HDI as these states have shown a strong commitment towards their improving the performance of their education system. There has been a drastic change in the raking of TN as it has shown considerably improvement in education and health.

The pattern of HDI does not show increase in inequality in standard of living across the 14 major states. The unweighted standard deviation has increased whereas the average HDI has risen in the 1990s. This is further accompanied by consistent fall in the coefficient of variation. Hence, these measures indicate that inter state disparity in well

being has not worsened, especially after the introduction of economic reforms (**N Singh, at el, 2002**).

Table: 4. 7- Human Development Indices and its Ranking

State	1981	1981	1991	1991	2001	2001
Value	Rank	Value	Rank	Value	Rank	
Andhra Pradesh	0.298	9	0.377	9	0.416	10
Bihar	0.237	14	0.308	14	0.367	14
Gujarat	0.360	4	0.431	6	0.479	6
Haryana	0.360	5	0.443	5	0.509	5
Karnataka	0.346	6	0.412	7	0.478	7
Kerala	0.500	1	0.591	1	0.638	1
Madhya Pradesh	0.245	13	0.328	12	0.394	12
Maharashtra	0.363	3	0.452	4	0.523	4
Orissa	0.267	10	0.345	11	0.404	11
Punjab	0.411	2	0.475	2	0.537	2
Rajasthan	0.256	11	0.347	10	0.424	9
Tamil Nadu	0.343	7	0.466	3	0.531	3
Uttar Pradesh	0.255	12	0.314	13	0.388	13
West Bengal	0.305	8	0.404	8	0.472	8
All India	0.302		0.381		0.472	
Unweighted average	0.325		0.407		0.469	
Standard deviation	0.071		0.075		0.072	
Coefficient of variation	0.219		0.185		0.155	

Source: Planning Commission (2002) and Singh and Srinivasan (2002).

4.4 Conclusion

Disparity in terms of human development across Indian states indicates that there has been a decline in the disparity across the states. Regional differences are indeed striking but there has been a significant reduction in inequalities of educational attainments across gender, population segments by castes, income levels and the rural-urban divide[3]. The gap between the male and female literacy has reduced but remains higher for BIMARU states (Table-4.8). Quantity-wise there has been a large increase in the spread of education in India, especially at the primary school level *(N Bajpai and S Goyal, 2004).*

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[3] National Human Development Report (2001) "Educational Attainments and Well-Being", Chapter 4: http://planningcommission.nic.in/reports/genrep/nhdrep/nhdch4.pdf

Table: 4.8 Literacy Rate of India – 1991 and 2001

States/Regions	1991			2001			Gain in Literacy		
	Person	Male	Female	Person	Male	Female	Person	Male	Female
India	52.2	64.1	39.3	65.2	75.6	54	13	12	15
Northern States	51.2	63.8	36.9	66.5	77.6	54.1	15	14	17
Haryana	55.9	96.1	40.5	68.6	79.3	56.3	12.7	10.2	15.8
Himachal Pradesh	63.9	75.4	52.1	77.1	86	68.1	13.2	10.6	16
Punjab	58.5	65.7	50.4	70	75.6	63.6	11.5	9.9	13.2
Rajasthan	38.6	55	20.4	61	76.5	44.3	22.4	21.5	23.9
Eastern States	47.6	60.1	33.9	59	70.1	47	11	10	13
Bihar	37.5	51.4	22	47.5	60.3	33.6	10	8.9	11.6
West Bengal	57.7	67.8	46.6	69.2	77.6	60.2	11.5	9.8	13.6
Orissa	49.1	63.1	34.7	63.6	76	51	14.5	12.9	16.3
Central States	42.4	56.6	26.5	60.1	72.8	46.2	18	16	20
Madhya Pradesh	44.7	58.5	29.4	64.1	76.8	50.3	19.4	18.3	20.9
Uttar Pradesh	40.7	54.8	24.4	57.4	70.2	43	16.7	15.4	18.6
Western States	63.6	75.4	51	73.5	82.9	63.4	9.9	7.5	12
Gujarat	61.3	73.1	48.6	70	80.5	58.6	8.7	7.4	10
Maharashtra	64.9	76.6	52.3	77.3	86.3	67.5	12.4	9.7	15.2
Southern States	59.3	69.1	49.2	70.4	78.7	62	11	9.6	13
Andhra Pradesh	44.1	55.1	32.7	61.1	70.9	51.2	17	15.8	18.5
Karnataka	56	67.3	44.3	67	76.3	57.5	11	9	13.2
Kerala	89.8	93.6	86.2	90.9	94.2	87.9	1.1	0.6	1.7
Tamil Nadu	62.7	73.8	51.3	73.5	82.3	64.6	10.8	8.5	13.3

Sources: Census of India, 2001.

However, in terms of quality of education provided, the system critically under performs mainly due to overcrowded classrooms, high teacher absenteeism, inadequate training and little supervision and much less accountability, indifferent community support, and an oppressive curriculum[4]. Furthermore there are critical gaps in the availability of infrastructural facilities and qualitative aspects of education including, teachers training, few teaching aids, educational curricula, equipments and training materials.

[4] A K Shiva Kumar (2003): "Community in elementary education":
www.azimpremjifoundation.org/ html/articles_communityineleedu.htm

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India despite being signatory to the "Alma Ata Declaration" (1978)[5], which aimed at "health for all" by 2000, is still lagging quite far from realizing this dream even in year 2004[6]. There is a great rural and urban divide in the performance of the health indicators as well as the quality of health infrastructure. One of the obvious reasons being- India spends (1-2% of GDP) less than by world standards. Inequalities in health indicators can be attributed to more investments favoring urban areas. Apart from that, a large proportion of the health expenditure is spent on maintenance of health infrastructure and payment of the salaries of the exiting health employees *(N Bajpai and S Goyal, 2004)*.

Increase in PCI is better indicators that explain the improvement in the performance of the health indicators across Indian states. This is true in case of developed and the developing states. PCI increase directly impacts the standard of living and improves the quality of life. Performance of health indicators largely depends on the quality of life. As discussed above, that the improvement in quality of life can be measured in terms of access to electricity, clean water, and hygienic sanitation facilities. These variables indirectly help in achieving better health profile of an individual.

Appendix

Table A1- Number of People below Poverty Line and Infant Mortality Rate (1983)

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[5] On the 12th of September, 1978, the International Conference on Primary Health Care being held in Alma-Ata, in the erstwhile USSR, adopted the 'Declaration of Alma-Ata' which proclaimed a positive view of health as complete physical, mental and social well being and a fundamental human right. The declaration envisaged primary health care as the first level of contact between individuals and families with their country's health system. According to this declaration, primary health care was to have its basis in the community it served; the notion of primary health care included maternal and child care including family planning, immunization against major infectious diseases, prevention and control of locally endemic diseases, appropriate treatment of common diseases and injuries, provision of essential drugs, education concerning prevailing health problems and ways to deal with them, provision of adequate food and nutrition and adequate supply of clean water. The Declaration of Alma-Ata set a goal for the year 2000 for all the people of the world to achieve a level of health such as to enable them to lead socially and economically productive lives. India, along with other countries, endorses the declaration.

[6] B Ashish, (2001)"Health For All By 2000: Broken Promises," Economic and Political Weekly, Vol.XXXVI, No.11, p.905-907
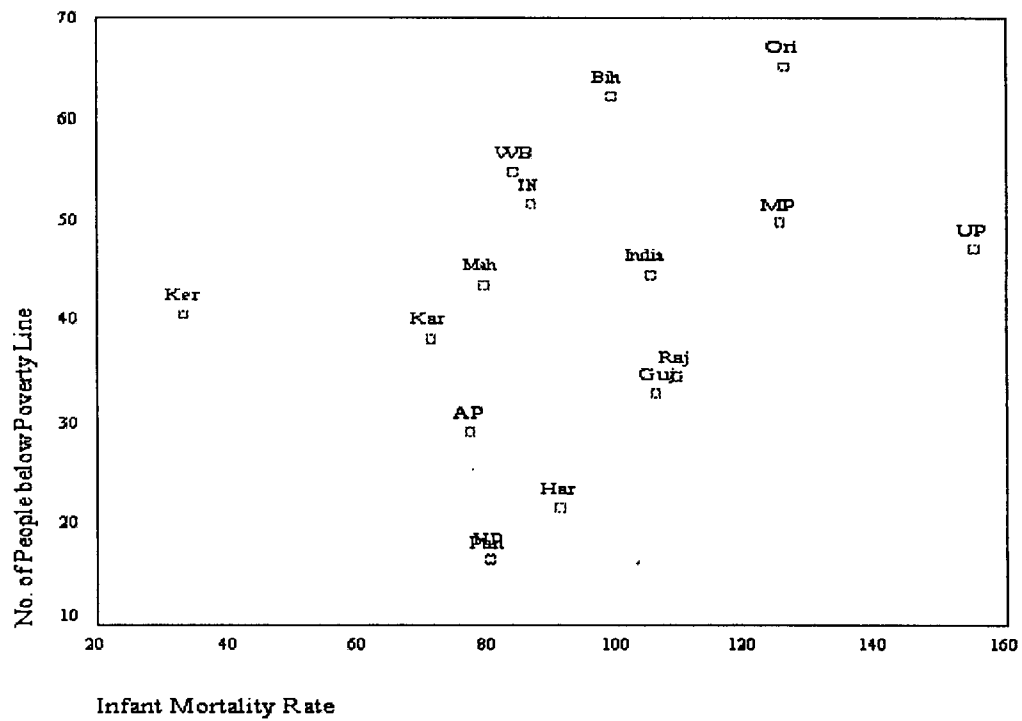
Table A2- Number of People below Poverty Line and Infant Mortality Rate (1988)
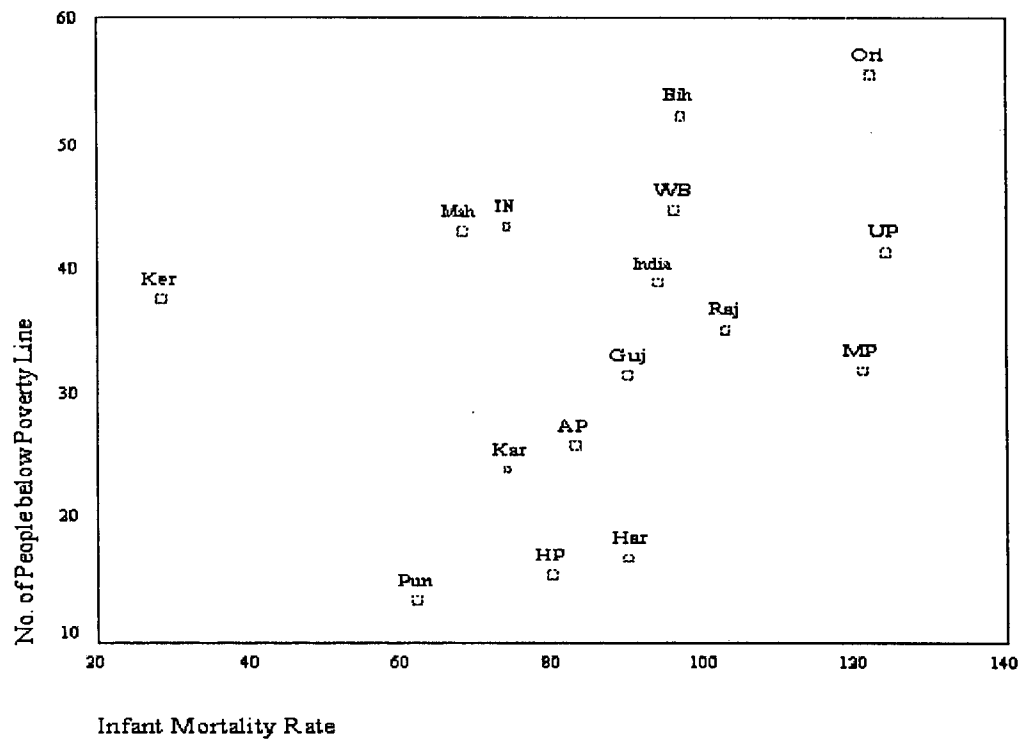

Infant Mortality Rate

Table B1- Number of People below Poverty Line and Total Fertility Rate (1983)

Total Fertility Rate
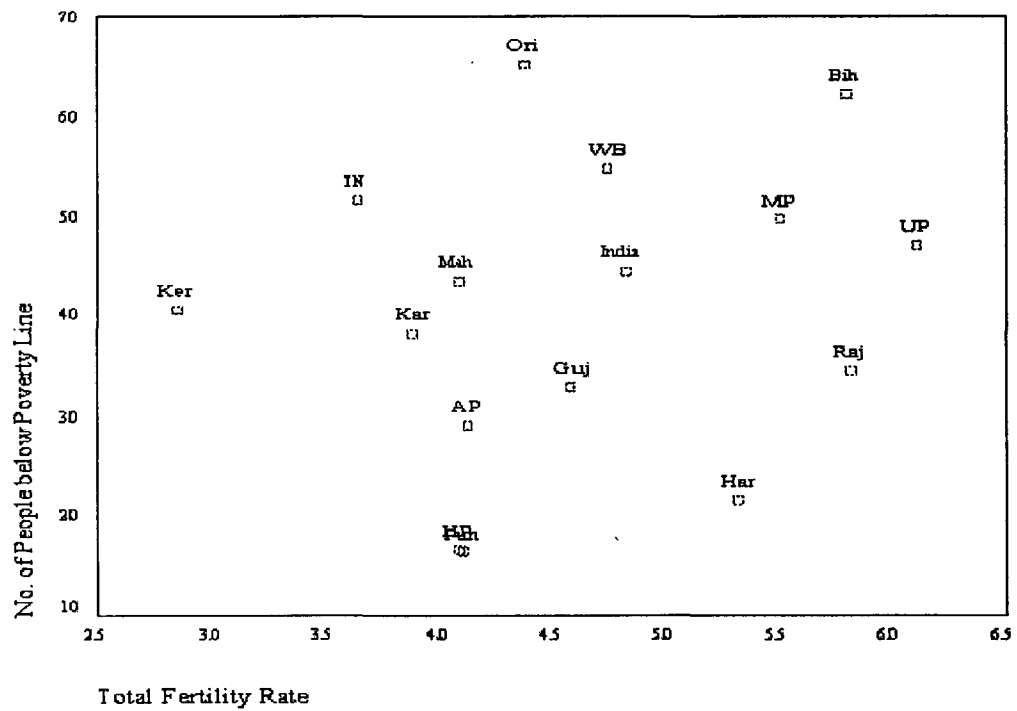
Table B2- Number of People below Poverty Line and Total Fertility Rate (1988)

Total Fertility Rate
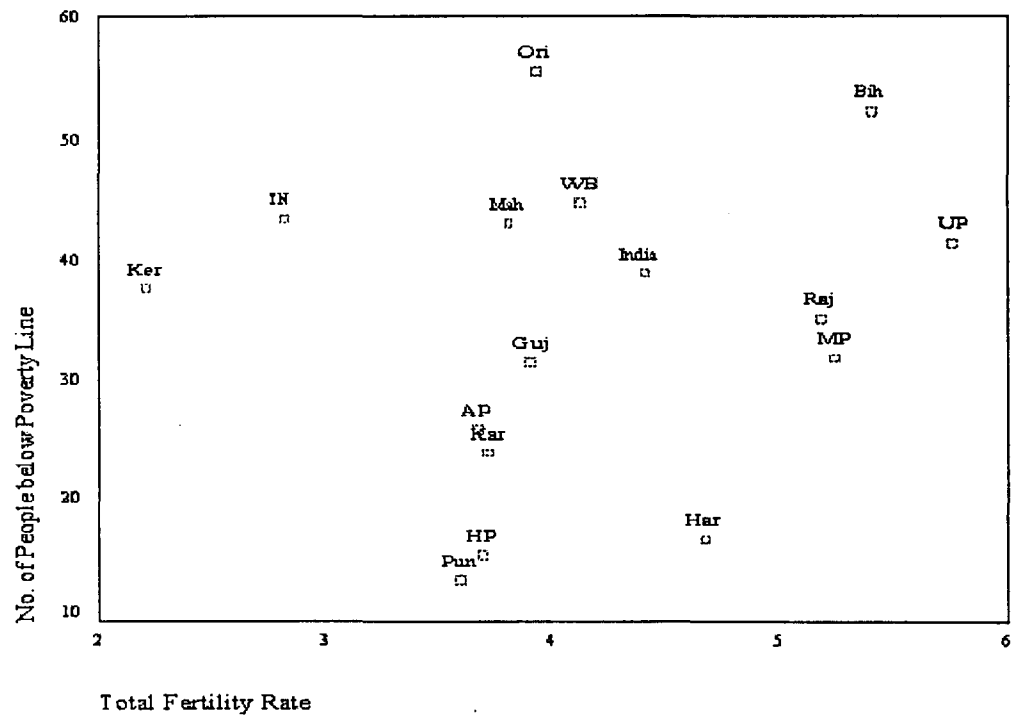
Table A3- Number of People below Poverty Line and Infant Mortality Rate (1993)

Infant Mortality Rate
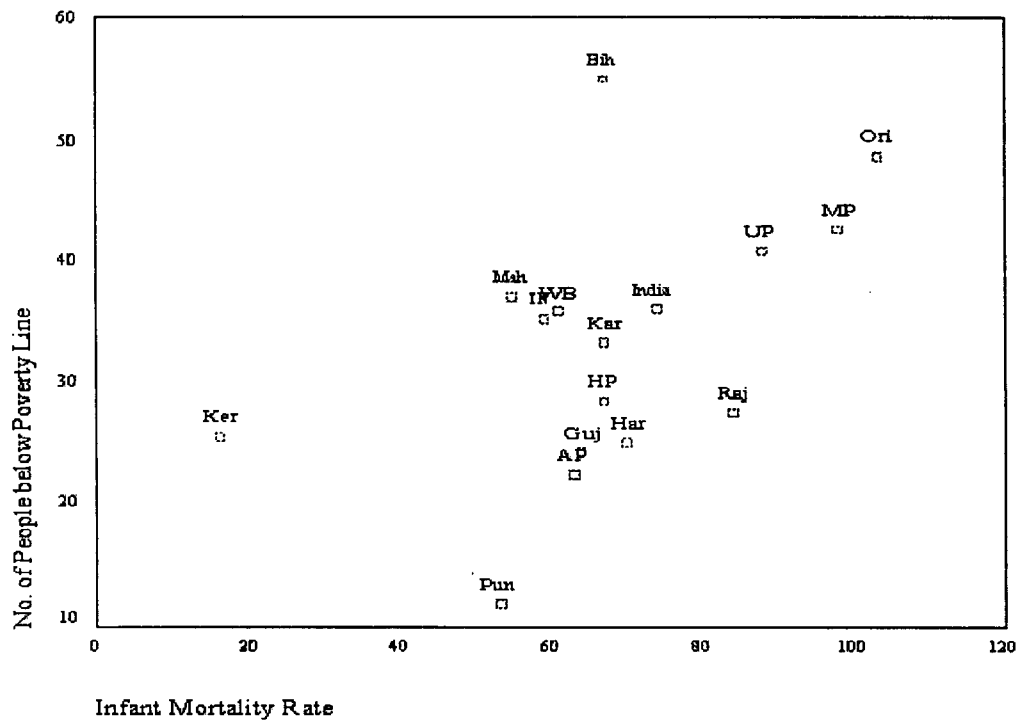
Table A4-Number of People below Poverty Line and Infant Mortality Rate (1999)

Infant Mortality Rate
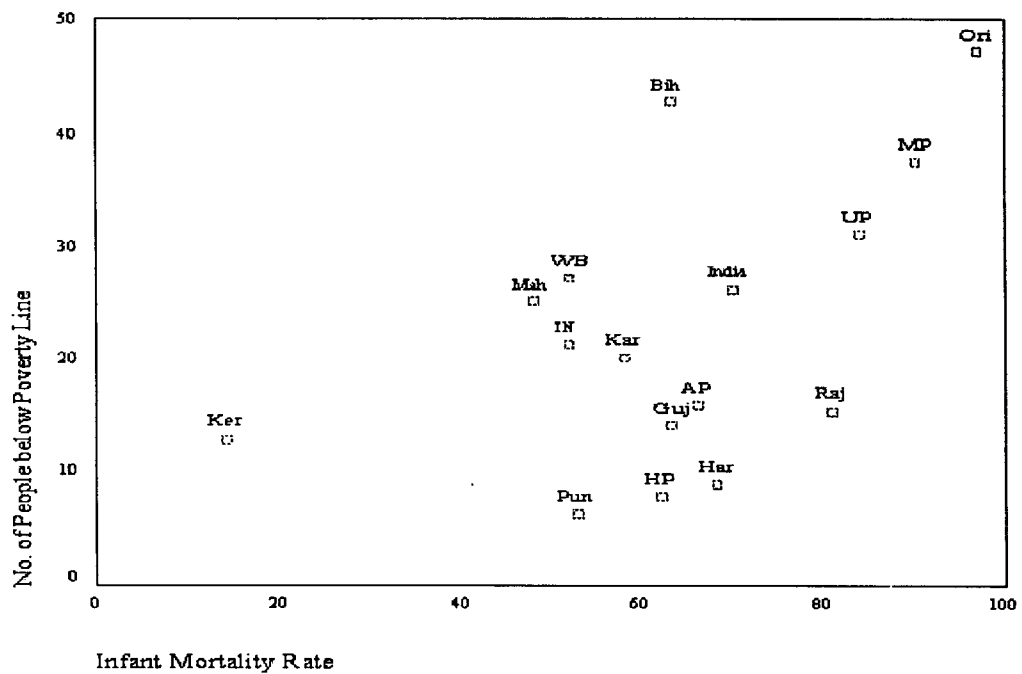
Table B3- Number of People below Poverty Line and Total Fertility Rate (1993)

No. of People below Poverty Line (y-axis, 10 to 60) vs Total Fertility Rate (x-axis, 1 to 6)

Data points: Bih, Ori, MP, UP, Mah, WB, India, IN, Kar, HP, Raj, Ker, Guj, Har, AP, Pun

Total Fertility Rate
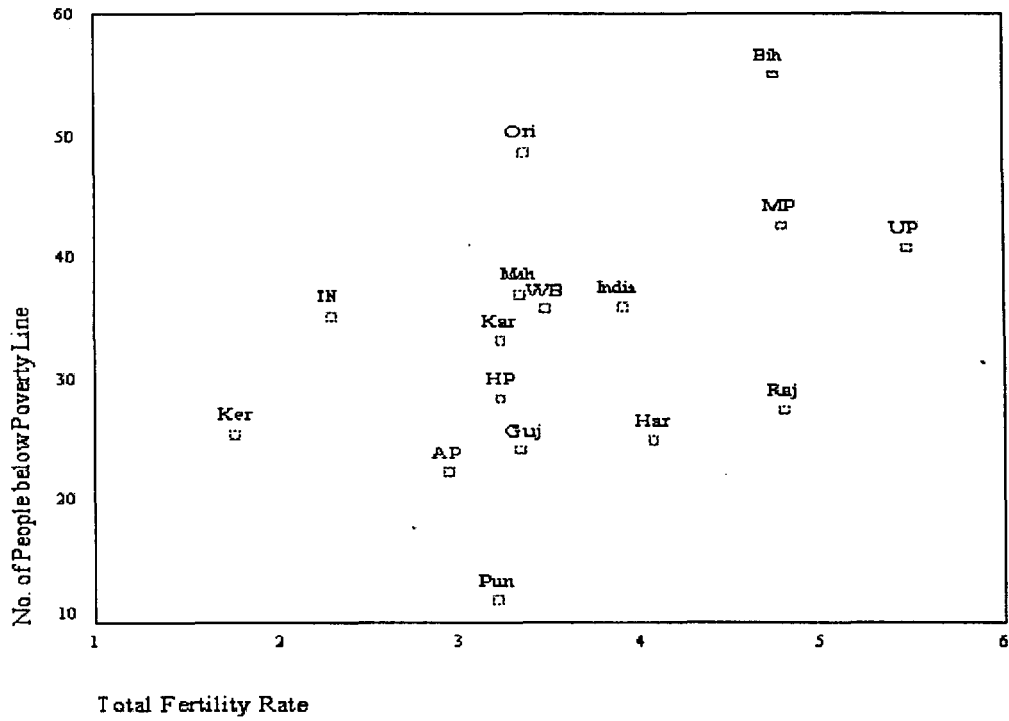
Table B4- Number of People below Poverty Line and Total Fertility Rate (1999)

No. of People below Poverty Line (y-axis, 0 to 50) vs TFR99 (x-axis, 1.5 to 5.5)

Data points: Ori, Bih, MP, UP, WB, Mah, India, IN, Kar, AP, Guj, Raj, Ker, HP, Pun, Har

TFR99

79
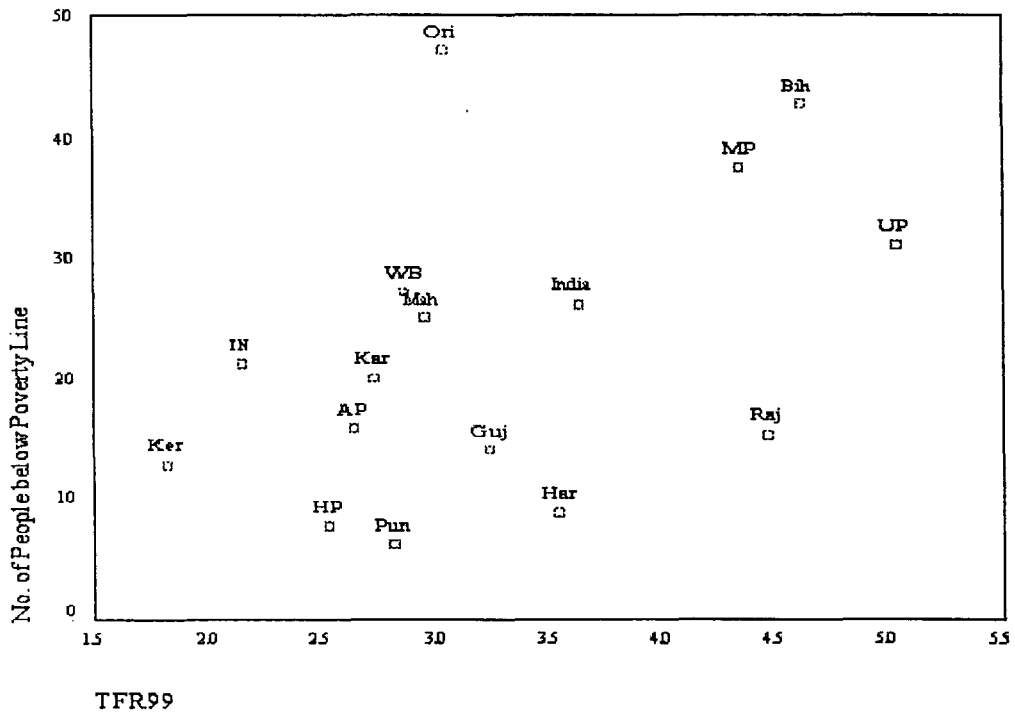
Policy Suggestions and Conclusion

I. Overview of Education

The overall educational attainment across the Indian states reveals that the southern and the western states have done well while eastern and the central states has lowest level of educational attainment. The gap between the male and female literacy has reduced but remains higher for BIMARU states. Public funded programme like SSA and DPEP which seeks to universalize primary education and elementary education has already made a considerable progress. Quantity-wise there has been a large increase in the spread of education in India, especially at the primary school level[1]. There is close to universal access to a primary school within one kilometer of the place of residence for most children. Mid-day meals programme in primary schools has increased enrolment, attendance and retention, especially of girls. Moreover, it has also taken care of nutritional needs of students.

However, in terms of quality of education provided, the system critically under performs mainly due to overcrowded classrooms, high teacher absenteeism, inadequate training and little supervision and much less accountability, indifferent community support, and an oppressive curriculum[2]. Apart, from that there are critical gaps in the availability of infrastructural facilities and qualitative aspects of education including,

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[1] N Bajpai and S Goyal, (2004) "Primary Education in India: Quality and Coverage Issues", Center on Globalization and Sustainable Development, Working Paper No. 11.
[2] A K Shiva Kumar (2003): "Community in elementary education": www.azimpremjifoundation.org/ html/articles_communityineleedu.htm

teachers training, few teaching aids, educational curricula, equipments and training materials.

II. Overview of Health

In India, health care at its essential is widely considered as a public good as it involves disease surveillance, health education, monitoring and evaluation, workforce development, enforcement of public health laws and regulations, public health research, and health policy development are essentials parts of the public health expenditure. It is based on the basic principles of universal access, and access to an adequate level, and access without excessive burden. However, India despite being signatory to the "Alma Ata Declaration" (1978)[3], which aimed at "health for all" by 2000, is still lagging quite far from realizing this dream even in year 2004[4]. There is a great rural and urban divide in the performance of the health indicators as well as the availability of health infrastructure. One of the obvious reasons being- India spends (1-2% of GDP) less than by world standards. Inequalities in health indicators can be attributed to more investments favoring urban areas. Apart from that, a large proportion of the health expenditure is spent on maintenance of health infrastructure and payment of the salaries of the exiting

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[3] On the 12th of September, 1978, the International Conference on Primary Health Care being held in Alma-Ata, in the erstwhile USSR, adopted the 'Declaration of Alma-Ata' which proclaimed a positive view of health as complete physical, mental and social well being and a fundamental human right. The declaration envisaged primary health care as the first level of contact between individuals and families with their country's health system. According to this declaration, primary health care was to have its basis in the community it served; the notion of primary health care included maternal and child care including family planning, immunization against major infectious diseases, prevention and control of locally endemic diseases, appropriate treatment of common diseases and injuries, provision of essential drugs, education concerning prevailing health problems and ways to deal with them, provision of adequate food and nutrition and adequate supply of clean water. The Declaration of Alma-Ata set a goal for the year 2000 for all the people of the world to achieve a level of health such as to enable them to lead socially and economically productive lives. India, along with other countries, endorses the declaration.

[4] B Ashish, (2001)"Health For All By 2000: Broken Promises," Economic and Political Weekly, Vol.XXXVI, No.11, p.905-907

health employees[5]. Per capita income is a better indicator that explains the improvement in the performance of the health attainment across Indian states. This holds true for developed and the developing states. Increase in per capita income directly impacts the standard of living and improves the quality of life whereas performance of health indicators largely depends on the quality of life. As discussed above, that the improvement in quality of life can be measured in terms of access to electricity, clean water, and hygienic sanitation facilities. These variables indirectly help in achieving better health profile of the individual.

As we have argued earlier[6], that the background motive of economic reforms was to correct growth imbalances to improve the economic condition of the poor by providing greater employment opportunities. Indian states have different experiences in reducing poverty, IMR and improving enrollment indicators. Looking at the poverty profile[7] of Indian states, it is clear that there is hardly any improvement in the relative ranking of the states. We can conclude that the states which are less developed have lower educational and health attainment and high poverty. This may be due to presence of weak institutional set up. The allocated budgetary funds do not reach the targeted audience or intended facilities, and hence do not improve the outcome. The rural and urban disparity still exits because of the health services; education and infrastructure facilities are concentrated in the urban area **(Pradhan, 2002)**. There is a strong correlation between low economic development and poverty; and poverty and low level of social attainment in Indian states. States like Bihar, Orissa, MP and UP have low economic growth with

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[5] Nirupam Bajpai and Sangeeta Goyal, (February 2004) 'Primary Education in India: Quality and Coverage Issues', Center on Globalization and Sustainable Development, Working Paper No. 11
[6] Refer- Introduction.
[7] Appendix-C (Tables- c1, c2, c3, c4)

high presence of poverty accompanied by low levels of health and educational attainment. The disturbing trend is that over the years poor states have remained more or less at the same place and have failed to reap the benefits of economic reforms thereby increasing the disparity across states in these attainment indicators. On the contrary, states like Maharashtra, Gujarat, TN and Karnataka have done extremely well in reducing poverty in the last two decades and have shown an improvement in their social indicators. The services sector coupled with a good spread of infrastructure (roads, power and human resources) were responsible for raising the aggregate growth rate in these states.

III. Suggestions

However, other factors like overall pace of economic development, growth in PCI, availability of infrastructure, level of development of infrastructure and role of government play a vital role in the performance of these indicators. Contrary to that, improvement in the quality, design and delivery of public education and health more likely to increase worker productivity, reduce income inequality, and boost economic growth. Without improved productivity, economic growth is likely to remain weak and there will be a little room for additional social spending on infrastructural investment. Hence, India needs a phenomenal change in the strategy–both in quantitative and qualitative terms to achieve the national goals of universal access of primary health services and total eradication of illiteracy.

a) Low levels of education and poor health affects growth though low labour productivity and lesser opportunities for availing economic benefits, especially for the weaker section of the society. Good health and education helps in reducing

socio-economic disparity. Thus breaking the inter-generational transmission of poverty requires a far-reaching action in the education and health sector.

b) Public funded programmes in education and health should focus on administrative decentralization and community participation to institute accountability within the system as it can drastically improve the physical access of the services/programme. For example, DPEP has seen increased school enrolments, especially of girls, and more so in the historically more backward states.

c) Some states have done exceptionally well; several others show a strong performance while some are doing very poorly. We need to focus on the specific characteristics of state which may be economic, institutional, socio-economic and socio-political explaining improvement/ decline in standard of living *(Ahluwalia, Montek S, 2000)*.

d) Lack of basic facilities like access to clean drinking water, electricity and sanitation are the main reasons for high IMR by any precedent standards. There is an urgent need for improving such basic infrastructure. Greater stress should be laid on less developed states and rural areas.

e) Greater social awareness should be promoted for fair sex. India is one of the few countries where the IMR of girls exceeds that of boys. This inequality is due to differential treatment given to boys in health care-seeking behaviour and in nutrition precisely due to strong preference for boys.

f) The quality of access to health services and treatment is much poorer in rural areas as compared to the urban areas. Even in terms of utilization of services; one

can find higher prevalence of morbidity in rural areas and for females as compared to the urban areas for the same income categories.

g) A well functionary public health system (PHS)[8] not only assures effective services to those at the lower end of the socio-economics hierarchy, but also set a ceiling for the prices and a norm for the quality in the private sector. Therefore, a well functionary PHS is a major anchor for overall equity in the health system. An inter-state comparison appears to conform that in the states with better PHS have lower prices in private sector[9].

h) Health care system should be efficient and should highlight fair distribution of financial cost for the access and fair distribution to burden in rationing care and capacity and a constant search for improvement to a more just system. It should pay special attention to vulnerable groups such as children, women, disabled and the aged.

i) The standard of living directly depends on the education of the household head. Since the literacy rate of woman is very low in India, the key stress should be on the improving the education profile of female. Greater female literacy also helps in improving the nutritional level of the family members.

j) Integrated approach should be adopted for improving the standard of living via improvement in education and health. Mid day meal programme is one such example wherein the nutritional level of students are taken care along with improvement in literacy.

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[8] In low income countries with low capacity in the public sector like India the focus should be on basic public health, disease eradication, and those programs that can be administered effectively (perhaps vaccination campaigns).

[9] Gita Sen, Aditi Iyer and Asha George (2000): 'Structural Reforms and Health Equity- A Comparison of NSS Surveys, 1986-87 and 1995-96.

k) There are critical gaps in the availability of infrastructural facilities and qualitative aspects of education (teachers training, educational curricula, equipments, training materials etc.). There should be a transparent policy particularly for the publicly funded schooling system for their upgradation in quality.

l) Since the central government is limited in addressing the problems of education sector in total, it needs transferring of decision making polices from central to local governments. Further, it needs to increase the autonomy for schools, involve communities in school management for efficient resource mobilization.

m) The 'malfunctioning' in government schools is due to inadequate physical facilities and high pupil–teacher ratios. Teachers are burdened with excessive paperwork, and there is 'unsupportive' and inadequate management. What is most disturbing factor is the low level of teaching activity and 'deep lack of accountability' in the schooling system.

n) Effectively involving the Panchayati Raj Institutions, School Management Committees, Village and Urban Slum level Education Committees, Parents' Teachers' Associations, Mother Teacher Associations, Tribal Autonomous Councils and other grass root level structures in the management of elementary schools will help in improving the overall literacy.

o) Government policies on elementary education must emphasize on universal access and enrollment; and retention of children up to 14 years of age. In addition, there should be a substantial improvement in the quality of elementary education (including improvement in educational infrastructure, standardization and regular review of curricula, improvement in teaching aids, practices and training) — to enable the children to achieve essential levels of learning.

Bibliography

Ahluwalia, Montek S. (2000), *'Economic Performance of States in Post-Reforms Period'* Economic and Political Weekly, May 6, pp. 1637-1648.

Ahluwalia, Montek S. (2002), "State Level Performance Under Economic Reforms in India", in *Economic Policy Reforms and the Indian Economy*, ed. by Anne O.Krueger, Oxford University Press, New Delhi, pp 91-125.

Balbir kaur and Sangita Mishra(2003): *'Social Sector Expenditure and Attainments: An Analysis of Indian States'* RBI Occasional Paper, summer and Monsoon.

Barro, Robert J. (1991), "Economic Growth in a Cross Section of Countries", *Quarterly Journal of Economics*, 106, 2 (May), pp, 407-443.

Bhattacharya, B.B. and S. Sakthivel (2003) *"Regional Disparities in Growth: A Comparison of Pre and Post-Reform Period"*, Discussion Paper No. 73/2003, Institute of Economic Growth, Delhi.

Dasgupta, Dipankar, Pradip Maiti, Robin Mukherjee, Subrata Sarkar, and Subhendru Chakrabarti (2000): *'Growth and Interstate Disparities in India'* Economic and Political Weekly, Vol-XXXV, No 27, July 1.

Damodar N. Gujarati (1995): Basic Econometrics, McGraw-Hill International Editions: 3rd Edition

Datt, G. and Ravallion, M. (2002) *'Is India's Economic Growth Leaving the Poor Behind?'* Journal of Economic Perspectives 16(3), 89-108.

Datt, G., Kozel, V. and Ravallion, M. (2003): *'A Model-Based Assessment of India's Progress in Reducing Poverty in the 1990s'* Economic and Political Weekly, January 25, 2003.

Deaton, A. (1997): 'The Analysis of Household Surveys: A Micro-econometric Approach to Development Policy' Washington D.C.: Johns Hopkins University Press for the World Bank.

Deaton, A. (2001): *'Computing Prices and Poverty Rates in India: 1999-2000'* Princeton, Research Program in Development Studies, processed.

Deaton, A. (2003a): *'Adjusted Indian Poverty Estimates for 1999-2000'* Economic and Political Weekly, January 25, 2003.

Deaton, A. (2003b): *'Prices and Poverty in India: 1987-2000'* Economic and Political Weekly, January 25, 2003.

Deaton, A. and Drèze, J.P. (2002): *'Poverty and Inequality in India: A Reexamination'* Economic and Political Weekly, September 7, 2002.

Dev, Mahendra S., and Jos Mooli, *'Social Sector Expenditures in the 1990s: Analysis of Central and State Budgets,'* Economic and Political Weekly, March 2, 2002.

Dev, S. M., Parikh, K. S., and Suryanarayana, M. H., "Rural Poverty in India: Incidence, Issues and Policies," *Discussion Paper No. 55*, Indira Gandhi Institute of Development Studies, Bombay

Dholakia, R (1994): *'Spatial Dimension of Acceleration of Economic Growth in India'* Economic and Political Weekly, Vol. XXIX, No. 35, August 21.

Drèze, J.P. and Sen, A. (2002): *'India: Development and Participation'* Oxford University Press.

Dreze, Jean and Aparajita Goyal, (2003), *'Future of Mid-Day Meals'* Economic and Political Weekly, November 1.

Elbers, C Lanjouw, J. and Lanjouw, P. (2002): *'Micro-Level Estimation of Welfare'* Policy Research Department Working Paper, No. WPS2911, World Bank.

Elbers, C Lanjouw, J. and Lanjouw, P. (2003): *'Micro-Level Estimation of Poverty and Inequality'* Econometrica, 71(1), January 2003, 355-364.

Geetha Rani, P (2003), *'Financing Primary Education and Sarva Shiksha Abhiyan,'* National Institute of Educational Planning and Administration, New Delhi.

Gupta S. (1973): *'The Role of the Public Sector in Reducing Regional Income Disparity in India'*, Journal of Development Studies, Vol. 9, No. 2, pp. 243-60.

Gupta, S P (1999): 'Trickle down Theory Revisited: The Role of Employment and Poverty', V B Singh Memorial Lecture (mimeo), November 18-20

Government of India (1996): 'Health information of India-1994' Central Bureau of health Intelligence, Directorate of health Services, New Delhi.

Government of India (1997): *'The Economic Survey of India-1997'* Ministry of Finance.

Government of India, (1993), Report of the Expert Group on the estimation of proportion and number of poor, Delhi, Planning Commission.

Government of India, (1997): *'Estimate of poverty,'* Press Information Bureau, March 11th.

Howes, S. and Lanjouw, J.O. (1998): *'Does Sample Design Matter for Poverty Comparisons?'* Review of Income and Wealth, Series 44, No-1, pp 99-109.

IIPS (1995): *'National Family Health Survey: 1992-93, India'* International Institute for Population Studies, Bombay.

Jean Dreze and Amarty Sen(1995): *'India Economic Development and Social Opportunities'.*

Kurian, N.J (2000): *'Widening Regional Disparities in India – Some Indicators'* Economic and Political Weekly, Vol. XXXV, No. 7, February 12-18.

Majumdar, Grace and J L Kapoor (1980): *'Behaviour of Interstate Income Inequalities in India'* Paper presented at the Twelfth Conference of the Indian Association for Research on National Income and Wealth.

Nagaraj, R, Aristomene Varoudakis and Marie-Ange Veganzones (1998): *'Long-Run Growth Trends and Convergence across Indian States'* OECD Technical Papers, No. 131, January, pp. 1-58.

Nair, K R G (1971): *'A Note on Inter-State Income Differentials in India 1950-51 to 1960-61'* Journal of Development Studies, Vol. 7, No 1, pp. 441-47.

Nirupam Bajpai and Sangeeta Goyal, (February 2004): *'Primary Education in India: Quality and Coverage Issues'* Center on Globalization and Sustainable Development, Working Paper No. 11

Pollak, Robert A (1981): *'The social cost of living index,'* Journal of Public Economics, 15, 311–36.

PROBE Team (1999), *Public Report on Basic Education*, Oxford University Press, Oxford.

Rajeev Sadnandan (2001): *'Government Health Services in Kerala: Who Benefits?'* EPW, August 2001.

Reddy, K. N. (1994): *'Alternative Sources of financing Health Care in India with Special Reference to Cities'* Prashasnika.

Reddy, K.N. and V. Selvaraju (1994): *'Health Care Expenditure by Government in India: 1974-75 to 1990-91'* National Institute of Public Finance and Policy, New Delhi.

Roy, Choudhury, Uma Datta (1996): *'Pattern of Regional Development As Measured Through Physical and Social Indicators'* The Journal of Income and Wealth, IARNIW, Vol 18, No 1, January

Sachs, Jeffrey D., Nirupam Bajpai and Ananthi Ramiah (2002): *'Understanding Regional Economic Growth in India'* CID Working Paper No. 88, Harvard University, March.

Sanyal S.K. (1996): *'Household Financing of Health Care'* Economic and Political Weekly, Vol. XXXI, May.

Sarker, P.C. (1994): *'Regional Imbalances in Indian Economy over Plan Periods'* Economic and Political Weekly, Vol. XXIX, No. 2, March 12.

Shand, Ric and S. Bhide (2000): *'Sources of Economic Growth – Regional Dimensions of Reforms'* Economic and Political Weekly, October 14, pp. 3747-3757.

Shariff, A. (1995): *'Health Transition in India'* Working paper no-57, National Council of applied Economic Research, New Delhi.

Srivastave D. K. and T. Sen (1997): *'Government Subsidies in India'*, National Institute of Public Finance and Policy, New Delhi.

Sundaram K and Tendulkar Suresh D (2003): *'Poverty in the 1990s:An Analysis of Change in 15 Indian States'* EPW, April 5, 2003

Sundaram, K. and Tendulkar, D. (2003): *'Poverty Has Declined in the 1990s: A Resolution of Comparability Problems in NSS Consumer Expenditure Data'* Economic and Political Weekly, January 25, 2003.

Tarozzi, A. (2001): *'Estimating Comparable Poverty Counts from Incomparable Surveys: Measuring Poverty in India'* Princeton University, Dept. of Economics, processed.

Tilak, J. B. G. (2004): *'Public Subsidies in Education in India'* Economic and Political Weekly, January 24.

Tulasidhar, V. B (1993): *'Expenditure Compression and Health Sector Outlays'* Economic and Political Weekly, November 6.

Garg C.C. (1998): *'Equity of health sector financing and delivery in India':* Takemi Research Paper No.144, Harvard School of Public Health, 665, Huntington Avenue, Boston, MA 02115.

Gylfason, T., and G. Zoega, (2003): *'Education, Social Equality and Economic Growth: A View of the Landscape,'* CESifo Economic Studies, Vol. 49, No. 4, pp. 557–79.

Davoodi, H.R., E.R.Tiongson, and S.S. Asawanuchit, (2003): *'How Useful Are Benefit Incidence Analyses of Public Education and Health Spending,'* IMF Working Paper 03/227 (Washington: International Monetary Fund)

Ramon Lopez, Vinod Thomas and Yan Wang (1998): *'Addressing the Education Puzzle: The Distribution of Education and Economic Reform'*, Policy Research Working Paper Series- No 2031, World Bank

Dorte Vernem (2004): *'Education and Its Poverty-Reducing Effects: The Case of Paraiba, Brazil'* World Bank Policy Research Working Paper-3321, World Bank.

Paul Atkinson and Paul Van Den Noord, (2001): *'Managing Public Expenditure: Some Emerging Policy Issues and a Framework for Analysis'* Economics Department Working Papers No. 285

Gupta, Indrani and Arindam Datta (2003): *'Inequities in Health and Health Care in India: Can the Poor Hope for a Respite'*, Institute of Economic Growth, New Delhi.

World Bank (1995): *'India Policy and Financing Strategies for Strengthening Primary Health care Services'*, Report no. 13042-IN, May 15

World Bank (1997): *'India New Directions in Health Sector Development at State Level: An Operational Perspective'* Report No. 15753-IN, February 11.

World Bank (1993): *'World Development Report: 1993, Investing in Health'* New York Oxford University Press