



Can Economic Growth Transform into Human Capabilities in India?

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Abstract

This paper examines the pro-poorness of economic growth in India by considering the development principles of the capabilities approach (Sen 1989, 2002, Nussbaum 2000, Alkire 2002 a, Fukuda-Parr 2003). We first develop multi-dimensional indices on four specific domains, viz., longevity and health, education, living conditions and livelihood security and then construct the aggregate index of human capability for 29 states and union territories in India. The state level composite index of human capability is derived through the aggregation of four domains covering sixteen variables using the method of two-stage principal components. Subsequently, we examine the relationships between economic growth and various human capability dimensions in a cross-sectional framework. Although, our results indicate a positive association between per capita real state domestic product and each of the four capability dimensions, the extent of correlation remains high for living conditions and livelihood securities and low for longevity and educational dimensions. We therefore conclude that while economic growth initiated some improvements in living conditions and livelihood security, its role remained limited in enhancing the health and educational capabilities that may require pro-poor public policies. (180 words)

Key Words: Pro-poor Growth, Human Capabilities, Multi-Dimensional Indicators, Principal Component Analysis, India, Regional Dimensions.

JEL Classification: I38, D63, I32, C13, O53, R11

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1. Introduction and Objectives:

Traditional economic analysis has often held that the process of development involves changes in per capita income caused by the achievements in high levels of economic growth. Economic growth has in fact been recognized as the most crucial prerequisite for reducing poverty in poor countries. Contemporary research results, based on cross-country analysis and country case studies have provided evidences that growth in per capita GDP is the most powerful, if not the only, force for poverty-reduction (Fields (1989, Deininger and Squire 1997, Ravallion and Chen 1997, Dollar and Kraay 2002, Ravallion 2005, Rodrick 2007, Dollar et al 2013). The aspect of higher economic growth can also found to be widely linked with performance in overall or individual human development indicators, like health, education and social inclusion. Earlier studies have provided evidence that faster and sustained levels of economic growth remained essential in making progresses in human capabilities, since the rise in incomes of the poor due to growth process raised their ability to spend on health, education and expand their capabilities. Economic growth also remains the potential source of government revenue to finance pro-poor public investments in primary education, health infrastructure and nutrition so as to enhance the income and capabilities of poorer sections.

The *basic needs* and the *capabilities* approach has often taken the view that economic growth may not be sufficient to generate progresses in human living conditions (Streeten et al 1981, Stewart 1985, Sen 1989, 2002, Nussbaum 2000, 2003, Alkire 2002 a, 2002 b, Fukuda-Parr 2003). Although, the Indian economy in recent past remained at the top ten in terms of its growth potential, it has lagged behind many poorer countries in terms of its human capabilities. Dreze and Sen [2013] have recently argued that while India surpassed other countries in real incomes, it had been overtaken in terms of social indicators by smaller countries in the South Asian region, due to its slow progress in the provision of social services like schooling, health care, water and sanitation infrastructures for the majority of population. This paper has a specific objective of examining whether the levels of economic growth tend to correlate with different dimensions of

human capability by employing state-level data from India. A major analytical difference of this study with the present line of research is that we just do not inquire whether the levels of per capita income tend to correlate with any of the aggregate capabilities measure. On the contrary, we examine as to which particular dimensions of human capabilities have had any stimulus from the economic growth process of Indian states. The individual dimensions of human capabilities are meaningfully constructed for the purpose of making appropriate public policies. The advantage of adopting a disaggregated approach in the measurement of capabilities is that the deprivation can be separately assessed for each of the individual dimensions. We subsequently aggregate the dimension-specific capability deprivations into a composite index on the understanding that a multi-dimensional measure can capture the overall *quality of life* better than the one that is based on any specific dimension.

The rest of the paper proceeds in the following sequence. We first discuss the theoretical grounds of the *capabilities approach* to understand how the growth process impacts on the development of capabilities (section 2). Section 3 provides an account of research on capabilities development in India, which is typically monitored using the Human Development Index (HDI) that accounts only for levels of income, health and education. We construct the multi-dimensional *capability indices* – individually on four different dimensions as well as the aggregate - for different states of India in section 4. We have used the *principal component method* to determine the set of weights that are to be employed for deriving the composite index. This is necessary, since the use of equal or any other weights among variables - as is done in the case of HDI – is liable to encounter potential methodological problems in case two or more variables are inter-linked and correlated. Thus, we have employed a method of normal or single stage principal component to work out the dimensional capability indices from the relevant variables for four individual dimensions. Subsequently, the aggregate multi-dimensional capability index is constructed by applying the second stage principal component method over the four dimensional capability indicators. We finally explore on whether the per capita income growth in different states has led to an impact on any of these individual capability dimensions (section 5). We use correlation and regression analysis to discern the growth and human capability linkages for individual dimensions. The final section summarizes the results and provides policy implications.

2. Interrelationship between Economic Growth and Human Capabilities:

The various progress reports on the Millennium Development Goals (MDGs) often raise a crucial question concerning reductions in the income dimension of poverty, viz., whether the very poor benefits more than the non-poor from an improvements in economic growth rates in a country? This essentially means that economic growth has to be rapid, broad-based and at a sustained level for the growth-poverty relation to work in favor of the poor. Studies have found evidence suggesting that faster and sustained levels of economic growth remained essential for the absolute decline in poverty levels. But, a number of studies have also argued that income inequality may play a crucial role in the positive relationship between growth and poverty reduction (Ravallion, 1997, Easterly 2000, Bourguignon, 2003, Fosu, 2009). The empirical evidences have observed that economic growth has been accompanied by greater equality of income in some countries, but by greater inequality in others. It is therefore not very clear whether higher inequality of income generated through the process of economic growth has contributed to the reductions in poverty.

Economic growth also holds a central reference for the human capability expansion, since improvements in per capita income provides greater opportunities for creating an environment for people to enjoy long, healthy and creative lives, and also enhance people's choices (Sen 1999). Although, per capita GDP growth remained as an important instrument for achieving a wide range of capabilities, the impact of economic growth on a nation's human development level continues to depend on other aspects, e.g., the income distribution. Thus, the same level of GDP has been found to deliver very different performance on HDI according to the allocation of GDP among different income classes. In addition, the manner in which countries spend their development expenditure remained crucial about the potential of economic growth to expand people's choices. In fact, a key message contained in various Human Development Reports remains that economic growth alone does not automatically translate into human development progress. Pro-poor policies and significant investments in people's capabilities through a focus on education, health and employment can provide rapid advances in human development. There are also other aspects that explain as to why similar rates of growth can bear different effects on poverty reductions and human development dimensions. For instance, it is argued that expansion in human development caused by increased household expenditure depends on the level and distribution of income across households as well as on whether women controls the allocation of

expenditure within households. A study by Anand and Ravallion [1993] found that most of the effects of economic growth on HDI are led by government central and local budgetary expenditures.

Building on the initial work by Ranis, Stewart, and Ramirez [2000], a series of papers by Booser, Ranis, Stewart and Suri [2003], Ranis [2004], Ranis and Stewart [2004], Ranis and Stewart [2006], Ranis, Stewart and Samman [2007] explored the two-way relationships between economic growth and human development, and argued that human development is not only an end product of the development process but also a means to generating future economic growth. The framework of two-way relationship, provided in these studies suggests that neither economic growth nor human development can be analyzed in isolation of the other. The fact that human development and economic growth reinforce each other bears crucial policy relevance for the poor developing countries. It is argued on the relationship that strong economic growth advances human development through the increased household consumption expenditure as well as public expenditures, which directly benefit the poor. Since economic growth increases a country's tax base it also becomes possible for the government to spend more on the key public services of health, education and other items that contribute to their capabilities and raise the standard of living. A strong growth and employment opportunities also create incentives for families to spend in education and hence enhance the productive capabilities by sending their children to school. It is also observed that poor households spend a higher proportion of their income on goods which directly promote better health and education than those with higher incomes. Thus, there is a second channel between growth and human development, whereby increased incomes of the poor raise the ability to improve their health and education status. Finally, the impacts from human development to economic growth works as people become healthier, better nourished and educated and to contribute more to economic growth.

3. Account of Human Development in India:

Pro-poorness of growth basically signifies that growth performances should be judged in terms of the impact of that economic growth on human capabilities and life-quality of the people. The economic performances across states, particularly after 2000, have been the subject of considerable research interest in India (Besley and Burgess 2004, Rodrik and Subramanian 2005, Kochhar et al 2006, Aghion et al 2008, Amin and Mattoo 2008, Panagariya 2008, Kumar and

Subramanian 2012), which upheld that the growth rates of per capita income in most of the states remained substantially greater after 2000, as compared to the level in the 1990s. Although, the recent economic growth has undoubtedly been noteworthy in India, the low rank of 136 among 186 countries on its HDI remained as the stark contrast for the quality of life of the poor and weaker sections of the society. This has obviously raised an issue whether the fruits of economic growth have helped the reduction in country's poverty, malnutrition, literacy and lack of sanitation. According to the Millennium Development Goals Report 2014, about 33% of the world's 1.2 billion extreme poor lived in India alone (UN 2014). The recent Economic Survey also maintain that India has a long way to go in achieving human development targets and therefore highlighted the need for faster and wider spread of basic health and education facilities to close the existing gap with other developing countries GOI (2014).

In the same way, the impressive economic achievements of some Indian states stand in stark contrast to the rising income inequality and wide-spread social exclusion. The examination of state-level data points to the remarkable success achieved by smaller states like Kerala, Goa or Himachal Pradesh in various scales of human development indicators, but bigger states like Uttar Pradesh, Bihar, Madhya Pradesh, Jharkhand, Chhattisgarh and parts of West Bengal and even Maharashtra remained as the stumbling blocks (GOI 2011). It may be mentioned that the document for the 12th Five Year Plan (2012-17), which seeks to fulfill the vision of *faster, sustainable and more inclusive growth*, stressed the need for a broad-based improvement in living standards of all sections of the people. A particular focus on the development of human capabilities can be discerned in the following lines of GOI [2013]:

“The development of human capabilities must be the first priority, for three reasons. First, these capabilities are actually ends in themselves. Second, they are also important instrumentalities which interact positively with others to raise the productive capacity of our economy and therefore its ability to satisfy the material needs of our population. Third, proper development of human capabilities will also ensure that our growth is more inclusive in the sense that the marginalized and disadvantaged sections of our society will be more able to access the opportunities thrown up by the growth process.”

Although, studies on the growth pro-poorness and/or growth-inclusiveness have remained numerous in the Indian context, most of these have been performed by examining the growth impacts on income poverty rather than the poverty in capabilities. While the income poverty is generally represented by the income deprivation, the poverty in capabilities can include

deprivations in health, access to education and skill, living conditions, livelihood security, etc. Further, only a handful of the studies addressed the question on how the economic growth process interacted with the development of human capabilities. Bhide and Shand [2000], Ahluwalia [2000], Amin and Mattoo [2008] included the role of human capital – skill element in the workforce - in analyzing the recorded growth performances across states of India, where the skill-intensity is captured through literacy rate or institutional enrollment rate or number of institutions per capita. Dholakia [2003] also found evidence of a two-way causality between human development and economic growth from state-level data in India. Ghosh [2005] evaluated the human development performance of 15 major Indian states during the period 1981-2001, and found evidence of regional convergence in human well-being from estimating cross-sectional growth regression. This study therefore concluded that the poorer states that failed to catch up with the rich ones in terms of per capita income have managed to catch up in terms of the indicators of human development.

4. Human Capability Index for Indian States:

4.1 Methodology:

The most difficult tasks in applying the capabilities approach to develop a multi-dimensional deprivation index are to decide on the choice of capability dimensions and the method of aggregating the dimensions into a single aggregate indicator. The Human Development Index (HDI) is certainly most acknowledged among the major indices that were shaped on the perception of the capabilities approach. As a measure, it signifies country's average achievements in three dimensions of human capabilities, viz., long and healthy life, knowledge and decent standards of living, and is calculated by using the indicators of life expectancy, adult literacy, school enrollment, and per-capita income. In its present form, HDI is a weighted average of income adjusted for distributions and purchasing power, life expectancy, literacy and health. On the other hand, the Indian HDI (IHDI) is calculated as a simple average of three indices in the dimensions of health, education and income, considering life expectancy at birth, literacy rate, adjusted mean years of schooling and inequality adjusted per capita real consumption expenditure as the four indicators (see GOI 2011).

There remains a problem in considering HDI as a measure of human capabilities in the sense that the conception of human capabilities is much broader than what the HDI actually

encapsulates. For instance, the HDI is not concerned with the living conditions or the basic amenities for living, social exclusion due to caste discrimination, political freedom, etc. Since the HDI is conceived as the simplest measure of *basic* capabilities, we felt that the relevant capability dimensions may be included in a meaningful measure. However, since the range of human capabilities is actually infinite, the selection of dimensions remains very fundamental for the multidimensional capability measure (Alkire 2007). In the Indian context, the functioning of basic capabilities may include people's well-being in health, education, basic amenities of life, having an employment or livelihood and freedom from social discrimination. Therefore, we have used indicators of 1) longevity and health, 2) education, 3) living conditions and 4) livelihood security. Table 1 below lists all the sixteen variables that were used under four domains of the human capability measure.

We construct individual series on four capability dimensions for the 29 states and union territories as well as for all-India. For this, we first convert some of the negative indicators in the list of sixteen variables positive by taking the inverse of the respective values. These include: infant mortality rate, percentage of under-nourished children, nutritional status of women, nutritional status of men, school drop-out rate, children at work, percentage of population below poverty line, percentage of backward class population and unemployment rate. Second, we undertake normalization of the individual variables to make each data series scale-free, which is important for the application of principal component method. Thus, each of these raw indicators is mapped onto a unit-free scale by subtracting the lowest value of the particular indicator among states from each of the states value under that indicator, and then dividing by the indicator-range among states, viz., $(x_{np} - x_{npmin}) \div (x_{npmax} - x_{npmin})$. Finally, we work out the capability indices from the relevant variables for each of the four individual dimensions by employing the method of normal or single stage principal component analysis (PCA). The aggregate multi-dimensional capability index is similarly derived by subsequently applying the second stage principal component method on the four capability dimensions.

The principle of PCA lies in finding weights to be given to each of the concerned dimensions, where weights maximize the sum of the squares of correlation of the dimension with the composite index. Suppose that y_1 is a principal component of $x_1, x_2, x_3, \dots, x_p$, such that: $y_1 = a_{11}x_1 + a_{12}x_2 + \dots + a_{1p}x_p$. Then the variance of y_1 is maximized given the constraint that the sum of the squared weights of $x_1, x_2, x_3, \dots, x_p$ is equal to one. The PCA determines the

weight vector $(a_{11}, a_{12}, \dots, a_{1p})$ by selecting higher weights for those series that vary a lot so that they influence the composite index relatively more. Once the weights are chosen, the first principle component would indicate the dominant pattern of variance in the indicators. The second principal component (y_2) similarly finds out a second a weight vector $(a_{21}, a_{22}, \dots, a_{2p})$ such that the variance is maximized subject to the constraints that it is uncorrelated with the first principal component. This signifies that y_2 has the next largest sum of squared correlations with the original variables, and the variances of the subsequent principal components would be smaller. The analysis also produces an estimate of how much variance in the x 's is explained by each principal components.

One problem of using PCA in indexing is to decide on how many components to retain. It can be noticed in the applied literature that using the first principal component has remained the standard practice. To capture the total system variability of the original variables, we could use all the components, but if the first components accounts for a large proportion of the variability (around 70-80%), it implies that there is one dominant component in the underlying variables. In the present analysis we use the first principal component since it explains about 81% of the variance in the data in most cases. In PCA, each of the principal components are described by the pair of *eigen-value* and *eigen-vector*, where each *eigen-value* describe the amount of variance explained by each principal component and the factor-loadings are the coordinates of the *eigen-vector*. The factor-loadings measure the importance of each dimension in accounting for the variability in the particular principal component. The *eigen-vectors* provide the weights to compute the uncorrelated principal components, and the principal component scores are then worked out as linear combinations of normalized original variables with the factor-loadings as weights.

4.2 Data Base:

The human capability index (HCI) is constructed using four domains, viz., 1) longevity and health, 2) education, 3) living conditions and 4) livelihood security, which covers sixteen variables. The description of the variables used in the construction of each HCI along with the account of their data base is discussed below.

I. Longevity and Health:

1). Infant Mortality Rate: This refers to the number of infants dying under one year of age in a year per 1000 live births of the same year. This data is made available from the Sample Registration System, 2011, Registrar General of India.

2). Percentage of Undernourished Children: The nutritional status of children is calculated according to anthropometric measure (weight-for-age) from NFHS-3, 2005–6.

3) Nutritional Status of Women: The nutritional status of women is calculated from the information provided in NFHS-3, 2005-06. The height and weight data of women aged between 15 to 49 years is used to define the Body-Mass-Index (BMI) as weight in kilograms divided by height in squared meters (kg/m^2). A cut-off point of BMI less than $18.5 \text{ kg}/\text{m}^2$ is used to define thinness or acute under-nutrition.

4) Nutritional Status of Men: The nutritional status of men is calculated from the information provided in NFHS-3, 2005-06. The height and weight data of men aged between 15 to 54 years is used to define the Body-Mass-Index (BMI) as weight in kilograms divided by height in squared meters (kg/m^2). A cut-off point of BMI less than $18.5 \text{ kg}/\text{m}^2$ is used to define thinness or acute under-nutrition.

II. Education:

1). Literacy Rate: This data have been compiled from the Census 2011 information provided by the Registrar General and Census Commissioner, Ministry of Home Affairs, GOI.

2). School Attendance Rate: It captures percentage of the population currently attending school. The data for all the states are gathered from NSS 64th Round Survey, 2007–08, (Report No. 532), which represents the current attendance rate in educational institutions per 1,000 persons for the 5–14 age group population.

3) High School Dropout Rate: The data on drop-out rates are gathered from “Selected Educational Statistics, 2005-06”, Department of Higher Education, Ministry of HRD, GOI.

4) Children at Work: The children’s work for different states is gathered from the information provided in NFHS-3, 2005-06. The percentage of working children is derived by including children age 5-11 years who worked for someone in the 7 days preceding the survey with or without pay or did household chores for 28 or more hours or engaged in any other family work and children age 12-14 years who worked for someone in the 7 days preceding the survey with

or without pay for 14 or more hours or did household chores for 28 or more hours or engaged in family work for 14 or more hours.

III. Living Conditions:

We have employed four variables to measure access to basic amenities, viz., percentage of households which live in concrete house (roof and wall); have access to safe drinking water; have access to toilet facility; and have electricity connection. These data have been sourced from the Registrar General and Census Commissioner's Housing Tables data.

IV. Livelihood Security:

We have used four indicators in this dimension, viz., head-count ratio of poverty, proportion of socially disadvantaged (SC-ST-OBC) population, unemployment rate (according to current daily status) and the monthly per capita expenditure (rural plus urban) for different states. The data on percent of population living below poverty line (Tendulkar methodology) in 2009-10 has been taken from Planning Commission, GOI. The proportion of socially disadvantaged population is gathered from per 1000 distribution of persons by social group provided in NSS-66th Round (2009-10), Report Number 543. The unemployment rate as defined by the number of person unemployed per thousand persons in the labour force has been compiled from NSS 66th Round Survey, 2009–10, Key Indicators. Finally, the data on monthly per capita expenditure (Modified Mixed Reference Period) are compiled from the NSS 66th Round Survey, 2009–10, Key Indicators.

The twenty-nine states covered in our analysis are: Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chattisgarh, Delhi, Goa, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Odisha, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh and West Bengal. Table 1 lists all the twenty one indicators under six dimensions along with their years of reference for each data indicator series.

(Insert Table 1 here)

4.3 Results:

The states are ranked on the basis of their individual capability indices of four different dimensions in Figure 1 through Figure 4, whereas the aggregate capability indices covering all the four dimensions are ranked in Figure 5. When we look at the individual dimensions, we find

that the states of Mizoram, Manipur, Sikkim, Kerala and Nagaland belonged to the top five ranks in the longevity and health dimension, while Chhattisgarh, Orissa, Uttar Pradesh, Rajasthan and Madhya Pradesh occupied the bottom five ranks. In the dimension of education, Kerala, Goa, Mizoram, Himachal Pradesh and Tamil Nadu remained at the top five ranks, while Uttarakhand, Jharkhand, Rajasthan, Bihar and Arunachal Pradesh belonged at the bottom five ranks (Figure 2). The states of Mizoram, Goa, Delhi, Sikkim and Maharashtra occupied the top five ranks in the dimension of living conditions, while Madhya Pradesh, Orissa, Chhattisgarh, Jharkhand and Bihar remained at the bottom five (Figure 3). Finally, in the livelihood security dimension, Goa, Delhi, Kerala, Himachal Pradesh and Jammu and Kashmir belonged to the top five ranks, while Assam, Jharkhand, Orissa, Chhattisgarh and Bihar remained at the bottom five (Figure 4).

(Insert Figures 1 to 4 here)

Figure 5 ranks all the states according to the aggregate capability score, which shows Goa, Kerala, Mizoram, Delhi and Sikkim at the top five ranks, and Madhya Pradesh, Jharkhand, Orissa, Chhattisgarh and Bihar at the bottom five. It can be observed that more number of states have done better than the all-India in aggregate capabilities ranking, which remained at twenty second out of twenty nine states. Thus, with twenty one states positioned above the all-India level and yet a low score of all-India capabilities ranking would imply that capabilities development remained remote for a large section of Indian population, which are concentrated in the seven highly populated states of Chattisgarh, Rajasthan, Odisha, Madhya Pradesh, Uttar Pradesh, Jharkhand and Bihar.

(Insert Figure 5 here)

Since the present study is the first in the line of constructing the human capability index (HCI) at the state-level in India, we have been left with no alternative other than the human development index (HDI) for the sake of providing a comparison of trends. However, it is important to note that there exist some differences in both the definition and coverage of the HCI and HDI series, i.e., the HDI covers only the domains of health, education and income attainments, whereas the HCI encompasses additional dimensions and more indicators. GOI [2011] provided comparison of HDI scores for different states at two points of time, viz., 1999-2000 and 2007-08 and found that the ranking of the states had barely changed over that decade. Thus, Kerala, Delhi, Himachal Pradesh, Goa and Punjab occupied the first five places in both the time periods. On the contrary, Bihar, Jharkhand, Madhya Pradesh, Uttar Pradesh, Odisha,

Rajasthan and Chattisgarh appeared at the bottom of the ranking in both the years. In spite of the differences, one can notice a broad similarity in the ranking orders of HCI and HDI. The states of Bihar, Jharkhand, Uttar Pradesh, Madhya Pradesh, Odisha, Rajasthan and Chattisgarh are ranked low in both the HCI and HDI rankings.

To understand the roles of individual dimensions in the making of the aggregate capabilities score, we provide a comparison of the four constituent dimensions for each state (Table 6). We can observe a broad pattern that states that are low in the aggregate capabilities ranking have also secured bottom rankings in most of the constituent dimensions, and vice versa. However, there are instances of states with top rankings in aggregate capabilities but also lagging in one or two specific dimensional capabilities. For instance, Kerala ranked first in educational dimension, but registered average performances in health as well as basic amenities dimension. Similarly, Delhi did extremely well in the basic amenities and livelihood security dimension but scored low in the health and educational capabilities. On the contrary, Sikkim performed well in the aspects of health and living conditions but lagged behind in the educational and livelihood security domains.

(Insert Figure 6 here)

5. Economic Progress and Human Capability Outcomes:

One of the most surprising results of contemporary research has been the lack of a significant correlation between economic growth and aggregate index of human development. We have therefore individually examined the relationship between per capita income on the one hand and each of the four capability dimensions on the other by using the cross-sectional data covering 30 observations (29 states plus all-India). Figure 7 to Figure 10 provides an individual plot of all the four capability dimensions alongside per capita real state domestic product (SDP), whereas the plot with the aggregate capability index spanning all the four dimensions is provided in Figure 11.

(Insert Figures 7 to 11 here)

Overall, a positive association with the real per capita SDP can be noticed for each of the four capability dimension. However, the correlation appears to be the highest for the living conditions and livelihood security dimensions, followed by the educational dimension. The dimension of longevity and health revealed the lowest correlation with the real per capita SDP, so that the fitted trend turns much flatter instead of yielding a positively sloped line. Our results

are consistent with the findings of Gross et al [2005], which earlier maintained human development indicators such as education and health are generally positively related to growth but often less strongly than income poverty. Our analyses therefore suggests that while the growth process has brought about some improvements in the livelihood and living conditions, initiating developments in health and educational capabilities would most likely require pro-poor public expenditures.

6. Summary and Policy Relevance:

A growth process that is not pro-poor and non-inclusive of the marginalized groups can disrupt the social progress of any country. We utilize the capability approach to examine the pro-poorness of Indian economic growth, which evaluated the growth performances across states according to their impact on people's capabilities and well-being. As a concept, human capability is mostly evaluated by using the measure of human development index (HDI), which accounts only for levels of income, health and education. The main objective of this study was to utilize a statistical method to develop the human capability index by using adequate number of capability dimensions. It is well recognized that the possible domains of human capability are much wider than what can be captured by one index. While data limitations necessarily restricted our coverage of capability dimensions, the objective was to include the crucial domains for the development of capabilities and subsequently capture the quality of life. This paper provided dimensional indicators on the extent to which people are healthy, educated, have accesses to basic amenities such as drinking water and sanitation, have opportunities for livelihood security and freedom from social/minority discrimination. If we define human capabilities development as the process of *improving people's life* by enlarging their choices, then it can be said that economic growth in India did bear some connection with improvements in life quality. It appears that the Indian growth process has led to the access for livelihood and basic living conditions, but certainly did not transform into extending people's choices for living a long and healthy life and be educated.

One of the major contribution of this paper remains as the examination of the distributional impacts of economic growth process on the income as well as non-income dimensions of human capabilities. Any improvements in the non-income dimensions of capabilities are essentially significant for the very-poor not only because they suffer income

deprivation but also for enhancing their productive capabilities to earn decent livings. Economic growth, however, remains as a major potential source of government revenue to finance public expenditure, which can be designed to be explicitly pro-poor, for example through broad-based expenditure on education and health. The government therefore should identify education and health as priority areas that have the highest potential for capabilities development. Public policies may predominantly be designed towards low income groups since this can attain the highest marginal impact on the capabilities improvement.

Bibliography

- Aghion, P., R. Burgess, S. Redding and F. Zilibotti [2008]: The Unequal Effects of Liberalization: Evidence from Dismantling the License Raj in India, *American Economic Review*, 98(4), pp. 1397-1412.
- Ahluwalia, M. [2000]: Economic Performance of States in the Post Reforms Period, *Economic & Political Weekly*, 35(19), 6 May.
- Alkire, Sabina [2002a]: Dimensions of Human development. *World Development*, 30 (2), pp 181-205.
- Alkire, Sabina [2002b] *Valuing Freedoms: Sen's Capability Approach and Poverty Reduction*, Oxford University Press: New York.
- Alkire, Sabina [2007]: *Choosing Dimensions: The Capability Approach and Multidimensional Poverty*, Chronic Poverty Research Centre (CPRC) Working Paper No. 88, University of Manchester, United Kingdom.
- Amin, M. and A. Mattoo [2008]: Human Capital and the Changing Structure of the Indian Economy, *Policy Research Working Paper No. 4576*, World Bank: Washington DC.
- Anand, S. and M. Ravallion [1993]: Human Development in Poor Countries: On the Role of Private Incomes and Public Services. *Journal of Economic Perspectives* 7 (1), pp. 133–150.
- Bhide, S. and R. Shand [2000]: Inequalities in Income Growth in India before and after Reforms, *South Asian Economic Journal*, 1(1).
- Boozer, M., G. Ranis, F. Stewart and T. Suri [2003]: *Paths to Success: The Relationship between Human Development and Economic Growth*, Discussion Paper No. 874, Economic Growth Center, Yale University: New Haven, Available in <http://ssrn.com/abstract=487469>.
- Bourguignon, F. [2003]: The Growth Elasticity of Poverty Reduction: Explaining Heterogeneity across Countries and Time Periods, in T. Eicher and S. Turnovsky [Edt.]: *Inequality and Growth. Theory and Policy Implications*, MIT Press: Cambridge, 2003.
- Deininger, K. and L. Squire [1997]: Economic Growth and income Inequality: Reexamining the Links, *Finance and Development*, pp. 38-41, March, 1997.
- Dholakia, R [2003]: Regional Disparity in Economic and Human Development in India, *Economic and Political Weekly*, 38 (39), 27 September.
- Dollar, D., T. Kleinberg and Aart Kraay [2013]: Growth Still is good for the Poor, Policy Research Working Paper No. 6568, World Bank: Washington D.C.
- Dollar, D. and Aart Kraay [2002]: Growth is good for the Poor, *Journal of Economic Growth*, Vol. 7, pp. 195-225.
- Dreze, Jean and Amartya Sen [2013]: *An Uncertain Glory: India and Its Contradictions*, Allen Lane: London.

- Easterly, W. [1990]: Life during Growth: International Evidence on Quality of Life and Per Capita Income, Policy Research Working Paper No. 2110, World Bank: Washington D.C.
- Fields, Gary [1989]: Changes in Poverty and Inequality in Developing Countries, *The World Bank Research Observer*, 4(2), pp. 167-182.
- Fosu, A. K. [2009]: Growth, Inequality and Poverty Reduction in Developing Countries, Recent Global Evidence, Background Paper for the Global Development Outlook 2010, *Shifting Wealth: Implications for Development*, OECD: Paris.
- Fukuda-Parr, Sakiko [2003]: The Human Development Paradigm: Operationalizing Sen's Ideas on Capabilities, *Feminist Economics*, 9 (2/3), pp. 301-317.
- Government of India [2011]: *India, Human Development Report, 2011*, Institute of Applied Manpower Research, Planning Commission, Oxford University Press: Delhi.
- Government of India [2013]: *12th Five Year Plan, 2012-17: Faster, Sustainable and More Inclusive Growth, Volume 1*, Sage Publications for Planning Commission, Government of India: New Delhi.
- Government of India [2014]: *Economic Survey, 2013-14*, Ministry of Finance, New Delhi.
- Kochhar, K., U. Kumar, R. Rajan, A. Subramanian and I. Tokatlidis [2006]: India's Pattern of Development: What Happened, What Follows, *Journal of Monetary Economics*, Vol. 53, pp. 981-1019.
- Kumar, U. and A. Subramanian [2012]: Growth in India's States in the First Decade of the Twenty First Century: Four Facts., *Economic and Political Weekly*, 47 (3), 21 January.
- Nussbaum, Martha [2000]: *Women and Human Development: The Capabilities Approach*, Cambridge University Press: Cambridge.
- Nussbaum, Martha [2003]: Capabilities as Fundamental Entitlements: Sen and Social Justice, *Feminist Economics*, 9 (2/3), pp. 33-59.
- Panagariya, A. [2008]: *India: The Emerging Giant*, Oxford University Press: New York.
- Ranis, G. [2004]: *Human Development and Economic Growth*, Discussion Paper No. 887, Economic Growth Center, Yale University: New Haven, Available in: <http://ssrn.com/abstract=551662>
- Ranis, G. and F. Stewart [2004]: *Dynamic links between the Economy and Human Development*, United Nations Department of Economic and Social Affairs (UN-DESA) Working Paper No. 8, UN: New York, Available in <http://www.un.org/esa/desa/papers>.
- Ranis, G. and F. Stewart [2006]: *Successful Transition towards a Virtuous Cycle of Human Development and Economic Growth: Country Studies*, Discussion Paper No. 943, Economic Growth Center, Yale University: New Haven, Available in: <http://ssrn.com/abstract=920603>.
- Ranis, G., F. Stewart and A. Ramirez [2000]: Economic Growth and Human Development, *World Development*, 28(2), pp. 197-219.

Ranis, G., F. Stewart and E. Samman [2007]: Country Patterns of Behavior on Broader Dimensions of Human Development, Discussion Paper No. 958, Economic Growth Center, Yale University: New Haven, Available in: <http://ssrn.com/abstract=1030028>.

Ravallion, M. [1997]: Good and Bad Growth: The Human Development Reports, *World Development*, 25 (5), pp 631 -638.

Ravallion [2005]: Inequality is Bad for the Poor, Policy Research Working Paper No. 6568, World Bank: Washington D.C.

Ravallion, M. and S. Chen [1997]: What Can New Survey Data Tell Us about Recent Changes in Distribution and Poverty? *World Bank Economic Review*, 11(2), pp. 357-82.

Rodrik, D [2007]: *One Economics, Many Recipes*, Princeton University Press: New Jersey.

Rodrik, D. and A. Subramanian [2005]: From Hindu Growth to Productivity Surge: The Mystery of the Indian Growth Transition, *IMF Staff Papers*, 52(2), pp. 193-228.

Sen, Amartya [1989]: Development as Capabilities Expansion, *Journal of Development Planning*, Vol. 19, pp. 41–58.

Sen, Amartya [1993]: Capability and Well-being, in M. Nussbaum and A. Sen [Edt]: *The Quality of Life*, Clarendon Press: Oxford.

Sen, Amartya [1999]: *Development as Freedom*, Anchor Books: New York.

Sen, Amartya [2002]: Response to Commentaries, *Studies in Comparative International Development*, 37 (2), pp.78-86.

Stewart, F. [1985]: *Planning to Meet Basic Needs*, Macmillan: London.

Streeten, P., S.J. Burki, M. Haq, N. Hicks and F. Stewart [1981]: *First Things First, Meeting Basic Human Needs in Developing Countries*, Oxford University Press: New York.

United Nations [2014]: The Millennium Development Goals Report, 2014, UN: New York.

Table 1: Indicators and Variables of Human Capability.

Indicator / Variable	Data Base
<i>Indicator 1: Life, Longevity and Health</i>	
1.1 Infant Mortality Rate	SRS (2012): 2011
1.2 Percentage of Undernourished Children	NFHS-3 (2005-06): 2005-06
1.3 Nutritional Status of Women	NFHS (2005-06): 2005-06
1.4 Nutritional Status of Men	NFHS (2005-06): 2005-06
<i>Indicator 2: Education</i>	
2.1 Literacy Rate	Census 2011: 2011
2.2 School Attendance Rate	NSS-66 th (2009-10): 2009-10
2.3 High School (Class X) Drop Out Rate	SSE (2010-11): 2010
2.4 Children at Work	NFHS (2005-06): 2005-06
<i>Indicator 3: Living Conditions</i>	
3.1 % of households living in House with Concrete Roof & Wall	Census Housing Tables (2011): 2011
3.2 % of households having access to Drinking Water	Census Housing Tables (2011): 2011
3.3 % of households having access to Toilet Facility	Census Housing Tables (2011): 2011
3.4 % of households having Electricity Connection	Census Housing Tables (2011): 2011
<i>Indicator 4: Livelihood Security</i>	
4.1 Percentage of Population living below Poverty Line	Planning Commission, 2009-10
4.2 Proportion of Socially Disadvantaged (SC-ST-OBC) Population	NSS-66 th (2009-10): 2009-10
4.3 Unemployment Rate (Current Daily Status)	NSS-68 th (2011-12): 2011-12
4.4 Monthly Per Capita Expenditure	NSS-68 th (2011-12): 2011-12

Figure 1: Human Capability Dimension:
Longevity & Health

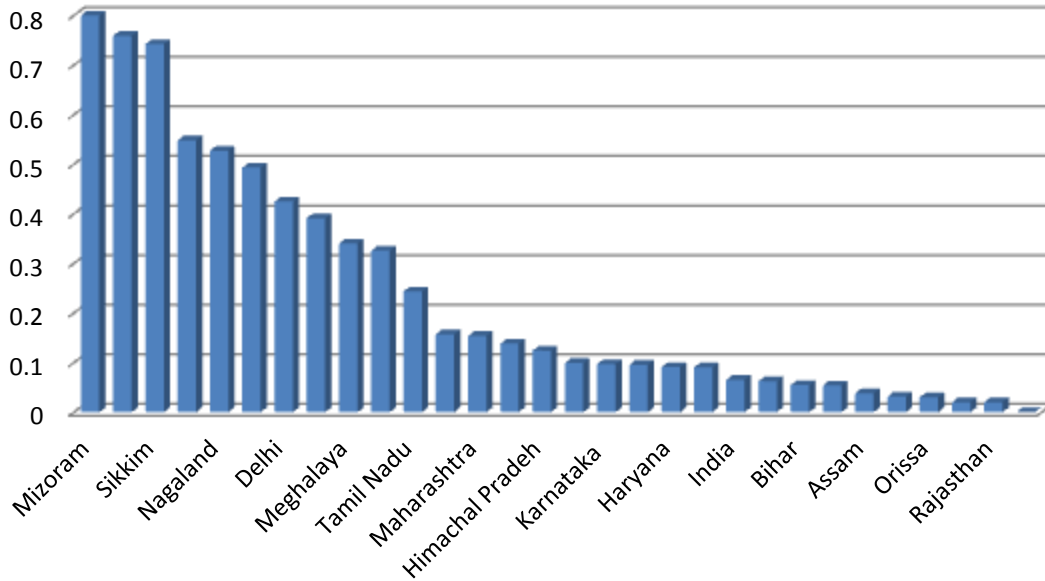


Figure 2: Human Capability Dimension:
Education

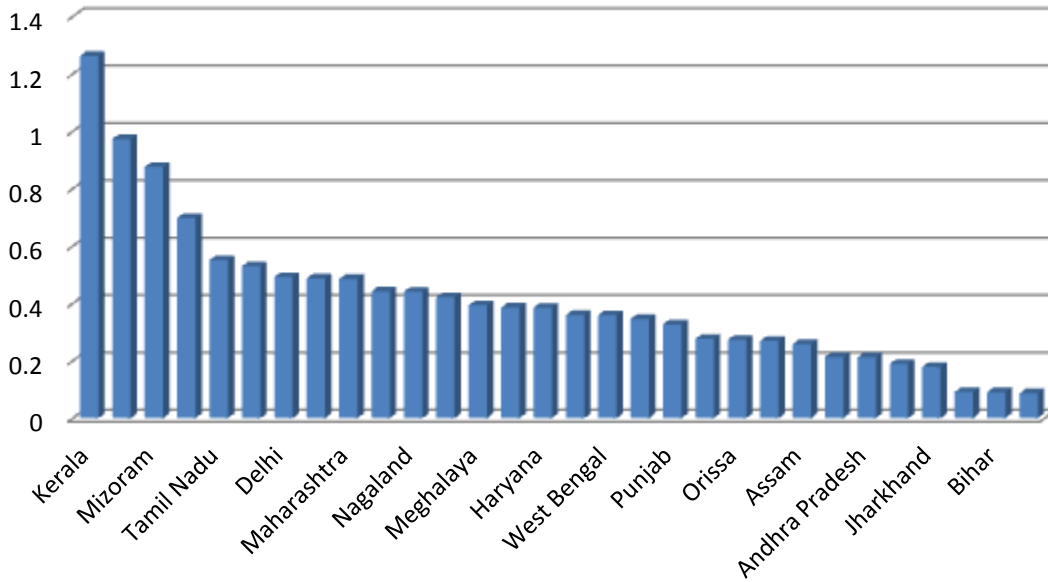


Figure 3: Human Capability Dimension:
Living Conditions

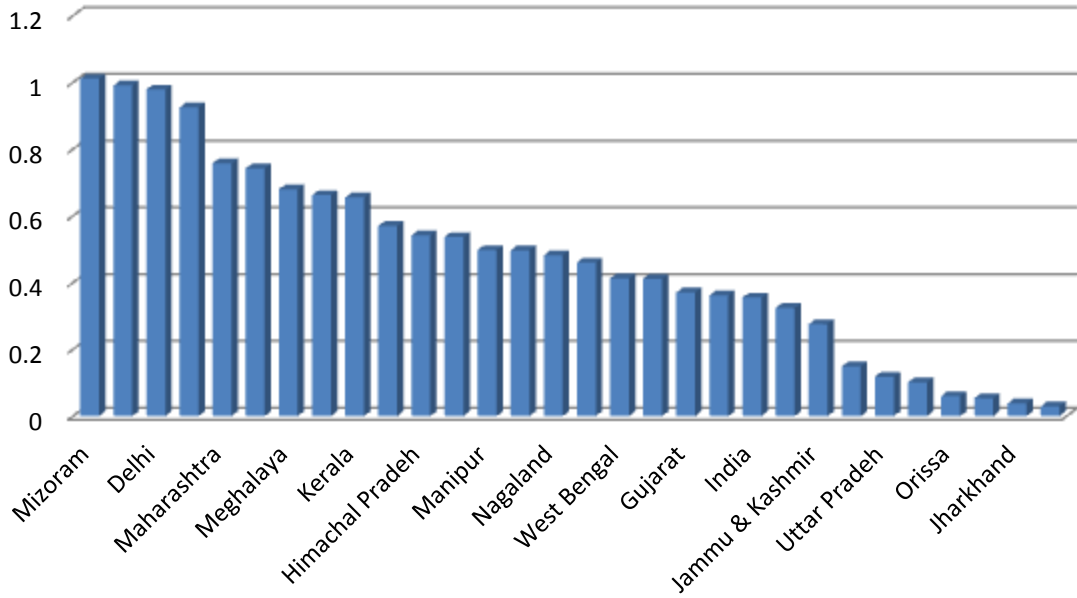


Figure 4: Human Capability Dimension:
Livelihood Security

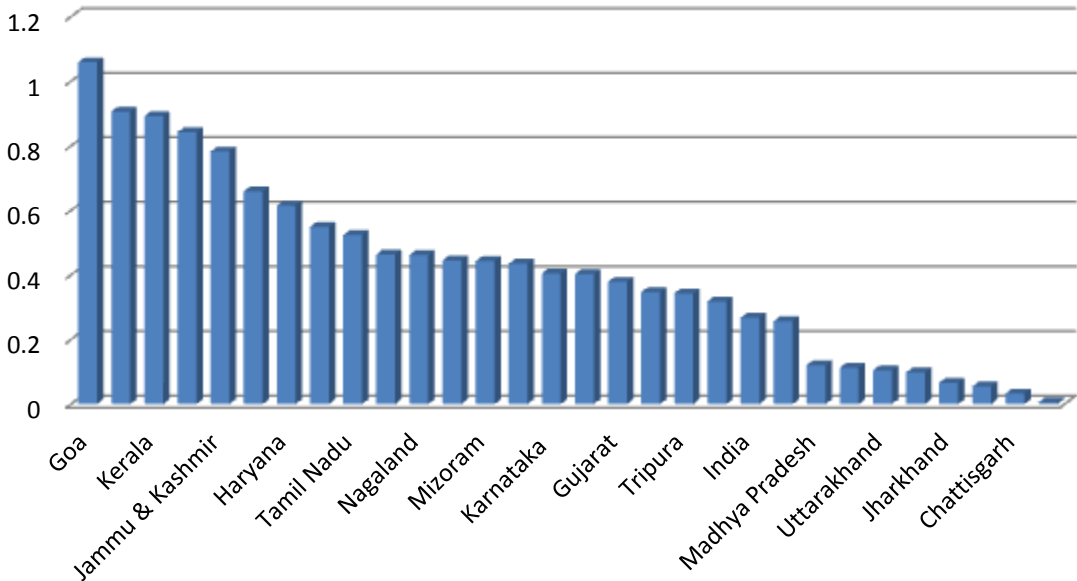


Figure 5: Aggregate Indicators of Human Capability

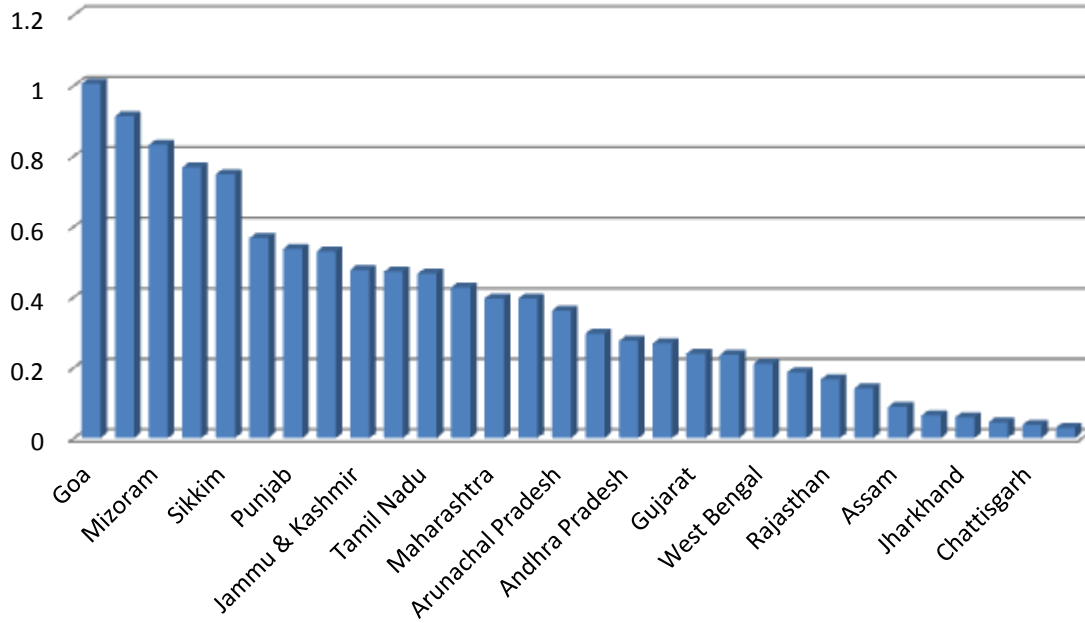


Figure 6: Capabilty Indicator of States in 4 Domains.

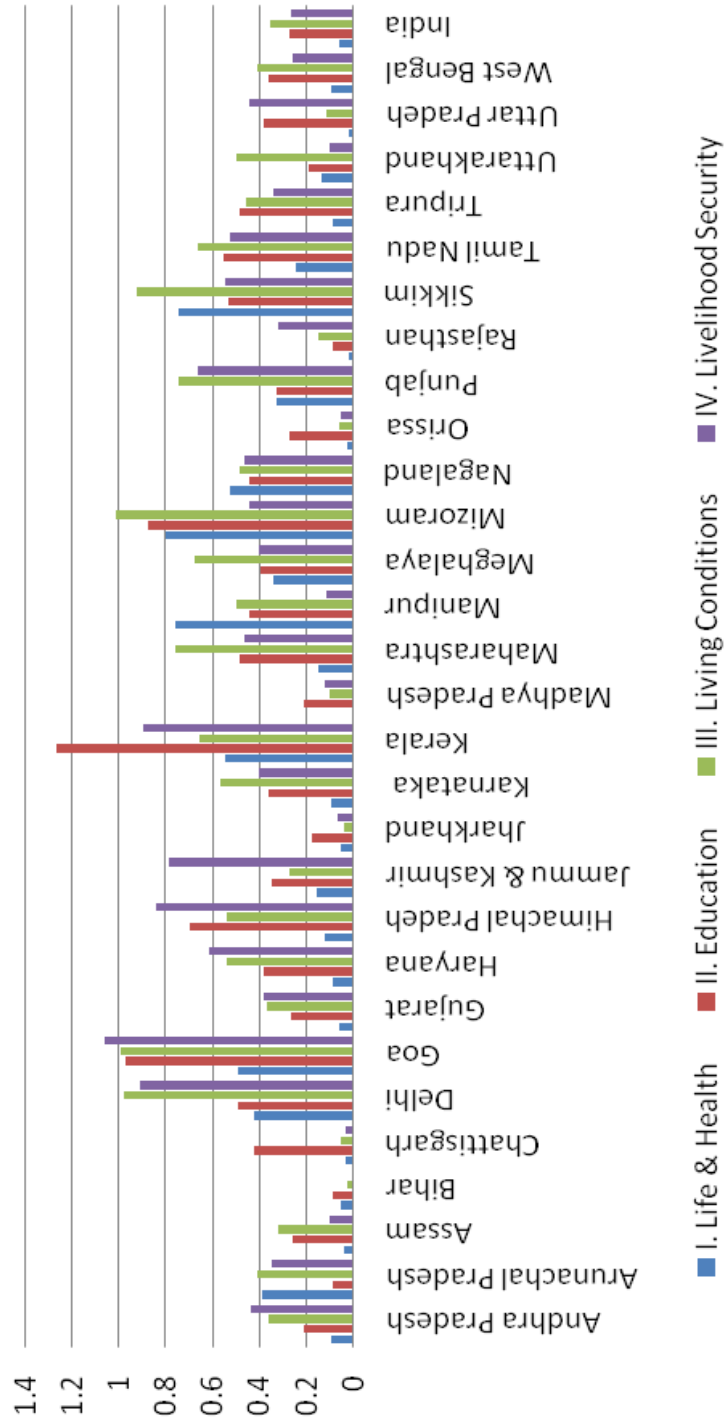


Figure 7: Per Capita SDP & Capability in Health across Indian States

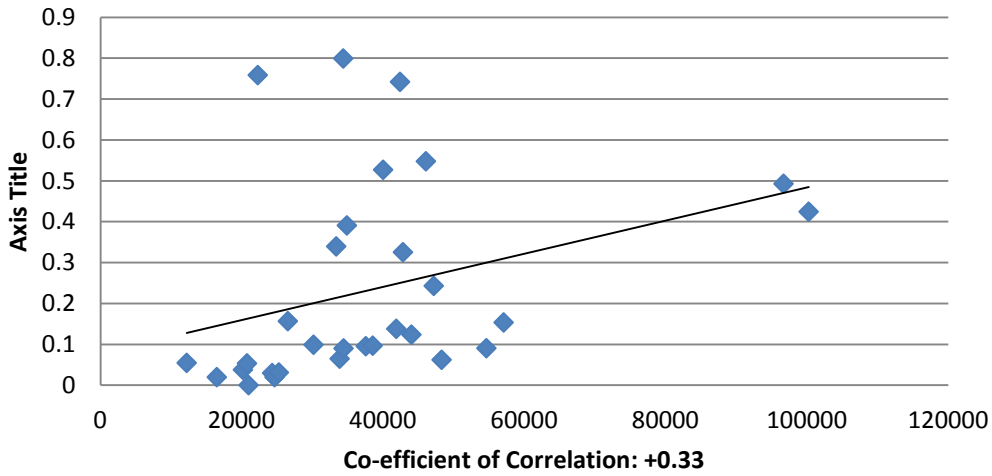


Figure 8: Per Capita SDP & Capability in Education across Indian States

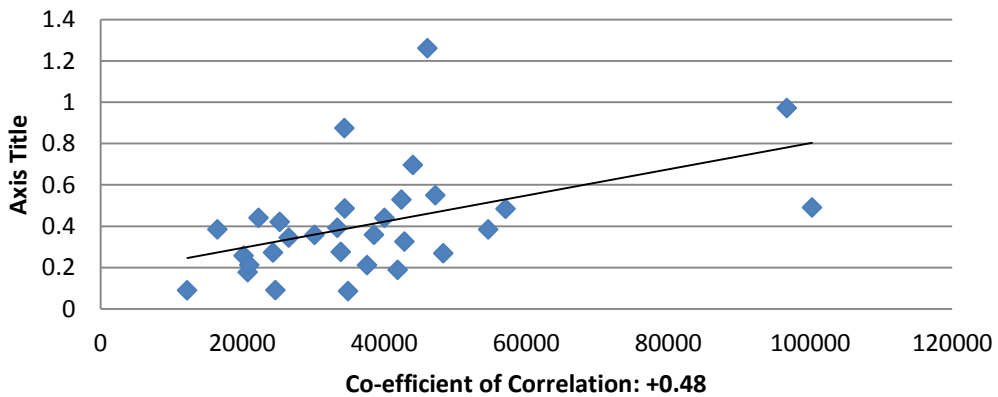


Figure 9: Per Capita GDP & Living Conditions across Indian States

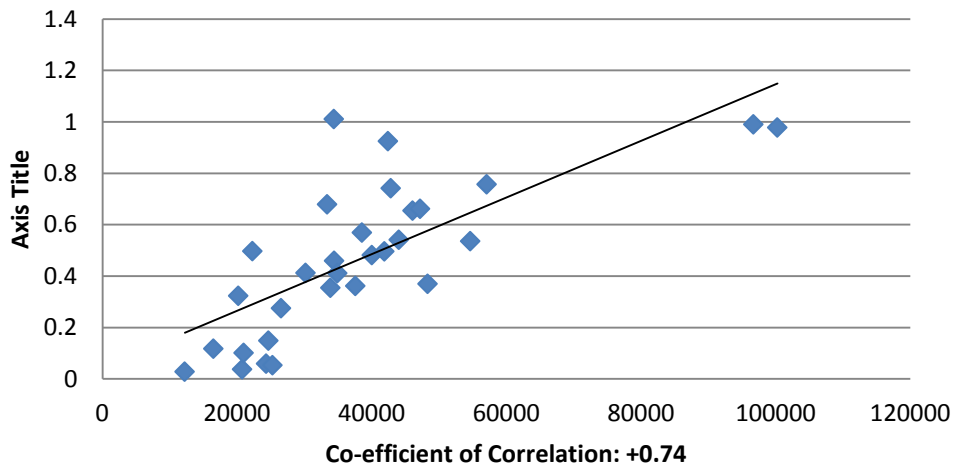


Figure 10: Per Capita GDP & Livelihood Security across States

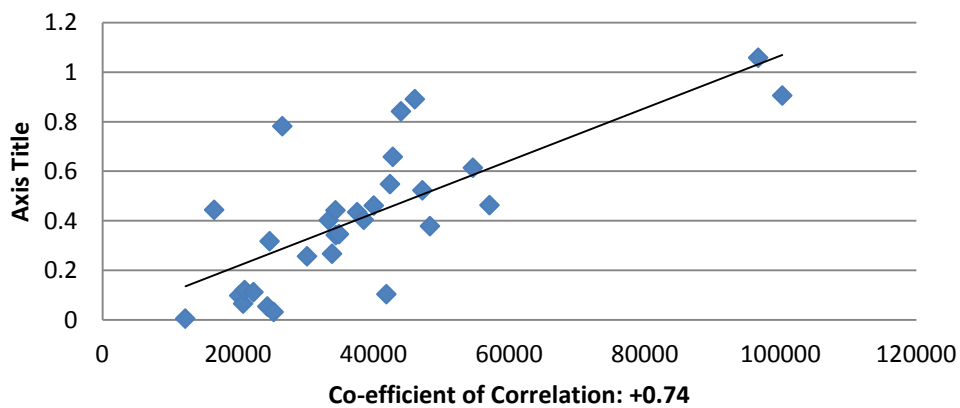


Figure 11: Per Capita GDP and Aggregate Index of Human Capability

