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Productivity Differentials in Registered Manufacturing Sector of Uttar Pradesh: A Disaggregative Analysis

Rachna Mujoo*

ABSTRACT

Uttar Pradesh is considered to be one of the most backward states in terms of socio-economic development. Barring the sixth five year plan, its growth never exceeded the national average. Being a poor state, productivity improvement in its registered manufacturing sector (RMS) is essential to put it on a higher growth trajectory. Several factors, such as, infrastructure inefficiencies, skill bottlenecks and poor governance have exacerbated its poor growth story. The present paper aims to throw light on the productivity performance in the RMS of the state and its fifteen two digit industry groups. The lackluster performance of the state manufacturing can be ascribed to its sluggish productivity growth during the study period from 1993-94 to 2013-14. However, some improvement in productivity, value added and employment growth has been witnessed during 2003-04 to 2013-14. Capital deepening has been the major contributor to growth in manufacturing. Excess capacity may be one of the reasons for subdued productivity performance. A capital saving productivity growth is essential if the state manufacturing is to attract excess labour from the agriculture sector and is to become the vehicle of overall development of the state economy.

Keywords

Productivity, TFP, Reforms, Capacity Underutilisation, Capital Deepening

Introduction

Economists have always endeavoured to identify the factors responsible for the growth of a nation right from the classical economists, who however, considered technical change as only a temporary disturbance in equilibrium and laid greater emphasis on augmenting the supply of conventional inputs for an accelerated growth. Led by the pioneering work

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of Schumpeter (1934), studies for the developed world have identified productivity improvement as the most crucial factor contributing to the economic growth of a Nation. Within neoclassical framework technical change was considered to be an exogenous variable occurring over the years without any policy effort. In the modern growth theory, technical change is considered to be an endogenous variable embodied in latest vintage of capital or in improvements made on human capital.[1]

The Schumpeterian thought influenced the literature on technical change so much that continuous, incremental improvements (in terms of minor improvements and changes in process of technology) have been mostly ignored. These types of changes, inclusive of assimilation and adaptation of foreign technology and improvements in it, besides generating new technology are very important in the context of developing economies. Japan, a newly industrialized country and recently China are examples of 'learning by doing'; by copying and improving upon the technology of the US and other developed western countries. Thus in its broader perspective, productivity growth "covers everything from major innovations in products or processes to the adoption of new techniques innovated elsewhere and the improvement of existing techniques or products, to the raising of productivity of given techniques, by better management, organisation and 'learning by doing'."[2] In short, in its broader perspective productivity growth incorporates both the technical efficiency and technical change aspects.

The Indian Context

There has been a considerable proliferation of productivity studies in case of India with differing time periods, methodologies and findings. These studies have been succinctly reviewed in Trivedi *et al.,* (2011) and Goldar *et al.,* (2014). Goldar *et al.,* (2014) have broadly divided all studies chronologically into three groups:

- Those covering the time period from 1951 to 1979 showing slow or negative productivity growth.
- Those covering the decade of 80s also called the 'enigmatic decade' by Sindhu and Balasubramanayam (2006). During this period productivity growth witnessed acceleration due to liberalization of industrial licensing policy and imports of mainly capital equipment and intermediates matched by demand augmenting policies, leading to increased capacity utilization (Ahluwalia, 1991: Sindhu and Balasubramanayam, 2006).
- Those concentrating on post-reform period (1991 onwards) with their main emphasis being to evaluate the impact of industry and trade policy reforms on industrial productivity growth. The productivity growth in post-reform period did not show any significant improvement in relation to the 80s due to low agricultural growth and gestation lag in investment projects leading to capacity under utilisation (Goldar and Kumari, 2003). Post 2000s, however, has witnessed a productivity resurgence (see Gupta, 2008; Trivedi *et al*., 2011; Goldar *et al*., 2014).

A number of studies have also been undertaken to analyse the performance and productivity growth for different states in India. These studies have been reviewed in detail in Trivedi

et al., (2011) and Babu and Natarajan (2013). The conclusions mainly point out that state level infrastructure availability, institutional arrangements and investment climate seem to be major determinants of productivity differentials across the states. Analysing the importance of infrastructure on productivity growth, Mitra *et al*., (2002) in their study concluded that an increased public investment on infrastructure development may lead to a convergence in productivity differentials across states. In their study Veeramani and Goldar (2004), find Uttar Pradesh holding the lowest rank in terms of investment climate (comprising labour regulation, access to finance, land reforms, infrastructure availability and efficiency) and Maharashtra being at the top. They conclude that a positive association exists between investment climate and TFPG, i.e., states with better investment climate are also better performers in terms of productivity.

However, recent studies by Trivedi *et al.,* (2011)., Singh (2012) and Babu and Natarajan (2013) covering collectively a period between 1980 and 2008 have found positive productivity index in most of the states during the selected time period, although the growth in 80s has been more than that of 90s with some revival after the year 2000. For example, Trivedi *et al.,* in their study find the average TFPG in Uttar Pradesh which was 0.23 per cent and 0.40 per cent between 1990-95 and 1995-2000 went up to 2.37 per cent during 2000-2004. Babu and Natrajan find an increase in the Malmquist index in Uttar Pradesh from 0.977 during 1990-91 to 2000-01 to 1.044 during 2001-02 to 2007-08. The state-wise results are more or less in conformity with the national level productivity estimates painting a rosy picture for post 2000 years.

Micro level studies incorporating productivity analysis of a single state are not ubiquitous. Only one detailed study in case of Uttar Pradesh is available (by Mujoo, 2001), but the selected time period is very old – 1974-75 to 1985-86. On basis of all the three TFP indices, namely, Kendrick, Solow and Translog, significant acceleration of TFP growth in Uttar Pradesh manufacturing sector was witnessed during the sub-period from 1980-81 to 1985-86.

Uttar Pradesh is still characterised as one among the BIMARU states with its socio-economic development being low.[3] Employment mainly comes from agriculture and the state is beset with large intra-regional and inter-regional disparities in levels of industrial development. One crucial reason, *inter-alia* may be differentials in productivity across the four economic regions. As agriculture is already overburdened and capital is scarce, manufacturing growth propelled by capital saving productivity improvements are *sine-qua-non* for a speedier development of the state. As mentioned above, there is a dearth of in-depth productivity studies on Uttar Pradesh manufacturing. One work that has been carried out pertains to very old period of time and has not been able to capture the impact of reforms on productivity in the registered manufacturing sector (RMS) of the state. To bridge this gap, the present study is being undertaken with the objective of analysing the level of productivity and its growth in the RMS of Uttar Pradesh and its fifteen two digit industry groups during the period of 1993-94 to 2013-14 (i.e. the latest year for which data is available). The main questions addressed are: (i) to what extent productivity growth has contributed to the development of RMS in the State? (ii) whether productivity growth has

resulted in accelerated growth of individual industry groups? Which industries are the leaders and which are proving to be the laggards and what are identifiable factors behind this? (iii) whether this growth has led to improvements in technical efficiency or technical change or both and by how much? and (iv) whether there has been an improvement in productivity growth post 2000s in the state RMS as has been indicated by the studies at the national level.

Policy

Structural growth theorists have always emphasised the pivotal role of manufacturing in transformation of an economy not only due to its strong backward and forward linkages but also its capacity of absorbing surplus labour force from agriculture. Since the second five-year plan India has embarked on the path of economic development *via* rapid industrialisation, especially development of heavy and capital-intensive industries. Prior to 1980s, Indian industry was operating in a highly protected environment with the aim of broadening its industrial base.[4] However, this policy orientation resulted in diminished internal and external competitiveness leading to low output and productivity growth in the manufacturing sector. Significant liberalisation in licensing and that of input imports during the 80s and sweeping changes in industrial, trade and financial policies in the 90s opened the economy to both domestic and international competition, which was expected to provide fillip to productivity growth.

Renewed interest of the policy makers in manufacturing led growth can be seen in terms of recent National Manufacturing policy, 2011 and Make in India initiative, 2014. Under Make in India initiative, major objective is to focus on job creation and skill enhancement.[5] Experiences of the emerging economies and the recent academic work have brought out the importance of the manufacturing and services as transformational sectors due to these sectors possessing some critical prerequisites, such as, high productivity and rapid growth in productivity, so as to aid in national and international convergence.[6] This will help in reducing the poverty and unemployment differentials within and among nations and thereby, creating increased social welfare worldwide.[7]

Industrial policy of Uttar Pradesh has followed broader national objectives. In its Industrial policy of 1993, the aim was to bring about economic development, balanced regional growth, employment and increases in per capita incomes *via* industrialisation. The 1998 industrial policy of the State called for revitalizing the existing investments and attracting new ones, especially in the private sector by creating a facilitating environment. Infrastructure development through private partnership was the major plank in the Industrial and Services Sectors of Industrial Policy of Uttar Pradesh (2004). In recent years, due to international and internal competition, the government of Uttar Pradesh has put forward its new Infrastructure and Industrial Investment policy (IIIP), 2012 with an objective of attaining an industrial growth of 11.2 percent per annum. The State is to be developed as the most preferred destination for investment through rapid industrial development, creation of a conducive business environment and development of high-end infrastructure facilities in order to create new employment opportunities.

Data and Methodology

The Uttar Pradesh RMS data is available from Annual Survey of Industries published regularly since 1967 by Economics and Statistics Division of the State Planning Institute. For the present study the data for 1993-94 to 2013-14 (21 years) was taken from the website www.uttarpradeshstat.com. As this data is available on basis of different National Industrial Classifications (NICs), for uniformity in the time series data concordance had to be worked out. In the present study concordance has been worked out at three-digit level. First, NIC 1987 was adjusted as per NIC 1998 and then NIC 1998 was adjusted as per NIC 2004. There were many changes in NIC 2008 as compared to NIC 2004, especially at four digit and five digit levels. To overcome this problem, we have adjusted NIC 2008 as per NIC 2004. Thus the entire data set for 21 years has been arranged as per NIC 2004. Thereafter, three digit industries have been aggregated at a two-digit level for final analysis (see appendix 1).

Data on wholesale price indices of manufacturing sector and different industry groups has been taken from various statistical abstracts published by the government of Uttar Pradesh. Consumer price index of industrial workers (CPIIW) of Kanpur was procured from the Statistical Abstracts and official website of the Labour Bureau. The measurement of different variables used in the study is explained as follows:

- **Output:** As far as output is concerned, a choice arises between gross output and value added. In the present study gross value added (GVA) at constant prices has been taken as a measure of output. A large number of studies on Indian manufacturing have used this measure. Some of these are (Goldar, 1986: Ahluwalia, 1991; Balakrishnan and Pushpagandan, 1994; Veeramani & Goldar, 2003: Kumar, 2004; Goldar; 2014). To arrive at GVA at constant prices, the yearly value added figures at current prices are deflated by the wholesale price index of relevant commodities. Although double deflation would have been preferable, but the choice of an appropriate price index for materials considering its severe heterogeneity is very difficult. Lack of availability of appropriate price data and input-output tables exacerbates the problem at the state level making double deflation a difficult task (Babu and Natarajan, 2013).
- **Labour:** As in case of many studies on Indian manufacturing, the present study also takes total persons engaged as a measure of labour input. In some issues of ASI it is given as total persons employed. The selected measure of labour input has not been corrected for quality changes (due to age, sex, education, etc.) due to paucity of such data at the state level.

  Data on total emoluments have been taken as remuneration to employees. In recent years it has been given as wages and salaries including employers' contribution. This is inclusive of wages and salaries and imputed value of benefits in kind, old age benefits, social security and other benefits. These have been deflated by consumer price index number of the industrial workers in Kanpur.[8]
- **Capital:** The measurement of capital is the most contentious issue in the economic theory. According to Bliss (1975), 'when economists reach agreement on the theory of capital they will shortly reach agreement on everything else'. Practically a number

of methodologies have been put forward for measuring capital, the most commonly used is the Perpetual Inventory Method (PIM) put forward by Goldsmith in 1951. This requires a two-step procedure, (i) estimates of capital stock for bench mark year at constant prices and (ii) gross investment series at constant prices for the subsequent years. In the present study gross fixed capital stock at constant prices has been taken as a measure of capital stock. PIM has been followed to arrive at this measure.

The figures of fixed capital stock available in ASI are depreciated book value of assets including capital goods of different vintages purchased at different prices. The bench mark year of this study is 1993-94. For arriving at the replacement value of fixed assets of the registered manufacturing at the state level in 1993-94, double the book value of fixed assets have been taken following the studies of Banerji (1975), Roychoudhary(1977), Goldar (1986), Balkrishnan and Pushpangandan (1994), Sharma & Upadhyay (2008). Further, the replacement value of fixed assets for two digit Industries is derived through proportionality rule. Under this, the bench mark capital stock estimated was distributed in proportion to the fixed capital stock of these industries to total manufacturing as reported in the ASI (Goldar and Kumari, 2003; Trivedi *et al*., 2011).

Once the bench mark capital stock is arrived at for total manufacturing sector and fifteen two digit industry groups, the gross investment series at constant prices is found out. For this, from the book value figures of 1993-94 to 2013-14, the net investment figures are obtained by subtracting previous year's capital stock figures from present year's figures. The depreciation figures of the corresponding year are added to these to arrive at gross investment at purchase prices. This series is then deflated by price index of Machinery and Transport Equipment of the relevant years (base 1993-94), to get estimates of gross investment at constant prices. The series of gross fixed capital stock for the period 1993-94 to 2013-14 was derived by cumulatively adding to the bench mark capital stock, the gross additions at 1993-94 prices for the subsequent years.

Methodology for Productivity Measurement

In the present study, an investigation into total factor productivity growth (TFPG) of the total manufacturing sector and its fifteen two digit industry groups in the State of Uttar Pradesh is being carried out for a period of 1993-94 to 2013-14 (21 years of the post-reform period) by using Translog Index and Malmquist index of TFP measurement.

- **Partial Productivity Indices:** Partial productivity indices of labour and capital have also been estimated in the study. Partial productivity simply measures the average product of inputs and is an indicator of efficiency in their use, resulting from various economic forces interacting simultaneously. These are computed as follows:

  $$PpL = Q/L; \quad PpK = Q/K$$

  Where PpL and PpK are partial productivities labour and capital, respectively; Q is GVA at constant prices and L is labour and K fixed capital stock at constant prices. Capital intensity (K/L) also has been estimated to get an idea of capital deepening overtime and its relationship with the two partial productivity ratios.

In recent literature a number of new methodologies have been used to find out the TFP index. These approaches can be both parametric and non-parametric, [9] with the following broad categorisation: (i) Growth accounting /index number approach; (ii) Econometric approach; and (iii) Frontier models approach.[10] As already indicated, present study uses both Divisia-translog and non-parametric Malmquist index to find TFP, falling into first and third categories, respectively. Growth accounting approach has been used more frequently, but in recent years frontier models approach which analyses how far the decision making unit is from the best practice frontier, is gaining prominence.

- **Divisia-Translog Index:** Using Divisia-Translog approach, the TFPG can be obtained as successive logarithms of output less a weighted average of the differences between successive logarithms of capital and labour inputs, with weights being average value shares. This function is characterised by constant returns to scale and variable elasticity of substitution. Besides, it does not require the assumption of Hicks neutrality. Thus

  $\Delta \ln TFP_{(t)} = \Delta \ln Q - [\{(w_{L(t)} + w_{L(t+1)})/2\} \Delta \ln L + \{(r_{K(t)} + r_{K(t+1)})/2\} \Delta \ln K]$

  Where $\Delta \ln TFP_{(t)}$ is total factor productivity growth (TFPG); Q is GVA; w_L is share of labour and r_K is share of capital in value added. Under constant returns to scale $w_L + r_K = 1$

  $\Delta \ln Q = \ln Q_{(t)} - \ln Q_{(t-1)}$; $\Delta \ln L = \ln L_{(t)} - \ln L_{(t-1)}$; $\Delta \ln K = \ln K_{(t)} - \ln K_{(t-1)}$

  From TFPG series thus obtained, TFP index (A) can be formed by using the following procedure. Taking base year's (1993-94 in the present case) value as 100, indices for remaining years can be worked out by using the following formula:

  $A_t / A_{t-1} = \exp(\Delta \ln TFP_{(t)})$

  For the entire period (1993-94 to 20013-14); sub-period I (1993-94-2002-03) and sub-period II (2003-04 to 2013-14), trend growth rates of various selected variables, partial productivity indices and translog index is estimated using the following semi-logarithmic trend equation

  $\log Y = a + bt + \mu$

  Where, Y is the concerned variable or index; and b is the coefficient of time.

- **Malmquist Productivity Index:** Non-parametric data envelopment analysis program (DEAP) version 2.1 by Coelli has been used for measurement of Malmquist productivity index (MPI) in the present paper. The MPI, named after Sten Malmquist (1953) and introduced by Caves *et al.,* (1982), is defined as a ratio of distance functions. It is an index representing TFPG of a firm or production unit, in that it reflects progress in efficiency along with progress of the frontier technology over the years under the multiple inputs and multiple outputs framework. It does not require information on factor prices for aggregation of inputs and outputs, thereby avoiding factor price distortions. Being based on non-parametric method, exact specification for the underlying production function is also not required.[11]

Fare *et al.,* (1994) proposed that output-oriented MPI between time periods t and (t+1) can be defined as:

$$M_o(x^{t+1}, y^{t+1}, x^t, y^t) = \left[\frac{D^t(x^{t+1}, y^{t+1})}{D^t(x^t, y^t)} \times \frac{D^{t+1}(x^{t+1}, y^{t+1})}{D^{t+1}(x^t, y^t)}\right]^{1/2}$$

Where 'D' represents the distance function and the value of M_o is output-based Malmquist productivity index. x and y represent input and output, respectively. The first ratio represents the period t Malmquist index. It measures productivity change from period t to period (t+1) using period t technology as a benchmark. The second ratio is the period (t+1) Malmquist index and measures productivity change from period t to period (t+1) using period (t+1) technology as a benchmark. MPI can further be decomposed into two components- efficiency change and technical change:

$$M_o(x^{t+1}y^{t+1}, x^t, y^t) = \underbrace{\frac{D^{t+1}(x^{t+1}, y^{t+1})}{D^t(x^t, y^t)}}_{Efficiency\ change} \underbrace{\left[\frac{D^t(x^{t+1}, y^{t+1})}{D^{t+1}(x^{t+1}, y^{t+1})} \times \frac{D^t(x^t, y^t)}{D^{t+1}(x^t, y^t)}\right]^{1/2}}_{Technical\ change}$$

In above equation the term efficiency change is a ratio of two distance functions, which measures the change in the output-based measure of the technical efficiency between period t and t+1, (the change in how far observed production is from maximum potential production through, say, by learning by doing, improved organisation methods, etc.). The geometric mean of two ratios within brackets is a measure of the technical change in the production technology through innovation. It is an indicator of the distance covered by the efficient frontier from one period to another and thus is a measure of technological improvements between the periods. The efficiency change is greater than, equal to or less than one if the producer is moving closer to, unchanging or diverging from the production frontier, respectively. The square root term is greater than, equal to or less than one when the technological best practice is improving, unchanged or deteriorating respectively. A value of M_o greater than one denotes productivity growth, while a value less than one indicates productivity decline and M_o equal to one corresponds to stagnation. One has to understand that while the product of efficiency change and technical change must be equal to Malmquist index, these components may be moving in opposite directions. If, for example, Malmquist index is greater than unity (say, 1.25), the efficiency change component can be less than unity (e.g.,0.5) and a technical change component must be greater than unity (e.g.,2.5).[12]

Performance of RMS in Uttar Pradesh: 1993-94 to 2013-14

As already indicated the industrial sector, especially the manufacturing sector, is considered to be a transformational sector which can catapult an economy to a higher growth trajectory due to its higher productivity potential. Unfortunately, in India the share

of manufacturing has ranged between 14-17 percent in the post-reform period as against 40 percent in China and 30 percent in some East Asian economies.[13] In Uttar Pradesh the scenario is more grim with the secondary sector's share in the state income declining from 22.2 percent in 2004-05 to 18.6 in 2013-14. Further, the share of manufacturing in state income was as low as 11 percent in 2012-13 and is showing a further declining trend. The share of registered manufacturing was only 7 percent for the same year.[14]

The Uttar Pradesh economy could never really take-off as can be seen from the average annual growth of its economy as a whole and its industrial sector as shown in Table-1. Throughout the planning period the growth of the state economy has always been less than the national average barring the period of the sixth five year plan. Its industrial growth saw significant acceleration during the fifth, the sixth and the seventh five year plans peaking at 11.8 percent in the sixth plan. In her study, Mujoo (2001) has clearly established that there was significant productivity growth in the state manufacturing

Table-1: Annual Average Growth Rates During Five Year Plans

(percent)

Plans	Year	NDP (India)	NSDP (UP)	Industrial Sector (UP)	Manufacturing (UP)
1		2	3	4	5
First Plan	1951-56	3.6	2.0	1.6	2.3
Second Plan	1956-61	4.0	1.9	3.2	1.7
Third Plan	1961-66	2.2	1.6	9.2	5.7
Fourth Plan	1969-74	3.3	2.3	6.7	3.4
Fifth Plan	1974-79	5.3	5.7	7.3	9.4
Sixth Plan	1980-85	5.3	8.7	9.5	11.8
Seventh Plan	1985-90	5.8	5.7	8.8	10.9
Eighth Plan	1992-97	6.8	3.2	3.3	4.2
Ninth Plan	1997-2002	5.6	2.0	-0.9	-4.3
Tenth Plan	2002-07	7.8	5.2	10.8	6.6
Eleventh Plan	2007-12	7.7	6.9	5.4	3.4
Twelfth Plan Actual (2012-13 to 2014-15)	2012-17	6.1	4.5	2.5	5.0

Source: Government of Uttar Pradesh, Annual Plan 2015-16, p7.

sector during 1980-85. As can be seen from Table-2 both the partial productivities and translog index saw positive and significant trend growth rates during this time period, showing efficiency in utilisation of resources. Post-reform period, however, witnessed a lackluster performance with a negative growth being observed in the ninth plan, although a revival in industrial growth was seen during the fast growing period of the tenth plan (2002-07). This poor performance in the state has been ascribed to low level of human capability, weak institutions, poor infrastructure coupled with political instability and social conflict rooted in sectarian politics based on caste, class and ethnic division.[15]

Table-2: Trend Growth rates of Partial Productivities and Total Factor Productivity for RMS in Uttar Pradesh: 1974-75 to 1985-86

Year	Labour Productivity	Capital Productivity	**Translog Index**
1	2	3	4
1974-75 to 1979-80	1.666 (1.588)	1.242 (0.949)	1.293 (1.091)
1980-81- to 1985-86	16.772* (7.611)	4.725** (2.150)	9.995* (5.237)
1974-75 to 1985-86	4.101** (0.000)	-0.130 (0.158)	1.266 (1.150)

Source: Rachna Mujoo (2001), Tables-5.1 and 5.2,pps 58&60.

Note:1. Figures in parentheses are t value of estimates

2.,**-significance at 1 percent and 5 percent level respectively.*

With this backdrop, an in-depth analysis of performance of RMS in Uttar Pradesh is being carried in this section. To analyse the temporal changes in the performance of RMS as a whole and its fifteen industry groups, trend growth rates in gross value added, employment and gross capital stock have been estimated for the entire period of 21 years (1993-94 to 2013-14) and two sub-periods – 1993-94 to 2002-03 and 2003-04 to 2013-14 provided in tables 3 and 4. Post-reform period has deliberately been divided into two parts to analyse the hypothesis of improvement in manufacturing growth and productivity in 2000s, as has been witnessed at the national level as described in the above section.

Significant trend growth rates can be observed in all the three variables for the entire period. Highest trend growth rate of 7.42 percent is observed in gross fixed capital stock followed by 4.54 percent in gross value added and 1.19 in employment. Period-wise break up shows insignificant growth in both value added and employment accompanied by a significant growth in gross capital in sub-period I (1993-94 to 2002-03). A turnaround in the growth of both output and employment was seen in sub-period II (2003-04 to 2013-14).Gross value added witnessed a significant improvement with a growth of 6.90 followed by a growth of 4.00 percent in employment. High employment growth will make possible surplus labour from already overburdened agriculture to be absorbed in

highly productive manufacturing, resulting in an increase in average productivity in both the sectors. The capital stock also witnessed a significantly high growth rate although marginally less than sub-period I. It seems that the state manufacturing sector witnessed considerable modernisation and mechanisation in the post-reform period, which however, got translated into better growth in value added and employment after a lag. Almost similar results for value added and employment growth in Uttar Pradesh manufacturing have been found out by Babu and Natarajan (2013) and for Indian manufacturing by Goldar (2011) according to whom substantial improvement in employment since 2003 can be traced to labour market reforms taken up by several states.[16]

Table-3: Trend Growth Rate of Different Variables for Registered Manufacturing Sector (RMS) of Uttar Pradesh

Year	GVA at 1993-94 Prices	Employment	Gross Fixed Capital Stock at 1993-94 prices
1	2	3	4
1993-94 to 2002-03	1.017 (.373)	-4.145 (.000)	9.607 (.000)
2003-04 to 2013-14	6.899 (.001)	3.999 (.000)	8.414 (.000)
1993-94 to 2013-14	4.544 (.000)	1.193 (.029)	7.423 (.000)

Source: Annual Survey of Industries

Note: 1. Figures in parentheses are p values of the estimates.

2. Significance is taken up to 10 percent level.

Industry group-wise trend growth rates of these variables are given in Table-4. Eight industry groups are demonstrating above the state average growth rate in both output and employment for the entire period. These are beverages and tobacco products, leather and leather products; wood and wood products; coke, refined petroleum and nuclear fuel; rubber and plastic products; other non-metallic mineral products; basic metals and fabricated metal products and electrical and optical equipment. In the second sub-period nine industry groups qualify for above the state level average growth of both value added and employment. In this sub-period better growth rates in both the variables is substantiated by a high coefficient of correlation of 0.77 between the two across various industry groups. However the growth of capital has always exceeded the growth of employment in all industry groups, excepting textile and textile products in sub-period II. On the whole, RMS of the state has experienced significant capital deepening over the selected time period. The high growth rate of 6 percent in capital intensity corroborates this (appendix Table-2).

Table-4: Industry Group-wise Trend Growth Rates in Gross Value added, Employment and Gross Fixed Capital Stock in U.P.

	Industry Group	Gross Value Added			Total Employment			Gross Fixed Capital Stock		
		1993-94 to 2002-03	2003-04 to 2013-14	1993-94 to 2013-14	1993-94 to 2002-03	2003-04 to 2013-14	1993-94 to 2013-14	1993-94 to 2002-03	2003-04 to 2013-14	1993-94 to 2013-14
	1	2	3	4	5	6	7	8	9	10
1.	Food products	-1.083 (0.528)	-0.365 (0.874)	-0.088 (0.899)	-5.173 (0.000)	0.194 (0.628)	-1.554 (0.000)	8.931 (0.000)	10.431 (0.000)	9.143 (0.000)
2.	Beverages and Tobacco Products	11.039 (0.004)	3.609 (0.110)	9.371 (0.000)	1.453 (0.182)	2.669 (0.98)	2.404 (0.000)	13.250 (0.000)	10.3551 (0.000)	11.061 (0.000)
3.	Textile and Textile Products	-2.763 (0.069)	10.017 (0.000)	4.265 (0.000)	-5.103 (0.010)	6.805 (0.000)	2.791 (0.002)	6.082 (0.009)	4.165 (0.000)	4.548 (0.000)
4.	Leather and Leather products (including fur Products)	3.608 (0.422)	9.900 (0.000)	8.846 (0.000)	4.775 (0.030)	5.559 (0.000)	8.039 (0.000)	9.393 (0.000)	10.096 (0.000)	9.686 (0.000)
5.	Wood and Wood products including Furniture	15.855 (0.040)	10.450 (0.011)	10.268 (0.000)	1.772 (0.442)	6.995 (0.000)	5.462 (0.000)	3.224 (0.048)	8.775 (0.000)	6.421 (0.000)
6.	Paper and Paper Products, Printing and Publishing	2.318 (0.262)	11.334 (0.001)	6.447 (0.000)	-7.268 (0.003)	5.792 (0.040)	-0.085 (0.935)	6.397 (0.005)	8.692 (0.000)	6.890 (0.000)
7.	Coke, Refined Petroleum Products and Nuclear Fuel	-19.728 (0.148)	28.880 (0.027)	14.526 (0.007)	-14.821 (0.003)	13.005 (0.008)	1.953 (0.345)	13.094 (0.023)	16.879 (0.000)	10.798 (0.000)
8.	Chemicals and Chemical Products	3.299 (0.064)	9.642 (0.120)	3.716 (0.031)	-1.740 (0.034)	2.031 (0.45)	-0.528 (0.166)	7.071 (0.005)	5.367 (0.001)	4.674 (0.000)
9.	Rubber and Plastic Products	2.579 (0.447)	10.781 (0.001)	5.759 (0.000)	-2.981 (0.218)	3.506 (0.303)	1.807 (0.098)	12.265 (0.001)	7.501 (0.000)	7.354 (0.000)
10.	Other Non-Metallic Mineral Products	1.667 (0.505)	7.731 (0.027)	6.502 (0.000)	-7.366 (0.000)	8.374 (0.002)	3.405 (0.005)	8.020 (0.050)	13.454 (0.000)	8.761 (0.000)
11.	Basic Metals and Fabricated Metal Products	10.205 (0.008)	3.775 (0.124)	5.013 (0.000)	4.515 (0.002)	4.281 (0.002)	4.912 (0.000)	12.297 (0.002)	5.548 (0.000)	6.440 (0.000)
12.	Machinery and Equipment, nec	2.402 (0.543)	3.766 (0.010)	6.437 (0.000)	-3.34 (0.141)	4.084 (0.001)	1.674 (0.019)	10.983 (0.001)	7.086 (0.000)	11.967 (0.000)

Industry Group	Gross Value Added			Total Employment			Gross Fixed Capital Stock		
	1993-94 to 2002-03	2003-04 to 2013-14	1993-94 to 2013-14	1993-94 to 2002-03	2003-04 to 2013-14	1993-94 to 2013-14	1993-94 to 2002-03	2003-04 to 2013-14	1993-94 to 2013-14
1	2	3	4	5	6	7	8	9	10
13. Electrical and Optical Equipment	-0.974 (0.715)	13.959 (0.010)	7.679 (0.000)	-6.508 (0.000)	3.059 (0.036)	-0.294 (0.662)	9.240 (0.000)	12.392 (0.000)	9.127 (0.000)
14. Transport Equipment	-1.431 (0.640)	12.652 (0.001)	6.103 (0.000)	-12.759 (0.002)	5.846 (0.000)	-1.663 (0.91)	18.267 (0.002)	8.278 (0.000)	8.101 (0.000)
15. Manufacturing, nec	-3.706 (0.535)	17.846 (0.001)	0.792 (0.728)	-1.425 (0.706)	7.570 (0.001)	0.620 (0.515)	9.529 (0.005)	8.361 (0.000)	5.772 (0.000)
Total Manufacturing	**1.017 (0.373)**	**6.899 (0.001)**	**4.544 (0.000)**	**-4.145 (.000)**	**3.999 (.000)**	**1.193 (.029)**	**9.607 (.000)**	**8.414 (.000)**	**7.423 (.000)**

Source: Authors calculations.

Note: 1. Figures in parentheses are p values of estimates.

2. Significance is taken up to 10 percent level.

Productivity Analysis

Shortage of resources, especially capital is one of the major obstacles of development in developing economies. Judicious utilisation of resources is necessary for these regions to develop with minimum wastage. Productivity analysis is being undertaken to measure efficiency in the input use in RMS of Uttar Pradesh. As already discussed earlier, partial productivities of labour and capital have been estimated along with translog and Malmquist indices of total factor productivity.

In this section, first the trends in partial productivities of labour and capital will be analysed for RMS of state as a whole (Table-5) and also for the fifteen two digit industry groups (Table-6).These indices are indicative of the efficiency in use of a particular input. As is clear from Table-6, labour productivity has experienced a significant trend growth rate of 3.031 percent accompanied by a significant decline of -2.957 percent in capital productivity for the whole period. During the same period, capital intensity has shown high and significant growth of 5.998 percent (appendix Table-2). The correlation coefficient between labour productivity and capital intensity is positive and high at 0.86. A continuous decline in capital productivity accompanied by increases in capital intensity and labour productivity shows that capital deepening alone does not lead to increases in capital efficiency. Inefficiencies may persist due to use of obsolete plant and machinery; inappropriate technology and unutilised capacity. It is not the shortage of capital which is the major cause of low growth, but its effective and efficient use (Gupta, 1995). In the Uttar Pradesh economy, these inefficiencies are widespread. During sub-period I, labour productivity growth (5.162) is significantly high, whereas, a significant decline (-8.590) is observed in capital productivity. As was observed in Table-3, a significant reduction

in the employment growth along with high growth of gross capital stock during this sub-period indicates that high labour productivity growth can be ascribed to labour getting substituted by capital rather than any skill enhancement (Sharma and Upadhyay, 2008). Surprisingly, in sub-period II (2003-04 to 2013-14), both partial productivities are showing insignificant growth rates. However a significant growth is observed in both the GVA and employment. Growth in capital stock is significant in all the three selected periods. Sub period II seems to be characterised with an output growth made possible with increased input deepening, mainly capital.

Table-5: Partial Productivities and Total Factor Productivity for RMS in Uttar Pradesh

Year	Labour Productivity Index	Capital Productivity Index	Translog Index
1	2	3	4
1993-94	100.00	100.00	100.00
1994-95	123.16	89.48	97.80
1995-96	120.18	78.49	90.15
1996-97	139.31	82.94	108.12
1997-98	131.61	63.97	81.41
1998-99	144.31	55.33	92.34
1999-00	149.84	48.54	91.83
2000-01	156.94	47.80	100.23
2001-02	162.29	48.26	101.65
2002-03	173.14	53.55	109.77
2003-04	161.38	52.85	97.18
2004-05	165.35	48.92	95.15
2005-06	159.38	48.49	98.35
2006-07	203.64	59.65	124.24
2007-08	212.75	59.17	100.43
2008-09	166.15	43.61	74.89
2009-10	194.02	48.94	113.48
2010-11	241.12	60.25	123.31
2011-12	181.92	44.29	73.98
2012-13	198.13	44.04	101.99
2013-14	196.77	44.25	101.61
Trend Growth Rate			
1993-94 to 2002-03	5.162 (0.000)	-8.590 (0.000)	0.773 (0.468)
2003-04 to 2013-14	2.143 (0.86)	-1.592 (0.207)	-0.225 (0.898)
1993-94 to 2013-14	3.031 (0.000)	-2.957 (0.000)	0.2095 (0.676)

Source: Authors calculations

Note: figures in parentheses are p values of the estimates

Similar findings of continuous reduction in labour productivity growth overtime in Uttar Pradesh manufacturing was found by Babu and Natrajan (2013). In their study labour productivity growth was 10.8 percent in the period from 1980-81 to 1990-91, which went

down to 5.9 percent during 1991-92 to 2000-01 and to 4.8 percent during 2001-02 to 2007-08.

For a better and deeper understanding, labour productivity growth rates have also been calculated for the fifteen industry groups for the whole period and the two sub-periods (Table-6).

Table-6: Industry Group-wise Labour Productivity Growth

Industry Groups	1993-94 to 2002-03	2003-04 to 2013-14	1993-94 to 2013-14
1	2	3	4
1. Food products	9.110 (0.017)	-0.588 (0.821)	1.456 (0.065)
2. Beverages and Tobacco Products	7.102 (0.025)	-0.091 (0.756)	6.966 (0.000)
3. Textile and Textile Products	12.490 (0.067)	3.212 (0.028)	1.474 (0.007)
4. Leather and Leather products (including fur Products)	-1.566 (0.718)	4.310 (0.001)	0.807 (0.499)
5. Wood and Wood products including Furniture	12.487 (0.020)	3.455 (0.206)	4.807 (0.005)
6. Paper and Paper Products, Printing and Publishing	9.586 (0.001)	5.541 (0.005)	6.532 (0.000)
7. Coke, Refined Petroleum Products and Nuclear Fuel	-4.908 (0.668)	15.876 (0.104)	12.573 (0.002)
8. Chemicals and Chemical Products	5.039 (0.06)	5.016 (0.309)	3.411 (0.014)
9. Rubber and Plastic Products	5.560 (0.099)	7.275 (0.043)	3.952 (0.002)
10. Other Non-Metallic Mineral Products	9.033 (0.000)	-0.643 (0.698)	3.098 (0.001)
11. Basic Metals and Fabricated Metal Products	5.691 (0.074)	-0.525 (0.790)	0.101 (0.911)
12. Machinery and Equipment, nec	5.735 (0.067)	-0.317 (0.809)	4.764 (0.000)
13. Electrical and Optical Equipment	5.534 (0.084)	9.356 (0.010)	7.001 (0.000)
14. Transport Equipment	11.328 (0.006)	6.806 (0.038)	7.766 (0.000)
15. Manufacturing, nec	-2.281 (0.612)	10.276 (0.004)	0.172 (0.909)
Total Manufacturing	**5.162 (0.000)**	**2.143 (0.86)**	3.031 (0.000)

Source: Authors calculations

Note: figures in parentheses are p values of the estimates.

During 1993-94 to 2013-14, significant trend growth rate in labour productivity can be seen in twelve out of the fifteen industry groups. Highest growth of 12.57 percent in coke, refined petroleum products and nuclear fuel is followed by 7.77 percent in transport equipment and 7 percent in electrical and optical equipment. Higher labour productivity growth in sub-period I can be ascribed to the fact that twelve industry groups have recorded positive and significant growth in labour productivity. Wood and wood products (12.49 percent); transport equipment (11.33 percent); paper and paper products, printing and publishing (9.57 percent); and food products (9.11 percent) qualify for higher labour productivity growth during this sub-period.

During the sub-period II significant growth is found only in eight industry groups explaining a lower growth of labour productivity for the manufacturing sector as a whole.

The highest growth of 15.87 percent is found in coke, refined petroleum products and nuclear fuel followed by manufacturing, nec (10.28) and electrical and optical equipment (9.36). Five industry groups are qualifying for higher labour productivity growth rates in sub-period II in comparison to sub-period I are: Leather and leather products; coke, refined petroleum and nuclear fuel; rubber and plastic products; electrical and optical equipment and manufacturing, nec.

Contrary to the results of the present study, Goldar (2014) finds an improvement in the labour productivity growth in the Indian manufacturing sector during 2000-2008 over 1980-1999. However, his industry group-wise results are almost congruous to results of the present study as an improvement in labour productivity growth in the latter period is witnessed in food products, beverages and tobacco; coke, refined petroleum products and nuclear fuel; chemicals and chemical products; rubber and plastic products; machinery, nec; and electrical and optical equipment. One important reason for subdued labour productivity growth in the present study, during the second sub period, seems to be the incorporation of recession years in the selected time period and also the input intensity of value added growth.

Trend growth rates of capital productivity and capital intensity are provided in appendix Table-2. Capital productivity is experiencing a significant decline for the whole period in the RMS. Only one industry group-wood and wood products has witnessed significant positive growth in capital productivity with five industry groups showing significant decline, highest being in food and food products. Similar results can be seen in both the sub-periods, although the decline in capital productivity is insignificant in period II. Rubber and plastic products qualify for positive and significant capital productivity growth in both the sub periods, whereas textile and textile products are found to have significant growth in sub period II. As far as capital intensity is concerned, positive significant trend growth rate can be seen across the board. This disquieting picture about capital productivity can be ascribed to under utilisation of capacity due to less demand or due to lack of cooperating factors, such as, infrastructure inefficiencies in terms of erratic and irregular power supply, lack of skilled workers, government interference or, in short, less congenial business environment.

To get an idea about an increase/decrease in the overall efficiency in the manufacturing sector and its fifteen industry groups we have also calculated translog and malmquist indices of TFP. Reverting again to Table-5 for the state manufacturing, translog index of TFP is showing considerable variation over the selected years – 1993-94 to 2013-14. A very low and insignificant trend growth of 0.210 is indicative of almost negligible technological progress in the state manufacturing during the concerned period. The growth of value added during this time period is 4.54 percent making the contribution of TFP to be a meagre 4.40 percent. It can be concluded that it is the input intensity, mainly capital deepening, which has been the main contributor of growth of output rather than productivity increases in the state manufacturing.

Insignificant growth in translog index is also observed in both the sub periods, however, the growth is higher in sub period I. Significant increase in the growth of labour productivity is accompanied by a decline in employment pointing towards greater capital being substituted for labour during this sub period. In sub period II, there is a significant improvement both in the growth rates of value added and employment, which is very good for a labour abundant economy like Uttar Pradesh. However, both partial productivity ratios and TFP index point towards a decline in efficiency in this sub period. Capital input needs to be used efficiently if there has to be some productivity improvement in RMS of the state.

Industry group-wise trend growth rates of translog index are given in Table-7. Nine industry groups have recorded positive trend growth in translog index during the whole period, but in no case is it significant. Highest trend growth of 1.246 is seen in case of rubber and plastic products although the significance level is very weak. The value added growth in this industry group is 5.76 percent so that the contribution of TFP turns out to be 22 percent. This industry group was having better estimates of partial productivity ratios also. Positive growth of translog index is found in eight out of fifteen industry groups in both the sub periods. Significant growth in two industry groups is found only in sub period I. These groups are textile and textile products and food products (significance is very low in case of the latter group).

Table-7: Industry Group-wise Trend Growth Rate in Translog Index

Industry Groups	1993-94 to 2002-03	2003-04 to 2013-14	1993-94 to 2013-14
1	2	3	4
1. Food products	9.345 (0.167)	0.040 (0.992)	-0.078 (0.945)
2. Beverages and Tobacco Products	-1.084 (0.748)	-0.2512 (0.240)	-0.395 (0.668)
3. Textile and Textile Products	4.312 (0.073)	0.409 (0.838)	0.541 (0.439)
4. Leather and Leather products (including fur Products)	-0.0971 (0.985)	-0.244 (0.870)	0.806 (0.562)

Industry Groups	1993-94 to 2002-03	2003-04 to 2013-14	1993-94 to 2013-14
1	2	3	4
5. Wood and Wood products including Furniture	6.074 (0.485)	-1.289 (0.795)	-0.388 (0.867)
6. Paper and Paper Products, Printing and Publishing	0.476 (0.857)	0.322 (0.887)	0.159 (0.843)
7. Coke, Refined Petroleum Products and Nuclear Fuel	-2.030 (0.907)	-7.504 (0.408)	0.510 (0.907)
8. Chemicals and Chemical Products.	1.391 (0.499)	1.390 (0.832)	0.473 (0.785)
9. Rubber and Plastic Products	3.449 (0.400)	0.802 (0.779)	1.246 (0.275)
10. Other Non-Metallic Mineral Products	0.775 (0.835)	-0.901 (0.796)	-0.314 (0.792)
11. Basic Metals and Fabricated Metal Products	-0.841 (0.753)	-0.236 (0.932)	-0.380 (0.675)
12. Machinery and Equipment, nec	-0.064 (0.979)	0.592 (0.732)	-0.243 (0.724)
13. Electrical and Optical Equipment	2.077 (0.536)	0.639 (0.861)	0.593 (0.612)
14. Transport Equipment	-0.499 (0.875)	-0.874 (0.838)	0.634 (0.625)
15. Manufacturing, nec	-5.429 (0.99)	1.019 (0.813)	0.714 (0.601)
Total Manufacturing	**0.773 (0.468)**	**-0.225 (0.898)**	0.210 (0.676)

Source: Authors calculations

Note: Figures in parentheses are p values of the estimates

For a better understanding of the productivity performance, MPI was estimated on the panel data of fifteen two digit industry groups. As is well known, this index makes possible the decomposition of productivity growth into two components, namely, the efficiency change and the technological change. Former reflects the catching up to the best practice frontier and the latter shows innovation or the shift in the production frontier itself. It has already been pointed out that if the value of MPI or its components is less than,equal to or greater than 1, then it denotes deterioration, no change or improvement in performance.

The results of MPI for the selected period and two sub periods are provided in Table-8. Instead of giving the year-wise results, a summary of average performance of these periods is given here.[17] For the whole period, mean MPI is 1.002 indicating a TFP per annum.[18] It is observed that only seven out of total fifteen industry groups have shown improvement in productivity during this time period. These are, wood and wood products; paper and paper products, printing and publishing; coke, refined petroleum products and

Table-8: Industry group-wise Malmquist Index of TFP and its Components

Industry Group	1993-94 to 2002-03			2003-04 to 2013-14			1993-94 to 2013-14		
	EffCh	TechCh	TfpCh	EffCh	TechCh	TfpCh	EffCh	TechCh	TfpCh
1	2	3	4	5	6	7	8	9	10
1. Food products	0.945	0.979	0.925	0.94	0.984	0.924	0.943	0.983	0.927
2. Beverages and Tobacco Products	1.000	0.981	0.981	0.954	1.008	0.961	0.977	0.996	0.973
3. Textile and Textile Products	0.946	1.029	0.974	1.072	0.981	1.051	0.992	1.005	0.997
4. Leather and Leather products (including fur Products)	0.954	0.971	0.927	1.028	0.981	1.008	0.993	0.978	0.972
5. Wood and Wood products including Furniture	0.998	1.052	1.05	1.04	0.976	1.015	1.018	1.012	1.030
6. Paper and Paper Products, Printing and Publishing	1.017	1.03	1.047	0.976	1.022	0.997	1.001	1.024	1.025
7. Coke, Refined Petroleum Products and Nuclear Fuel	0.955	1.033	0.986	1.000	1.129	1.129	1.003	1.082	1.085
8. Chemicals and Chemical Products	1.000	1.053	1.053	0.946	1.076	1.018	0.972	1.057	1.027
9. Rubber and Plastic Products	0.932	1.027	0.957	1.055	1.042	1.100	0.965	1.033	0.996
10. Other Non-Metallic Mineral Products	0.986	0.999	0.985	0.981	0.984	0.966	0.985	0.993	0.977
11. Basic Metals and Fabricated Metal Products	1.014	1.037	1.051	0.963	1.000	0.962	0.993	1.017	1.010
12. Machinery and Equipment, nec	1.031	0.98	1.011	0.924	1.033	0.955	0.984	1.007	0.992
13. Electrical and Optical Equipment	1.003	1.012	1.015	1.025	1.015	1.04	1.013	1.013	1.026
14. Transport Equipment	0.954	1.000	0.954	1.012	1.036	1.048	0.995	1.017	1.012
15. Manufacturing, nec	0.927	0.985	0.914	1.125	0.977	1.099	1.007	0.983	0.990
Total Manufacturing (Mean)	0.977	1.011	0.988	1.001	1.015	1.017	0.989	1.013	1.002

Source: Author's Calculations.

Note: EffCh;TechCh and TfpCh refers to efficiency change; technical change and total factor productivity change, respectively.

nuclear fuel; chemical and chemical products; basic metals and fabricated metal products; improvement for the RMS, but this average change turns out to be very low at 0.2 percent electrical and optical equipment and transport equipment. Four out of these seven industry groups are showing values greater than 1 in TechCh, whereas three are showing values greater than 1 for both the EffCh and TechCh. Technical change seems to have larger role in productivity growth during this time period.

Period-wise results show deterioration in the average performance of TFP in sub period I. Only five industry groups are showing improvement in MPI, driven both by EffCh and TechCh in three industry groups and by only TechCh in two industry groups. These industry groups are – wood and wood products; paper and paper products, printing and publishing; basic metals and fabricated metal products; machinery and equipment, nec; electrical and optical equipment. Sub period II results show an improvement in average productivity across industry groups. The average change in productivity during this time period was 1.7 percent per annum. This was made possible by nine industry groups witnessing an improvement in MPI. Highest increase of 12.9 percent per annum was witnessed in coke, refined petroleum and nuclear fuel; followed by rubber and plastic products (10 percent per annum) and manufacturing, nec (9.9 percent per annum). This growth was propelled by both EffCh and TechCh in four industry groups, by only TechCh in two industry groups and by only EffCh in four industry groups. Overall, efficiency change seems to be the main driver of TFP growth during this time period.

Arrest in the decline of capital productivity, improved trend growth in both value added and employment in sub period II are indicative of improvement in the growth of RMS of Uttar Pradesh brought about by the increased investment in the previous sub period. However, partial productivities and translog index is indicative of insignificant productivity growth during this sub period. These results need to be interpreted with caution. Fare (1994) points out that the results of traditional growth accounting can be biased due to (i) factors not being paid the cost minimising shares, i.e., not being paid equal to their marginal products and (ii) lack of an explicit benchmark.[19]

As has been listed in detail in the above section, several studies on Indian manufacturing based on both translog and malmquist productivity indices have found that there has not been any improvement in productivity in the post-reform decade of the nineties, but some reversal has been noted in post 2000s. The most common reason provided is that a positive impact of economic reforms on productivity growth is being witnessed after a lag. Comparing these results with that of the present study, it is found that TFPG based on translog index has been sluggish in Uttar Pradesh manufacturing during the selected time period and no improvement is discernible during time period 2002-03 to 2013-14. MPI also shows a sluggish TFP change over the whole study period, but there is significant improvement post 2002-03 (sub period II), corroborating the findings of the studies on Indian manufacturing and state-wise manufacturing sectors including Uttar Pradesh.

Conclusion

The total factor productivity growth in RMS has not been able to provide impetus to economic growth in Uttar Pradesh. The results based on both translog amd malmquist productivity indices indicate a sluggish TFP growth during the selected time period. Some improvement is discernible during sub period II (2002-03 to 2013-14) as an average productivity increase of 1.7 percent per annum has been experienced based on MPI. This period also accounts for significant growth rates in both value added and employment. Productivity improvements are experienced by the industry groups - wood and wood products; paper and paper products, printing and publishing; coke, refined petroleum and nuclear fuel; chemical and chemical products; basic metals and fabricated metals; electrical and optical equipment; transport equipment and rubber and plastic products. Better growth in both value added and employment is experienced by beverages and tobacco products, leather and leather products; wood and wood products; coke, refined petroleum and nuclear fuel; Rubber and plastic products; other non-metallic mineral products; basic metals and fabricated metal products and electrical and optical equipment.

Input accumulation, mainly capital accounts for greater share of output growth in the state. Increased capital intensity accompanied by falling capital productivity does not augur well for a capital scarce state like Uttar Pradesh. Capacity under utilisation due to skill bottlenecks, inefficiency in infrastructure use and weak policy implementation seem to have put RMS and the state economy in perpetual low development trap. This entails an increased opportunity cost for the investible resources. The state economy, emulating the national economy, has witnessed pre-mature tertiarisation as far as the share in total income is concerned but the employment is still concentrated in agriculture. Manufacturing sector is required not only to absorb the surplus labour but also provide additional employment opportunities for an ever increasing labour force, which is possible through productivity growth, particularly the capital saving one. However, not much attention has been paid to enhancing the productivity levels in RMS of the state as is clearly brought out by this study.

The results of this study provide important policy implications for policy makers. For enhancing productivity, production and employment levels in the state economy, fuller utilisation of production capacity is required. To this end, a strong policy vision is required to bring about a real change in this less rosy scenario. Some steps in this direction may be in terms of improving infrastructure availability and efficiency, enhancing human capability levels, good governance and an improvement in overall ease of doing business. Recently an initiative has been taken by Niti Aayog to make a blueprint exclusively for socio-economic development of Uttar Pradesh by focusing on infrastructure, health, education and connectivity.[20] A strong political will aiming at proper implementation with minimum inefficiencies may be helpful in putting the state on the right track of higher industrial and economic growth.

Notes

1. See mainly K.J. Arrow (June, 1962); P.M. Romer, (October, 1986); and R.E. Lucas, Jr, (July, 1988).
2. S. Lall (1981).
3. It is the most populous state of the country with 16 percent of its population residing here. Literacy rate among females still is only 57 percent and infant mortality rate is as high as 50 per thousand live births. In 2011-12, 29.4 percent people in urban areas and 30.4 persons in rural areas of the state were below poverty line as against 13.7 percent and 25.7 percent in urban and rural areas, respectively at all India level. See Government of Uttar Pradesh, Annual Plans – 2013-14; 2014-15.
4. During this period public sector was assigned a greater role and private sector a supplementary role by being regulated through a plethora of policy measures. Some of these were industrial licensing, quantitative and tariff barriers on input imports, MRTP Act, foreign exchange regulation, nationalisation of commercial banks, etc. Preferential treatment was given to SSIs through a number of protective and promotional measures.
5. Government of India, Economic Survey, 2015-16, p.135.
6. Government of India, Economic Survey, 2014-15, Vol. I, pp.32-33.
7. M. Manonmani (January 2014), p.515.
8. Consumer price index for industrial workers (CPIIW) is not available at the state level. For UP it is available separately for Agra, Ghaziabad, Kanpur, Lucknow and Varanasi districts. CPI in Lucknow is available since 2006 only. Being centrally located, CPIIW of Kanpur has been taken as a proxy for the state level.
9. See Trivedi *et al*., (2011) for detailed discussion on methodology, pp.79-89.
10. S.Sharma and V. Upadhyay (20008), p.125.
11. Babu and Natrajan (*op.cit*. 2013), p.6 and Trivedi *et al.,* (*op.cit*. 2011), p.106.
12. Fare *et al*., (1994), pp.71-72.
13. Government of India, *Economic Survey*, 2011-12, p.202.
14. Government of Uttar Pradesh, State Income Estimates-2004-05 to 2012-13 (*op. cit.*)
15. Golam Rasul and Eklabya Sharma (2014), p.234.
16. The growth rates of value added and employment saw a jump from 4.5 percent to 10.3 percent and -1.4 percent to 5.3 percent respectively between 1991 to 2001 and 2001-2007 (Babu and Natrajan) and employment fell at a rate of 1.5 percent per annum in Indian manufacturing during 1996-2004 which rapidly increased at a high rate of 7.5 percent per annum during 2004-09 (Goldar). Our results for second sub-period show slightly lower growth in value added and employment in comparison to Babu and Natrajan because our study extends till 2013-14 and is inclusive of recession years starting from late 2007.

17. Averages are geometric means.
18. Subtracting 1 from MPI figure gives average increase/decrease per year for the selected time period. See Fare *et al*., (*op.cit*.1994), p.78, n20.
19. In our case in translog approach, each industry is compared only itself in the previous periods and not to a common benchmark, as in MPI where mean of industries (RMS) is the best practice frontier.
20. Economic Times, 15 May 2017, p.15.

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Appendix-1: Two Digit Aggregation of Industry Groups (as per NIC-2004)

1.	Food Products – 151+152+153+154
2.	Beverages and Tobacco Products – 155+160
3.	Textile and Textile Products – 171+172+173+181
4.	Leather and Leather Products (including Fur Products) – 191+192+182
5.	Wood and Wood Products (including Furniture) – 201+202+361
6.	Paper and Paper Products, Printing and Publishing – 210+221+223
7.	Coke, Refined Petroleum Products and Nuclear Fuel-231+232+233
8.	Chemicals and Chemical Products – 241+242+243
9.	Rubber and Plastic Products – 251+252
10.	Other Non-Metallic Mineral Products – 261+269
11.	Basic Metals and Fabricated Metal Products – 271+272+281+289
12.	Machinery and Equipment, nec – 291+292+293+300
13.	Electrical and Optical equipment – 311+312+313+314+315+319+321+322+323+331+332+333
14.	Transport Equipment – 341+342+343+351+352+353+359
15.	Manufacturing, nec – 369

Source: NIC-2004

Note: Numbers are three digit codes

Appendix-2: Industry Group-wise Trend Growth of Capital Productivity and Capital Intensity

Industry groups	1993-94 to 2002-03	2003-04 to 2013-14	1993-94 to 2013-14	1993-94 to 2013-14
1	2	3	4	5
1. Food products	-8.206 (0.000)	-10.796 (0.002)	-9.231 (0.000)	10.687 (0.000)
2. Beverages and Tobacco Products	7.650 (0.235)	-6.746 (0.007)	-1.691 (0.063)	8.657 (0.000)
3. Textile and Textile Products	-2.484 (0.554)	5.853 (0.001)	-0.283 (0.780)	1.757 (0.50)
4. Leather and Leather products (including fur Products)	2.783 (0.649)	-0.196 (0.872)	-0.840 (0.401)	1.647 (0.019)
5. Wood and Wood products including Furniture	4.880 (0.476)	1.675 (0.603)	3.848 (0.030)	0.959 (0.088)
6. Paper and Paper Products, Printing and Publishing	-4.079 (0.025)	2.641 (0.259)	-0.442 (0.565)	6.975 (0.000)
7. Coke, Refined Petroleum Products and Nuclear Fuel	-32.823 (0.23)	12.001 (0.186)	3.728 (0.409)	8.845 (0.000)
8. Chemicals and Chemical Products.	-3.771 (0.042)	2.450 (0.579)	-1.364 (0.198)	5.051 (0.000)
9. Rubber and Plastic Products	9.686 (0.009)	3.280 (0.093)	-1.595 (0.148)	5.546 (0.000)
10. Other Non-Metallic Mineral Products	-6.354 (0.170)	-5.724 (0.109)	-2.259 (0.104)	5.357 (0.000)
11. Basic Metals and Fabricated Metal Products	-2.091 (0.295)	-1.792 (0.391)	-1.427 (0.042)	1.528 (0.065)
12. Machinery and Equipment, nec	-8.582 (0.009)	-3.320 (0.020)	-5.528 (0.000)	10.292 (0.000)
13. Electrical and Optical Equipment	-10.214 (0.008)	1.334 (0.583)	-1.783 (0.127)	8.784 (0.000)
14. Transport Equipment	-19.698 (0.000)	4.374 (0.184)	-1.999 (0.277)	9.764 (0.000)
15. Manufacturing, nec	-13.234 (0.005)	9.485 (0.024)	-4.980 (0.014)	5.152 (0.000)
Total Manufacturing	**-8.590 (0.000)**	**-1.592 (0.207)**	**-2.957 (0.000)**	**5.998 (0.000)**

Source: Authors Calculations

Note: 1. Cols. 2-4: Capital Productivity; Col. 5: Capital Intensity.

2. Figures in parentheses are p values of the estimates.

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Dynamics of Urban Poverty in United Andhra Pradesh

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ABSTRACT

The United Andhra Pradesh (AP) witnesses high urbanization and poverty reduction in the post-reform period. This paper examines the claim of economic development of both the newly formed states by looking into the urban poverty in both the states during post-reform period. The major proposition which the paper raises is which urban regions and economic groups are having more head count ratio (HCR) in the united AP. The National Sample Survey Organisation (NSSO) unit level data of Consumer Expenditure Survey (CES) for 1993-94, 2004-05 and 2011-12 rounds have been used to find out poverty among the economic groups. While the period from 1993-94 to 2004-05 (first) has seen a faster reduction in poverty in AP, the state of Telangana recorded a drastic reduction in poverty during the period from 2004-05 to 2011-12 (Second). Andhra Pradesh constitutes around 68% of the total urban poor. In the first period, there was no population mobility within the regions while during the second period large-scale population mobility happened from AP to Telangana. The 1st period has seen a slow growth in real MPCE while the 2nd period witnesses high growth in real MPCE among occupational groups.

Keywords

Urban Poverty, Economic Groups, Andhra Pradesh, Telangana, United AP

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Introduction

The 20th century witnessed a rapid growth in urban population. Economic development and urbanization are closely linked. In India, cities contribute over 60% of the country's GDP and urbanization has been recognized as an important component of economic growth. The declining trend in the urban population growth rate observed during the 1980s and 1990s was reversed at the national level and the level of urbanization increased faster during 2001-2011. The urban population grew from 286 million in 2001 to 377 million in 2011, an increment of 91 million, which is larger than the rural population increment of 90.5 million for the first time since independence (Bhagat, 2011). A substantial increase in the urban population is due to a net rural-urban classification and rural-to-urban migration. A huge number of new towns emerged during the last decade, contributing significantly to the speeding up of urbanization. The level of urbanization in the country as a whole increased from 27.7% in 2001 to 31.1% in 2011, an increase of 3.3 percentage points during 2001-2011 compared to an increase of 2.1 percentage points during 1991-2001 (census, 2011).

With India becoming increasingly globalized and urban, there is also an increase in the number of poor people living here. As per the latest NSSO survey reports, there are over 85 million poor people living in the cities and towns of India. Urban poverty poses the problems of housing and shelter, water, sanitation, health, education, social security and livelihoods along with special needs of vulnerable groups like women, children and aged people. Poor people live in slums which are overcrowded, often polluted and lack in basic civic amenities like clean drinking water, sanitation and health facilities. Most of them are involved in informal sector activities where there is a constant threat of eviction, removal of goods and almost non-existent social security cover. Urban poverty will become a major challenge for policymakers in our country as the urban population in the country is growing, so is urban poverty. Therefore, a need has arisen to develop new poverty reduction tools and approaches to attack the multi-dimensional issues of urban poverty. For this, policymakers at the national and local levels should have a good understanding of the nature of urban poverty as well as accurate data on various issues relating to it, in order to develop programme/policies to manage urban poverty in a systematic manner.

The state of Andhra Pradesh situated in the southern region of the country is considered as one of the middle-income states of India. The state is consisting of 23 districts out of which large no of districts from Telangana and Rayalaseema regions has been considered as backward districts. As per Census 2011, Kerala and Andhra Pradesh are two states having the highest growth of urban population during the decade of 2001-2011. The urban population growth is 3% per annum in Andhra Pradesh during 2001-11 as compared to just about 1% per annum during the previous period 1991-2001. The reasons for the high growth of urbanization in AP has to be looked into by the academia. The share of urban population in united AP is 33% which is higher than the national average of 31% for the year 2011.

The demand for a separate state of Telangana is due to the long neglect by the united

Andhra Pradesh government on several fronts like economic, political, social, language and religion. There exist huge disparities among the districts in terms of per capita income. Districts like Hyderabad, Medak are having very high per capita income where districts like Mahbubnagar, Adilabad have low per capita income. At this juncture, it is important to look into various aspects of developments and differences among these two newly formed states. It has been argued that the districts of Telangana are more poverty ridden and backward. This study looks into the comparison of the economic condition especially the magnitude of poverty in these two newly formed states, i.e., Telangana, Andhra Pradesh in the post-reform era. The poverty HCR has been calculated for the urban areas as it constitutes around a large chunk of the population of the state. The disaggregation of the urban population into occupation group has been made, in order to look into the question of which groups have experienced a reduction in the poverty during the post-reform period. The post-reform period has seen high growth in net state domestic product (NSDP) and reduction in poverty among most of the states of India and also at the national level. Does it show the same trends in Andhra Pradesh and Telangana, is this question that needs to be answered? Among these two states, which one has recorded a high reduction in poverty and whether the poverty reduction is same among all the economic groups?

Some of the recent literature observed that the growth and macro-economic performance of united Andhra Pradesh have improved (Dev & Ravi, 2003) in the post-reform period. The comparison with other states shows that the rank of AP has been somewhere in the middle on both growth and human development front. The performance of the state, in general, has been closer or marginally below to that of national level. Dev (2007) concluded that Andhra Pradesh seems to be improving its economic growth. The growth rate of GSDP in the last four years has been 7% to 8% per annum. However, the post-reform period witnessed an increase in disparities across regions and social groups and also between rural and urban areas. There is a need to have a broad-based and inclusive growth to benefit all sections of the society. The most important elements of inclusive growth are agriculture, poverty and employment, social sector and, regional disparities. Improving decentralization and governance are also part of inclusive growth. It is more challenging for the state to achieve this inclusive growth than getting 8 to 9 per cent growth in GSDP. Rao & Dev (2014) observed that Andhra Pradesh has been pursuing economic reforms to step up the GSDP growth rate and alleviating poverty while protecting the environment. However, there are some major areas of concern which need to be addressed for deriving full benefits from the reforms which are physical infrastructure, agriculture, industry, social sector, watershed development, conservation of surface water and working of panchayat raj institutions.

The main focus of the paper is whether the poverty has been declined among all the regions of urban United AP. In this paper, an attempt has been made to explain the variations in poverty in both the regions of the united AP for the urban sectors and among the economic groups (household type). The rest of the paper is organized as follows. The section titled Data and Methodology describes the poverty line and measurements of poverty. The section titled Poverty in United Andhra Pradesh deals with urban Poverty in

united AP and the poverty among the economic groups in urban united AP. The section titled Decomposition of Poverty and Conclusion presents the decomposition of poverty in urban united AP followed by concluding remarks in section titled Conclusion.

Data and Methodology

The poverty line defined by the Tendulkar Methodology has been taken into account and accordingly the poverty Head Count Ratio (HCR) has been estimated among the regions and socio-economic groups. Both the incidence of poor and the percentage of poor among the socio-economic groups have been calculated. The data on HCR was collected from the planning commission, Government of India (GOI). For calculating the poverty among the socio-economic group and the regions, the NSSO unit level data on "Consumer Expenditure Survey" for the year 1993-94 (50th), 2004-05 (61st) and 2011-12 (68th) round has been used. The annual changes in the percentage of poor among those groups have also been calculated. The HCR, depth and severity of poverty have been estimated among the regions.

There are several measures of poverty given the income per capita or consumption expenditure and the poverty line. The headcount index is the simple measure of poverty. It measures the proportion of the population that is below the poverty line. The poverty gap index measures the extent to which individuals fall below the poverty line as a proportion of the poverty line. The sum of these poverty gaps gives the minimum cost of eliminating poverty. It shows how much would have to be transferred to the poor to bring their incomes or expenditures up to the poverty line. The squared poverty gap averages the squares of the poverty gaps relative to the poverty line. The measures of poverty depth and poverty severity provide complementary information on the incidence of poverty. It might be the case that some groups have a high poverty incidence but low poverty gap (when numerous members are just below the poverty line), while other groups have a low poverty incidence but a high poverty gap for those who are poor (when relatively few members are below the poverty line but with extremely low levels of consumption). There are several other measures of poverty as sen's index, watt index, etc. which have not been used here.

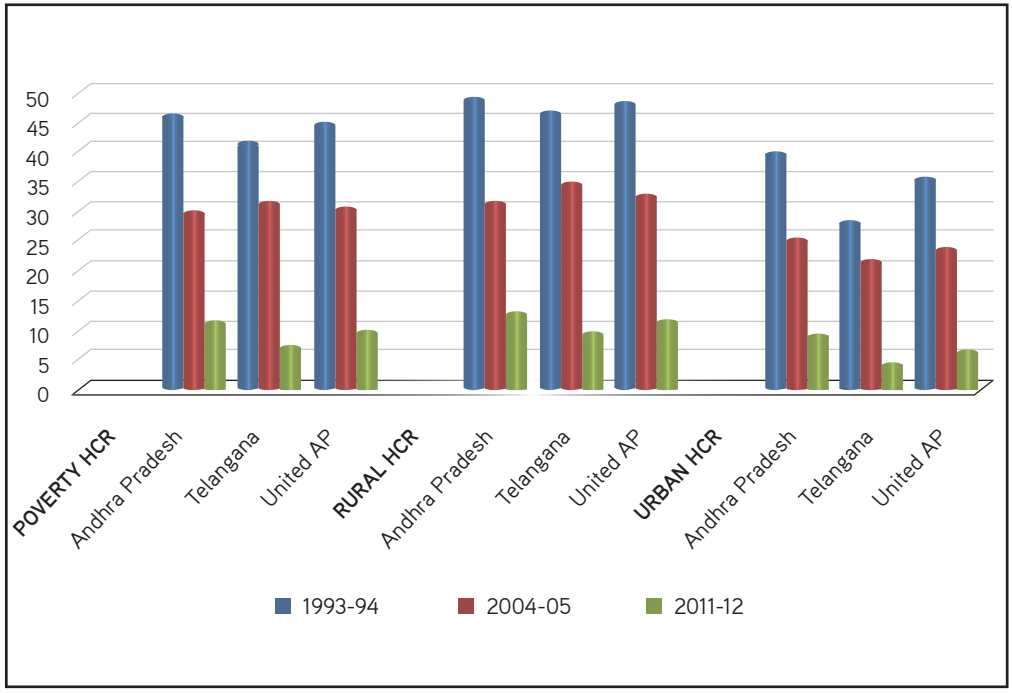
Poverty in United Andhra Pradesh

Figure-1 presents the poverty HCR of United Andhra Pradesh, Andhra Pradesh and Telangana both for rural and urban areas for the years of 1993-94 (55th), 2004-05 (61st) and 2011-12 (68th) NSSO rounds. The poverty line advocated by Tendulkar committee which is based on the mixed reference period has been used for calculation of poverty HCR. The 13 districts of Andhra Pradesh and the ten districts of Telangana have been clubbed using NSSO unit level data in order to get the poverty HCR figures.

The decline in HCR is higher in the 2nd period in comparison to the 1st period both in rural and urban areas. While the poverty HCR has declined by 2.95% annually in the 1st period, the decline for the 2nd period is 9.85% annually for the united AP. The decline in poverty HCR in the 1st period is higher for Andhra Pradesh while in the 2nd period the decline is

higher for the Telangana. In the 2nd period, the poverty HCR for AP has declined by 8.87% annually whereas the declined percentage for Telangana is 11.15%. In the post-reform period as a whole, the decline in poverty HCR is higher in Telangana in comparison to the AP.

Figure-1: Poverty Head Count Ratio in United Andhra Pradesh



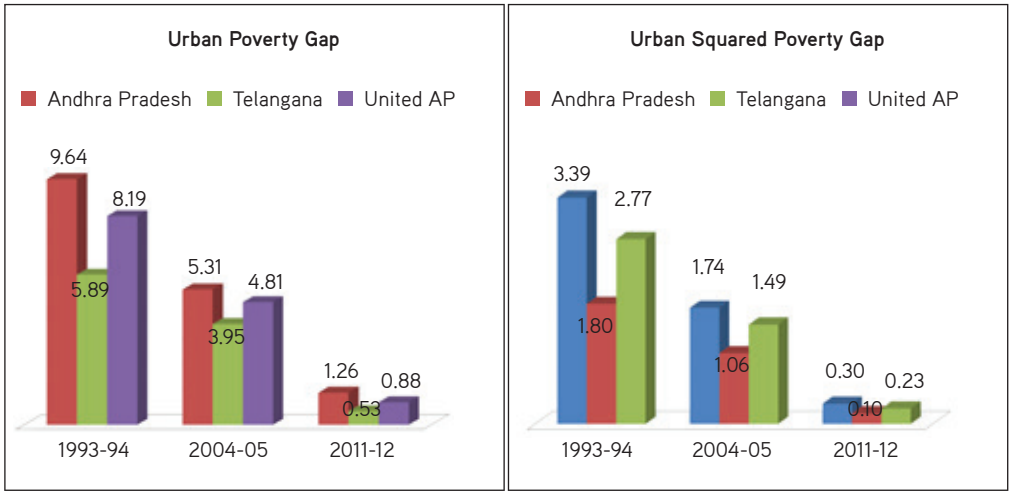
Source: Authors calculation from NSS CES unit level data

Table-1: Poverty HCR and the Percentage of Poor in Urban United Andhra Pradesh

Urban HCR	1993-94	2004-05	2011-12
Andhra Pradesh	39.25	24.69	8.44
Telangana	27.61	21.06	3.67
United AP	35.00	23.36	5.96
Percentage Share of Urban Poor			
Andhra Pradesh	71.17	66.93	68.07
Telangana	28.83	33.06	31.93
United AP	100.00	100.00	100.00

Source: Calculated from unit level data of Consumer Expenditure Survey

Figure-2: Poverty Depth and Severity in Rural and Urban Odisha in Post-reform Period



Source: Authors own calculation

The Table-1 shows that the urban HCR of Telangana is lower than the Andhra Pradesh. The decline in HCR is higher for Andhra Pradesh in the 1st period where-as the decline in HCR is faster for Telangana in the 2nd period. Telangana has lower urban HCR in comparison to Andhra Pradesh. The contribution to total poor for Andhra Pradesh is double to that of the Telangana. While Andhra Pradesh contributed around 68% of the total urban poor, the rest 28% has been contributed by Telangana. It shows it's not the urban Telangana rather urban Andhra Pradesh which is highly poverty trodden.

The Figure-2 presents the poverty gap (depth) and squared poverty gap (severity) of poverty in undivided Andhra Pradesh, AP and Telangana. From the figure, it can be shown that both PG & SPG of Telangana are lower than that of Andhra Pradesh. The AP is having high PG, SPG in all these periods than the Telangana showing the higher depth of poor and severity among the poor. In urban areas in the 1st period (1993-94 to 2004-05) and the 2nd period (2004-05 to 2011-12). The PG and SPG have seen a declining showing in both the distance from poverty line and inequality among the poor has been declining among both the states. The decline in depth and severity is faster in AP in the 1st period while the decline is faster in Telangana in the 2nd period.

Poverty among Occupation Groups in Urban United AP

Though various studies have been done on poverty at both the national and state levels, very few studies have been done on poverty at the disaggregated level, i.e., poverty among the socio-economic groups (Sundaram & Tendulkar (2003), Thorat & Dubey (2012). As this is important to know which economic group is poverty stricken and which are the household types recording a higher decline in poverty ratio, this section focusses on the poverty among household types in the urban area in united Andhra Pradesh. NSSO

makes disaggregation of the surveyed households according to economic groups, what the NSSO reports describe as "household types." These are classified on the basis of the reported major source of income or livelihood during the last year for the household as a whole. For urban households, there are four categories, namely: (1) Self-employed households, (2) Wage and salaried income households, (3) Casual labour households, (4) (Residual) others. The first category is a heterogeneous aggregate ranging from high-income professionals earning their incomes from high skills and education to unskilled low productivity trading and personal services with meager physical or human capital. In the urban context, after accounting for self-employment and contractual as well as non-contractual paid employment in the first three categories, the fourth residual category of 'others' is taken to include those households whose major source of income is derived from non-participatory earnings.

Table-2: Poverty HCR and Percentage of Poor among the Household in Urban United AP

URBAN	Headcount Ratio			Percentage Share to Urban Poor		
House Hold Type	1993-94	2004-05	2011-12	1993-94	2004-05	2011-12
United AP						
Self Employed	35.48	26.53	5.94	36.68	42.66	35.55
Regular Wage / Salaried Employed	22.34	13.97	2.73	27.45	24.61	18.9
Casual Labour	65.25	45.24	17.26	32.83	29.28	38.21
Other	21.18	13.05	4.43	3.04	3.46	7.34
Total	35	23.36	5.96	100	100	**100**
Andhra Pradesh						
Self Employed	37.83	28.14	8.48	37.79	43.57	34.89
Regular Wage / Salaried Employed	28.02	12.41	3.65	26.97	19.16	16.27
Casual Labour	69.72	45.74	21.84	32.74	33.25	43.81
Other	19.78	17.33	3.97	2.5	4.03	5.03
Total	39.25	24.69	8.44	71.17	66.93	**68.07**
Telangana						
Self Employed	30.37	23.61	3.7	33.58	40.8	36.96
Regular Wage / Salaried Employed	14.84	16.18	2.02	28.23	35.65	24.49
Casual Labour	58.05	43.72	9.89	33.78	21.25	26.28
Other	23.67	6.96	4.93	4.41	2.3	12.28
Total	27.61	**21.06**	**3.67**	28.83	33.06	31.93

Source: Authors calculation from NSSO unit level CES data

Table-2 presents the urban HCR and the percentage share poor to total urban poor among the occupation groups in AP, Telangana and united AP. It shows that for the united AP it's

the casual labour which is having high HCR showing this group in urban areas is more vulnerable. If we look into the percentage share to the urban poor it's the casual labourers and the self-employed who are having highest contribution to the urban poor. But, the HCR of casual labourers varies in both the regions. While HCR of casual labourers for AP is 22%, for Telangana the HCR for this group is hardly 10% showing the deplorable situation of casual labourers in AP. However, there has been a faster reduction in poverty in the 1st period (1993-94 to 2004-05) in AP while Telangana recorded a faster reduction in poverty in the 2nd period (2004-05 to 2011-12).

In the 1st period, the annual decline in HCR for AP is 3.37% while for the Telangana the decline in HCR is 2.16%. The major decline in HCR in AP in the 1st period happens among the regular wage & salaried employed household followed by the casual labourerers. But the major decline in HCR in Telangana during 2nd period happens among the others followed by casual labourers. The occupational group of regular wage/salaried employed which has recorded the highest decline in HCR in AP experienced the lowest decline in HCR in Telangana and the occupational group which registered the highest decline in HCR in Telangana seems to have the lowest decline in HCR in AP. This shows the discrimination by the then Govt. in terms of emphasis to occupational groups among the regions. In terms of percentage share to a total urban poor, there has been a rise in the share of poor in Telangana during the 1st period while there is a decline in the share of poor in AP. The decline in the share of urban poor in AP is due to declining in poor among the regular wage and salaried employed. At the same time, the increase in the share of urban poor in Telangana is due to rise in the urban share of poor among the self-employed and regular wage. Overall in the 1st period, the state AP remain better off in terms of decline in HCR and decline in the share of urban poor.

During the 2nd period, Telangana exhibit a faster poverty reduction in Telangana in comparison to the Andhra Pradesh. The annual reduction in HCR for Telangana in this period is 11.80% whereas it is 9.40% in Andhra Pradesh. The major decline in HCR in Andhra Pradesh is among the other, regular wage / salaried employed, self-employed occupational groups. The other occupational group in AP has registered the lowest HCR decline in the 1st phase. The major decline in HCR among Telangana is self-employed, regular wage and casual labour. These two are the groups which have exhibited the lowest decline in HCR in the 1st period in Telangana. Though there exists a regional difference in poverty HCR, still the government is giving special emphasis to the groups with high poverty HCR within the region. In terms of percentage share to urban poor in the 2nd period, Andhra Pradesh has recorded an increase, while Telangana experiences a decline. The increase in the share of urban poor in AP is due to the casual labour and other while the decline in Telangana share is because of the decline among the self-employed and regular wage / salaried employed. The overall trend shows that the 2nd half is beneficial for the state of Telangana than AP.

A well-known feature of the Indian employment scene after globalization and liberalization is the Domination of the unorganized sector with irregular and insecure jobs, low

productivity and earnings and no social protection. The proportion of workers having regular salary/wage employment rises with the level of urbanization and has significant negative correlation with an index of relative deprivation. The percentage of casual wage worker has significant negative correlation with the rate of urbanization, implying that as rate of urbanization rises, the weight of casual wage workers declines and the wage rates for regular employees or casual workers do not show any significant relation with urbanization or relative deprivation (urban poverty report, 2009).

Explanation of decline in Poverty HCR in Urban United Andhra Pradesh

The contribution of an occupational group to the total HCR depends on the population share of that group and the real income or expenditure of that group. The post-reform period witnessed a high growth of the rural non-farm sector and hence mobility of labour from farm to non-farm sector. Is there a major population mobility among the occupation groups within the urban sector. As poverty HCR can be decomposed into growth and inequality effect, the decline in poverty may lead to a rise in monthly per capita expenditure (MPCE). If the poverty has been declined among all the economic groups whether the MPCE has increased among all those groups. The MPCE has been converted into real at 2004-05 prices. Table-3 presents the population share and the real MPCE among the economic groups in urban areas. It shows a movement of population among the occupational groups in urban united AP and the change in real MPCE among the occupational groups. The share of urban population in the Telangana has been increasing while the AP has seen declining. The annual change is faster in the 2nd period than the 1st period. The rise in real MPCE in both the periods is higher for the urban AP in comparison to the urban Telangana.

Table-3: Percentage of Population and Real MPCE among Household Type in Urban United AP

House Hold Type	Percentage of Population			Real MPCE at 2004-05 prices		
	1993-94	2004-05	2011-12	1993-94	2004-05	2011-12
United AP						
Self-employed	35.53	37.55	35.7	781.71	954.02	1223.36
Regular Wage / Salaried Employed	42.24	41.15	41.22	983.08	1279.34	1650.1
Casual Labour	17.29	15.12	13.2	523.28	622.09	872.18
Other	4.94	6.19	9.88	1025.88	1823.01	1958.55
Total	100	100	100	828.65	1104.59	1425.53
Andhra Pradesh						
Self-employed	39.07	38.22	34.73	716.47	920.14	1228.58
Regular Wage / Salaried Employed	37.64	38.1	37.65	908.7	1331.35	1524.99
Casual Labour	18.36	17.95	16.94	508.4	619	849.21
Other	4.94	5.73	10.68	1033.4	1383.32	1998.5
Total	100	100	100	765.96	1049.25	1358.15

Telangana						
Self-employed	29.28	36.4	36.59	927.6	1015.43	1218.77
Regular Wage / Salaried Employed	50.38	46.4	44.53	1074.38	1205.63	1748.02
Casual Labour	15.41	10.24	9.75	549.73	631.45	909.12
Other	4.94	6.97	9.14	1004.06	2447.47	1915.32
Total	100	100	100	937.56	1164.16	1487.9

Source: Calculated from unit level CES data of NSSO

The 1st period has not seen much of the labour mobility in the AP and the percentage share of the urban population remains the same as 63%, where the Telangana witnessed the mobility though the percentage share of the urban population of Telangana remains same as 37%. For Telangana, the share of regular wage and casual labour has declined and the share of self-employed and other experienced a rising trend. But, the real urban annual MPCE increase for the AP is 2.45% which is higher than the urban real MPCE of the Telangana. The increase in real MPCE in the 1st period is higher in AP in comparison to Telangana for all the occupational groups except the 'others'. The 1st period in Telangana has seen a high annual rise in MPCE among the other and a high reduction in HCR among the 'Other group.' While the highest rise in real MPCE for AP is among the regular wage/ salaried employed.

The 2nd period has seen a rise in urban population in Telangana and a fall in urban population in AP. The decline in urban population in AP is because of the decline in the share of the self-employed though 'other' has seen a rise in urban population. Telangana has recorded a high growth of other population in the urban areas. Hence it's the movement of self-employed of AP to the urban Telangana in terms of the other occupation group which resulted in a growth of urban population in Telangana. In terms of real MPCE, the 2nd period has seen a high growth. Andhra Pradesh has seen high growth in MPCE among the groups except regular wage / salaried employed. But the annual increase in real MPCE is very high in Telangana for the RW / SE group. However, the real MPCE in the 2nd period has declined for the group 'other' in Telangana and hence rise in the HCR for that group. Hence the rise in population for the group 'others' resulted in fall in real MPCE and rise in poverty HCR.

Decomposition of Poverty

As we know the change in poverty can be decomposed into change in growth and change in redistribution. This section is going to explain the decomposition of poverty. The pace of poverty reduction depends not only on the rate of economic growth but also how the benefits of this growth are shared, i.e., how the distribution of households' per capita income or consumption expenditure evolves. Poverty reduction is attained through both growth and a reduction in inequality, implying that people at the lower end of the distribution benefit more from growth. While Asia's impressive poverty reduction has largely been due to rapid growth, growth alone does not guarantee that everyone will benefit equally. Pro-poor growth benefits the poor more than the non-poor, i.e., growth is accompanied

by reduced income inequality for poverty reduction (Kakwani and Pernia 2000). Pro-poor growth is thus associated with attacking poverty through growth and reduced income inequality. As a result, people at the lower end of the distribution are better able to meet their basic needs. The decline in poverty is attributable to the change in monthly per capita expenditure and the distribution.

There is a common belief that economic growth is an effective way to eradicate poverty in developing countries. But there are dissenting views and empirical support is not supportive of a simple consensus view. Some economists interpret the historical evidence as suggesting that the benefits of growth have not reached the poor. In contrast some economists and international institutions, notably the World Bank and the IMF, have supported growth-oriented economic policies, on the ground that they create opportunities for the poor to increase their incomes. They also emphasize that the pattern of growth plays an important role in determining the effect of growth on poverty (World Bank, 1990). The relation between changes in poverty and economic growth bears further thorough analysis and empirical examination. The experience of economic policies of developing countries suggests that incomes of the poor usually grow slower than the average (Kakwani, 1993). In an empirical study about the 1980s, Ravallion (1995) concluded that, in developing countries, the growth process typically had neither strongly adverse impact on the relative position of the poor, nor was it associated with a tendency for inequality to either increase or decrease.

The methodology of decomposition of change in poverty starts with the seminal work of Jain & Tendulkar (1990), Datt & Ravallion (1991) and recently by Kakwani (2000). Whereas the first two authors distinguish a change in poverty into growth in MPCE, distributional change & the residuals, Kakwani proposed an exact decomposition[1] where there are no residuals. Later on Son (2003), Mishra (2015) has included the population effect in the poverty decomposition literature. Although Datt and Ravallion's method has been used in several empirical studies, it has some limitations. Firstly, the growth and redistribution effects are not symmetric with respect to the base and final years. Secondly, the decomposition is not exact and contains a third residual component. A more desirable decomposition method is one that exactly sums the contributions of determining factors of total changes. The benefits of economic growth diffuse across all segments of society is the essence of the trickle down theory, which influenced economic thinking during the period of fifties and sixties. One view which significantly influenced policy decisions in this direction is that the poor benefit from economic growth only indirectly and therefore, the proportional benefits of growth going to them compared to the rich are always less (Kakwani and Son, 2000). Economic growth brings in either an increase or a decrease in inequality; hence, if inequality increases with economic growth, the benefits accruing to the poor would be less than those to the non-poor. On the other hand, if growth is accompanied by a decline in inequality, benefits received by the poor would be more than those by the non-poor and under this particular situation growth is said to be pro-

1 The average value of both the period has been taken and the residual if any has been canceled and what we got the exact decomposition as proposed by Kakwani (2001).

poor. Kakwani and Pernia (2000) define pro-poor growth as one that enables the poor to actively participate in economic activity and benefit from it significantly. If economic growth brings in a sharp increase in inequality it is possible that the incidence of poverty rises over time because the beneficial effects of growth get offset by the adverse effects of rising inequality, which means that the inequality effect may dominate over the growth effect. Bhagwati (1988) has described this phenomenon as immiserizing growth. Hence, it is important to assess the impact of growth and inequality separately on poverty, which has been attempted in a large number of studies in the past in terms of decomposition exercise (Kakwani, 2000; Jain and Tendulkar, 1990).

In order to examine some of these hypotheses, we have conducted two decomposition exercises. The first exercise, following Kakwani (2000) and Mazumdar and Son (2002), decomposes the change in incidence of poverty into growth effect, inequality effect and population shift effect. The second exercise expresses poverty in terms of per-capita income, share of industry in gross domestic product, manufacturing labour productivity and the ratio of poor to manufacturing employment.

The degree of poverty depends upon two factors which are associated with economic growth. These are the average level of income and the extent of inequality. The increase in average income which is motivated by increase in economic growth reduces poverty and the increase in inequality increase poverty. The importance of growth and inequality in accounting for changes in poverty is built by decomposition of changes in poverty into growth effect and change in income distribution. Using the head count ratio of poverty (P), we can model poverty *P* as a function of average income per capita (Y*), poverty line (Y) and income inequality (D) such that,

$$P = P(Y^*, Y, D) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

The poverty line is constant over the period *0* to *t*. Therefore the change of poverty level can be decomposed from period *0* to period *t* as follows,

$$\Delta P = P(Y_t^* D_t) - P(Y_0^* D_0) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

This can be expanded such as,

$$\Delta P = [P(Y_t^* D_t) - P(Y_0^* D_t)] + [P(Y_0^* D_t) - P(Y_0^* D_0)] \quad \ldots\ldots\ldots\ldots\ldots\ldots (3)$$

The first term on the RHS of equation (3) is the *growth effect*. It measures the change in poverty due to change in the average income over the period *0* to *t* for a given income distribution. This shows for a given income distribution (D) and poverty line (Y), growth in average income of the population would lead to reduction in poverty since

$$P(Y_t^* D_t) < P(Y_0^* D_t).$$

The second term on the RHS in (3) is the *distribution effect*. It measures the change in poverty due to the change in the income distribution. Lowering of income inequality would lead to a reduction in poverty $P(Y_0^* D_t) < P(Y_0^* D_0)$ for the equation (3) to hold.

The decline in poverty is attributable to the change in Monthly per capita expenditure and the distribution. The methodology of decomposition of change in poverty starts with the seminal work of Jain & Tendulkar (1990), Datt & Ravallion (1991) and recently by Kakwani (2000). Whereas the first two author distinguishes a change in poverty into growth in MPCE, distributional change & the residuals, Kakwani proposed an exact decomposition where there are no residuals. Later on Son (2003), Mishra (2015) has included the population effect in the poverty decomposition literature. The change in poverty can be written as follows.

Table-4: Decomposition of Poverty into Growth and Inequality

Decomposition		1st period	2nd period	Poverty Change	Growth	Redistribution
1993-94 to 2004-05	United AP	35.00	23.36	-11.63	-20	8.37
	Andhra Pradesh	39.25	24.69	-14.54	-24.15	9.6
	Telangana	27.61	21.06	-6.54	-15.61	9.06
2004-05 to 2011-12	United AP	23.36	5.96	-17.64	-13.76	-3.89
	Andhra Pradesh	24.69	8.44	-16.77	-14.23	-2.54
	Telangana	21.06	3.67	-17.39	-11.43	-5.95
2004-05 to 2011-12	United AP	35.00	5.96	-29.28	-30.42	1.14
	Andhra Pradesh	39.25	8.44	-31.32	-35.54	4.21
	Telangana	27.61	3.67	-23.94	-22.42	-1.52

Source: Calculated by the Author

Table-4 presents the decomposition of poverty into growth and redistribution components for rural united AP. The growth component represents the growth in monthly per capita expenditure. The negative sign of the growth component represents the poverty that has been declined by that figure if the redistribution remains same. The positive sigh of inequality implies a rise in inequality which offset the poverty reduction while the negative sign of redistribution will complement to higher poverty reduction. But it's the increase in inequality in the 1st period which offset the poverty reduction and hence the poverty decline is below its optimal. The AP has higher growth impact. The 2nd period has seen a decline in inequality and hence results in higher poverty reduction in comparison to the 1st period. The Telangana in the 2nd period has seen a thrice decline in poverty HCR. Though the growth in MPCE has been a decline in comparison to 1st period, its because of the faster decline in the inequality which resulted in a faster decline in poverty HCR for Telangana. AP in both the periods is having higher growth impact than Telangana. The overall post-reform period has seen growth in MPCE which is faster in AP but while AP witnessed a rise in inequality, Telangana recorded a decline in inequality. AP recorded a higher decline in poverty than Telangana due to higher growth in MPCE.

Conclusion

The united AP has seen a higher decline in urban poverty in the post-reform period. The decline in urban HCR is higher in the 2nd period in comparison to 1st period. Andhra Pradesh exhibits higher poverty reduction in the 1st period while Telangana exhibits the same during the 2nd period. The poverty decline varies among the economic groups. The group of casual labour recorded above-average headcount ratio and are more poverty ridden. The 1st period seen a static and hence the labour mobility is too slow while the 2nd period has seen labour mobility from Andhra Pradesh to Telangana. It's the movement of self-employed from AP to Telangana urban centers which resulted in high poverty HCR among others of Telangana. The rise in real MPCE among the group is higher in AP in comparison to Telangana. The rise in real MPCE is faster in the 2nd period than the 1st period.

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Inequality and Incidence of Poverty among Labourers in Tea Plantation Sector: A Study of Dibrugarh District of Assam

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ABSTRACT

The low level of living among the tea plantation labourers being accentuated by inequality (in monthly per capita consumption expenditure and ability of asset creation) under the regulated labour market of uniform wage structure. The present study was conducted in Dibrugarh district of Assam with the objective of examining the inequality and incidence of poverty among the tea labourers across the different sizes of gardens. The primary data were collected from five different classified patterns of gardens (excluding smallest class) for a sample of 150 tea labour households by using stratified random sampling method. The collected data were analysed by using descriptive statistics, Sen's index, and non-parametric test. The percentage of labourers below poverty line found to be directly linked with the size of garden they were engaged in but education attained by them has not been a significant contributor of income inequality and poverty in the study area. Initiative on introduction of vocational, technical education, and awareness on entrepreneurship for the adult dependents and those who got temporarily engaged outside plantation work may be a locomotive to pull families out of vicious circle.

Keywords

Poverty line, Inequality, Sen's Index, Monthly Per Capita Consumption Expenditure

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Introduction

Besides having characteristics of an economic unit plantation sector is also a component of the socio-economic formation of the society. Large area of cultivatable land and labour force in large number are normally necessary for development of plantation sector. Owing to local labour scarcity, the tea plantation in Assam historically being initiated with labourers migrated from Bihar, Jharkhand, Orissa, Madhya Pradesh and West Bengal. The vulnerable labourers migrated to the tea plantations of Assam for livelihood and to save themselves from famine and hunger during the colonial period. Tea plantation sector in India has provided direct employment to more than one million and indirectly to another two million in ancillary activities (Baruah, 2008). The Plantation Labour Act 1951 and formation of trade unions have no doubt helped in raising the demand for the plantation labourers and improving their economic condition slightly. But, plantation labourers in most developing and less developed countries are still the backward section of the society. One such reason may be is due to limited scope for occupational mobility and supplementary earning of the labourers engaged in tea sector (Mishra *et al.,* 2011 & Saharia, 2005). Ranasinghe (1982), Rote (1986), Breckenridge (2001) and Vijesandhiran (2001) observed poor labour standards of tea plantation workers in Sri Lanka. Chronic poverty coupled with debt bondage and semi starvation forced plantation workers of South India to migrate to Sri Lankan plantations (Wesumperuma, 1986). Poverty, illiteracy, improper health & medical facility are responsible for the low standard of living of the tea tribes of Assam (Sarma, 2007) while poverty being responsible for economic backwardness of tea labourers of Dibrugarh district of Assam (Saharia, 2005). High infant mortality among the children of tea labourers of Bangladesh was because of poverty and malnutrition (Barakat *et al.,* 2010) while low wage and high unemployment causing prevalence of poverty among the tea labourers of Sylhet (Das and Islam, 2006). Lalitha *et al.,* (2013) mentioned lower earnings of tea workers as one of the factors contributing towards poverty among the tea labourers compared with agricultural labourers outside plantation work in India. Unemployment was responsible for high poverty among the tea labourers of Ponmudi tea estate (Nair, 1984). Sen (2008) mentioned low level of per capita income being the major cause of poverty in South Asia and Sub-Saharan African nations.

Low wage structure among the tea plantation labourers has been the target of criticism in various studies. Low wage structure with high job insecurity was found among the tea plantation labourers of Kenya (Morser, 2010). Palmer (1986) mentioned that the wage and working conditions in Southern Nyasaland tea plantations are unattractive. Wage structure was dissatisfactory in the tea plantations of Assam in the pre-independence period (Rao, 1946) and it continued to be below subsistence level in the Assam Valley plantations even in the post-independence period (Behal, 1985). The worry about labour exploitation in terms of low wage rate still continues as claimed in some recent studies. Joseph (2002) found that the tea labourers of Kerala are subject of low wage along with poor working conditions. Centre for Workers Management Report (2015) claimed that the wages of tea labourers in West Bengal were not directly linked with the price of tea the state fetches. Sivaram (2001) expressed the need for linking wage to the effort of tea

labourers. For its isolation from other industries, the vulnerable labourers of Dooars-Terai region of West Bengal compelled to work for low wages and under exploitative conditions (Bhowmik, 2011). The existence of wage discrimination with female being preferred in low paid manual work of tea plantations (Savur, 1973 & Bhadra, 2004). Similarly, low wage rate and low earning made the tea worker to remain in poor condition (Kumar, 2009; Sunny & Chattopadhyay, 2008). There is hardly any scope for compensation for the tea labourers involved in hazardous jobs given the uniform wage structure in the regulated labour market of tea sector (Das, 2012). Porter and Howard (1996) shared the importance of trade union activity in raising the wage rate of the tea labourers.

The relationship between the rate of unemployment and prevalence of poverty has been examined in few literatures (Sau, 1978; Parthasarathy, 1978; Dantwala, 1979; Visaria, 1980; Dev *et al.,* 1994 & Sen, 1998). Sen (1997) stated economic inequality from a normative perspective of individual well-being and freedom and inequality makes it difficult to achieve efficiency. Deaton (2003) argued the importance of income inequality as an effective measure of poverty conditional on average income. Moreover, Bazen (2000) studied the complementarities between wage regulation and anti-poverty policies. The author expressed that effective regulation of low wages would be helpful in reducing inequality in terms of earnings and income.

Drastic worsening in relative inequality and absolute poverty in Bangladesh were observed in recent years (Islam and Khan, 1986). Ali *et al.,* (1999) stated that there had been increase in urban poverty contributed by surging inequality for the given level of growth. It was recommended that the growth-oriented policies must be accompanied by measures of inequality reduction for tackling the problem of poverty in rural areas. There has been significant reduction in the number of casual labourers in below poverty line (BPL) households resulting increase in the number of working poor in the country during 2000-2005 (Sundaram, 2007). Poverty reduction especially in urban areas had a slowdown with the sluggish labour productivity and real wages in both rural and urban areas of India in the wake of acceleration of workforce employment growth in the early years of 2000.

Worsening of the living conditions of tea workers in recent years was observed in few studies (Misra, 2003 & Khawas, 2006). The fall in employment elasticity in Assam tea sector since 90s has been felt responsible which has brought livelihood challenges for those dependent on it (Misra *et al.,* 2008). The liberalised economic environment since 90s coupled with declining international tea prices has led to the closure of many small and medium size tea gardens both in Assam and Kerala resulting in loss of jobs and starvation of the tea workers (Sunny & Chattopodhya, 2008). There has been a number of studies attempting evaluation of socio-economic conditions of labourers engaged in tea plantation sector of Assam in particular and the country in general. But, few attempts had been made to examine the inequality and incidence of poverty among the labourers engaged in the different size tea plantations. The present study is an attempt in that direction taking Dibrugarh district of Assam as a study area.

Data Source and Methodology

The present study was based on primary data. The field survey for the study was carried in the Dibrugarh district of Assam. The district[1] was selected for its relative importance in terms of spread of tea cultivation, contribution in production of tea and employment generation for the tea sector amongst other tea producing districts of Assam. The stratified random sampling method was followed for selection of the households. Initially, the gardens were selected as per the Tea Board classified pattern (in terms of Area under plantation) and then labour households were selected from pre-decided classified pattern of gardens[2]. Data were collected from 150 tea labour households by uniformly selecting 30 households from each classified pattern of gardens.

Pattern of inequality among the tea labourers in different classified sizes of gardens was examined with Gini Coefficient[3] of income and expenditure. The incidence of poverty in the study area was examined by using the new poverty line adopted by Planning Commission (2014) on the basis of monthly per capita consumption expenditure (MPCE) of Rs.972. In order to control for inflation of the income data, the monthly income data was deflated using average consumers price index (CPI) number for agricultural labourers (Rs.347) for the year 2004-2005 (with 1986-87=100). For evaluation of social welfare among the tea labourers, the study used Sen's index[4]. Sen (1976) proposed an axiomatic approach to poverty research and a specific index which later was used in a number of research works on poverty such as Ahluwalia (1977), Osberg and Xu (1997, 1999, 2000), Rongve (1997), Xu (1998), Bishop *et al.,* (1997), Myles and Picot (2000) and Osberg (2000). In India, poverty is estimated usually on the basis of per capita consumer expenditure (Bardhan, 1973; Minhas, 1976; Dandekar & Rath, 1970; Thimmaiah, 1983; Deaton, 2002 and Tendulkar & Sundaram, 2003). Consumer expenditure data are deemed more appropriate for analysis of level of living and poverty than those on income (Sharma, 2004). The estimation of poverty in India is based on two components. First, information on the consumption expenditures and its distribution and second, these expenditures by households are evaluated with reference to a given poverty line. Households with consumption expenditure below the poverty line are deemed poor and the remaining being non-poor.

1 The Dibrugarh district covered 37.57 per cent of total land devoted for tea cultivation in Assam producing 43.36 per cent of tea output for the state. The productivity of tea output in the Dibrugarh district has been found to be highest amongst rest of tea growing district of Assam 2164 Kg/Hectare. Dibrugarh district employed about 203245 average daily number of labour (resident + nonresident + casual labour) during 2005 which was 33 per cent of total tea worker of Assam for that period (Tea Digest 2006 & 2007).

2 Given the six different classified pattern of garden present study was carried out with five classes by excluding the smallest class (0-10.12 Hect). The reason for dropping the smallest class from the study is that in such classified pattern of gardens labourers are not hired for practicing tea cultivation, rather tea cultivation is primarily undertaken by imputed (or family) labour and the owner of the garden.

3 Suppose n individuals (households) are arranged in ascending order, $y_1 \le y_2 \le ..... \le y_n$, the Gini Coefficient (G) suggested by Fei and Ranis (1974) has been defined as : $G = \frac{2}{n^2 \mu} \sum_{i=1}^{n} i y_i - \left(\frac{n+1}{n}\right)$ where, μ is the mean of the distribution.

4 S Index = X $[C_p / C^* \{1- G_p\}]$ with X being the percentage of population below poverty line, C^* stands for the poverty line, C_p implies the mean consumption of the poor and G_p is the Gini coefficient of the distribution among the poor, $0 \le S\ Index \le 1$ (Ahluwalia,1977). The Sen's index in the present study was constructed with MPCE data.

Socio-Demographic Profile of the Labourers

Referring to Table-1, it can be observed that the average family size of tea labourers in the study area was 5. Subject to the availability, the tea garden management used to offer the low lying areas which being unfit for tea plantation to the resident labourers for agriculture and animal husbandry activities as supplementary livelihood source. It was observed that nearly 48 percent of the respondents in the study area could not initiate agricultural or allied activities due to non-accessibility of land. Interesting to observe that the percentage of families having access to agricultural land were more in small size gardens compared with large size gardens in the study area.

Table-1: Socio-Demographic Profile of Labourers

Garden Size (Hectare)	A_{Fs}	FA_1 (%)	Illiterate (%)
Below 50	5.6	50	56.67
50-100	5.2	63.33	53.33
101-200	5.1	53.33	43.33
201-400	5.2	43.33	36.67
Above 400	5.7	30	43.33
All Size	5.4	48	47

Source: Estimates based on field survey

Note: A_{Fs} stand for Average Family Size;

FA_1 stands for percentage of families having access to Agricultural Land

The level of educational attainment among the tea labourers in the study area has found to be low as 47 percent of labourers were illiterate. In addition, the numbers of illiterate labourers were observed to be more in the small size garden to that of large size gardens of the study area. It was mentioned that the low enrolment with high dropout ratio was responsible for poor educational attainment among the tea labourers of Assam (Sarma, 1994 & 2011; Saharia, 2005). The gender disparity in educational attainment with the number of dropout and poor enrolment was higher amongst the girls relative to that of boys (Saikia, 2007). The fall in rural school enrolment among tea plantation labourers in China caused by soaring gender gap in earning (Qian, 2008). Low education has been responsible for deprivation of tea labourers from basic facilities (Kar, 2009) and weakness to part with trade union activity (Sarkar & Bhowmik, 1998 &1999).

Distribution of Income and Consumption Expenditure

The level of living of the people can be measured or studied using a number of variables like income, expenditure, literacy, assets, etc. Of these variables, per capita monthly income and expenditure have been considered to be the most important in order for understanding the standard of living of the people (since they can directly determine the attainments of other variables). The distribution[5] of income and MPCE for 150 families is reported in Table-2.

5 The lengths of the intervals have been allotted according to the method suggested by H.A. Sturges $\text{int}erval = \frac{l\arg est - smallest}{1 + 3.322\log_{10}(number)}$ (Agarwal, 2006).

Table-2: Distribution of Income and MPCE (Rs.) of Tea Labourers

Range for Income & MPCE (Rs)	Income Distribution				Distribution of MPCE			
	N	A_{Fs}	C_f	C_i	*N*	A_{Fs}	C_f	C_e
0 – 500	38	6.5	25.33	14.17	16	5.8	10.67	4.64
501 – 750	55	5.3	62	17.74	32	5.5	32	18.55
751 – 1000	34	5	84.67	72.27	38	5.3	57.33	42.11
1001 – 1250	15	4.5	94.67	87.35	34	5.2	80	68.87
1251 – 1500	3	4	96.67	91.06	21	5	94	88.94
1501 – 1750	1	4	97.33	92.46	5	5.2	97.33	94.47
1751 – 2000	2	2	98.67	95.95	3	7	99.33	98.38
More than 2000	2	4	100	100	1	4	100	100
Total	150	5.4			150	5.4		

Source: Estimates based on field survey

N stands for number of Labour Household, A_{Fs} stands for Average Family Size,

C_f cumulative number of families in percentage, C_i stands for cumulative income share in percentage;

C_e stands for cumulative total expenditure in percentage;

MPCE stands for Per Capita Monthly Expenditure

From the Table-2, it can be observed that more than one-fourth (25.33 percent) of the families are with per capita income of less than Rs. 500 per month. At the same time, the per capita monthly income of 84.67 percent of the families has been found to be less than Rs. 1000. Only 1.33 percent tea worker observed to have the per capita monthly income is higher than Rs. 2000. Such observation reflects the low level of income among the tea labourers that the majority of them (nearly 62 percent) earned only Rs. 25 a day. From the figures of income shares of cumulative percents of families, it was found that 62 percent of families contribute only 17.74 percent of the total income while the income shares of the top 15.32 percent families[6] is 27.73 percent. Such observations revealed the prevalence of unequal distribution of income among tea labourers in the study area.

Although, per capita income has been a strong indicator of the standard of living, the difficulty posted in its estimation as well as the hesitation on the part of the respondents to give details of income often compromise the quality of the estimates. In this situation, the usual practice is to use per capita consumer expenditure as a proxy for income to study the standard of living. Private final consumption expenditure is a direct measure of the standard of living of the people (Prasad, 2001). From the distribution of MPCE of tea labourers as reported in Table-2, it has been observed that the distribution of MPCE is more acceptable than income distribution as the data series of per capita expenditure has been more or less normally distributed. As such, the deviation of income distribution from expenditure may be attributable to under-estimation of family income data. Theoretically, the distribution of MPCE is more efficient to study the level of living than income distribution and hence, it will be more meaningful to use consumer expenditure data to

6 It covers the families in the income rage of 1000-1250 till 2000 and less. The figure 15.32 percent is obtained by aggregate of the percentage of families in each class for the income rage of 1000-1250 till 2000 and less. Again the figure 27.73 percent is obtained after summation of the percentage share of income for the income rage of 1000-1250 till 2000 and less.

determine the poverty level and inequality rather than income data. Expenditure data is usually used to study the income distribution, poverty and inequality in a number of studies such as Dandekar and Rath (1970), Bardhan (1974), Thimmaiah (1983) and Savita (2004).

Refer to Table-2, it can be observed that bottom 32 percent of the total families has MPCE less than Rs. 750 while only 2 percent of the families have MPCE exceeding Rs. 1750. The average household size has been found to decline systematically up to the middle class and fluctuates afterwards. Looking at the cumulative budget share, the bottom 32 percent families shared only 18.55 percent of the total expenditure while the top 20 percent families has shared 31.13 percent of total expenditure. The observation of MPCE distribution once again reinforces unequal distribution of income being observed in family income.

Inequality and Incidence of Poverty

It has been observed in the previous section that there exist inequalities in the distribution of income and consumption expenditure of the tea garden labour households in the study area. It is deemed important to study the magnitude of inequality to examine the impact of economic development on the people. Equal distribution of income and expenditure would indicate welfare gain on the part of the people from economic development. Refer to Table-3, it can be observed that the average monthly per capita income (AMPI) of tea workers ranges from Rs. 628.81 in the largest size of tea garden (400 Hectare and above) to Rs. 881.4 in the holding class of 50-100 hectares; while the AMPI of all tea labourers surveyed was Rs. 731.42. The AMPI found to be smallest for the labourers who were engaged in the largest size tea gardens of the study area. The average income of the labourers primarily from tea garden (AMIPT) engagement ranged from Rs. 499.7 in garden size of (50-100 Hectare) to Rs. 788.1 in the garden size of (100-200 Hectare) with the AMPIT for all the labourers in the study area was found as Rs. 612.12. However, the average monthly per capita income from supplementary source (outside plantation engagements) was found to be higher in the small size gardens with the AMPISS for all the workers in the study area was observed as Rs. 119.29.

Table-3: Income, Expenditure and Interest Payment (in Rs.) of Tea Labourers

Garden Size (Hectare)	AMPIT	Deflated AMPIT	AMPISS	Deflated AMPISS	AMPI	Deflated AMPI	AMPCE	AMIP
Below 50	573.2	165.2	73.8	21.26	647.02	186.46	1121	193
50-100	499.7	144	381.7	110	881.37	254	1058	249
101-200	788.1	227.1	45	12.96	833.05	240.07	979	150
201-400	611.6	176.3	55.2	15.91	666.84	192.17	862	108
Above 400	588	169.5	40.8	11.76	628.81	181.21	736	43
All Size	612.12	176.4	119.29	34.38	731.42	210.78	951	149

Source: Estimates based on field survey

AMPIT stands for Average monthly per capita income from Tea Garden Engagement; AMPISS stands for Average monthly per capita income from Supplementary Source; AMPI stands for Gross Average monthly per capita income; AMPCE stands for Average monthly per capita consumption expenditure; AMIP stands for Average Monthly per capita interest payment on Loan or borrowing

Large farms usually provide job opportunities from the lowest to highest paid job. Looking at what is happening in the distribution of MPCE, the highest was found in the smallest garden size. The overall average MPCE is Rs. 951. It is interesting to note that average MPCE is higher than average MPI. Such result reflects the dis-saving or borrowing habit by tea workers to maintain level of living in the study area. It was observed that the average monthly interest payment on loan by workers in the study area was Rs. 149 with the workers engaged in smaller size gardens were spending significant amount of money for monthly interest payment on loan. The average monthly interest payment on loan by the workers in smallest size garden was Rs. 193 followed by Rs. 249 for those who were engaged in garden size of 50-100 Hectare. Therefore, it can be understood that the labourers in the study area must be under the realm of debt trap with the debt burden was being higher for those who were engaged in small size gardens.

As per the distribution of income and consumption which reveals that the income levels of certain sections of the families were very low to get the minimum requirement of food, clothing and housing. The income inequality was not found to be significantly varying between the workers engaged in different sizes of plantations. The estimated Gini Coefficient of monthly total income was found to be highest in the classes of gardens which had the higher average MPI. The fact that an increase in per capita income do not necessarily results in welfare gains for all persons, the decreasing inequality along with increasing per capita income is supposed to increase the welfare gains. In other words, economic development which is usually measured in terms of the increase in per capita income has not reached each and every family of tea garden labourers in the study area. The calculated Gini Coefficient from the distribution of AMPCE is found to be highest in the largest size of tea garden while it is lowest in the class which has the highest AMPCE. The deviation of AMPCE from AMPI may be due to the inconsistency in income estimation by the sampled families, as stated earlier. Thus, under the regulated labour market of uniform wage structure in tea plantation sector the low level of living among the labourers in Dibrugarh district being accentuated by inequality in monthly per capita consumption expenditure and ability of asset creation.

Table-4: Inequality in Income and Expenditure

Size of Holding	G_y	G_{dy}	G_{dyt}	G_{dys}	G_e
Below 50	0.18	0.08	0.1	0.16	0.15
50-100	0.29	0.08	0.04	0.12	0.16
101-200	0.21	0.09	0.08	0.07	0.25
201-400	0.2	0.11	0.002	0.37	0.15
Above 400	0.22	0.06	0.09	0.04	0.26

Source: Estimates based on field survey

G_y stands for Gini-Coefficient of Monthly Total Income; G_e stands for Gini-Coefficient of Expenditure; G_{dy} stands for Gini-Coefficient of deflated Monthly Total Income; G_{dyt} stands for Gini-Coefficient of deflated Monthly Income from Tea garden work; G_{dys} stands for Gini-Coefficient of deflated Monthly Income from Supplementary work

As per MPCE nearly 61 percent of tea labourers in the study area were poor (Refer to Table-5). The percentage of labourers under below poverty line class was less in smallest size gardens and was high in largest size gardens. The percentage of tea labourers under below poverty line class seemed to be directly linked with the size of the garden they are engaged in. There seems to be moderately high incidence of poverty among the tea labourers of the study area as per the Sen's index. The value of Sen's index was 0.4 for all the labourers of present study. .

Table-5: Poverty Incidence

Size of Holding	Percentage of Poor	Sen's Index
Below 50	36.67	0.3
50-100	50	0.3
101-200	63.33	0.4
201-400	76.66	0.5
Above 400	80	0.4
All Size	61.33	0.4

N = 150

Source: Estimates based on field survey

Note: Sen's Index was constructed out of MPCE data

Thus, it can be observed that the poverty incidence among the families to some extent is correlated with inequality in consumption expenditure. Therefore, any policy measures to reduce poverty among tea plantation labourers should focus on the aspect of the distribution of income and consumption expenditure.

Conclusions and Policy Implication

There seems to be moderately high incidence of poverty among the tea labourers of the study area. Under the regulated labour market of uniform wage structure in tea plantation sector, the low level of living among the labourers in Dibrugarh district being accentuated by inequality in monthly per capita consumption expenditure. However, no significant difference in income inequality being observed among the labourers engaged in different size tea plantations of the study area, although, the incidence of poverty seemed to be directly linked with the size of the garden they are engaged in. But, such incidence or less percentage of labourers below poverty line in small size gardens may be because of the fact that the number of households having access to agricultural land were more in small size gardens thereby helping them to earn higher supplementary income. In addition, the labourers in small size gardens seemed to meet their high consumption expenditure through borrowing or taking loan whereas the labourers in the largest size gardens have

compromised their standard of living because of low earning and they to some extent tried to avoid the credit trap. Thus, eventhough, the poor are less in numbers in small size gardens yet, they could have escaped poverty via credit trap as an artificial way and also by making relatively higher supplementary earnings being beneficiary of agricultural land. Hence, from the present observations it may be concluded that the inequality and the incidence of poverty among the tea labourers in the study area are less determined by the sizes of tea gardens they are engaged in but, because of labourer household specific characteristics.

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Employment Creation and Diversion Effects of MGNREGS: A Study of Mahabubnagar District in Telangana

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ABSTRACT

The paper explores the employment creation and employment diversion effects of MGNREGS (Mahatma Gandhi National Rural Employment Guarantee Scheme) in the Mahabubnagar district in Telangana. We argue that the differences in wage rate between MGNREGS and local market leads to the exodus of labourers from agriculture sector and non-agriculture sectors to MGNREGS and vice versa. This kind of exodus of labourer is called the employment diversion effect of MGNREGS.

Keywords

MGNREGS, Employment, Creation, Diversion, Effect

Introduction

The paper explores the employment creation and employment diversion effects of MGNREGS (Mahatma Gandhi National Rural Employment Guarantee Scheme) in the Mahabubnagar district in Telangana. The MGNREG Act was enacted by the Indian Parliament in 2005 and came into effect in April 2006 starting with the 200 most backward districts, since then the extension of the programme spread to an additional 130 districts by 2007-08 and to all the districts of the country by 2008-09. This is one of the biggest flagship programmes within and outside the country. The broad objective of the scheme is to guarantee livelihood security of the rural poor by providing at least hundred days of employment in a financial year to every household, whose adult members are volunteer to

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do unskilled manual works, which is primarily for natural resources management offering gender-neutral wages. The other objectives of this Act were: i) providing a strong social safety net for the vulnerable social groups by guaranteeing a fall back employment source when other employment alternatives are scarce /inadequate and ii) this act can work as a growth engine for sustainable development of an agricultural economy in addition to empowerment of the rural poor. Besides, the Act mandates 33 percent women participation (Manikandan 2011; 2013). This paper has made an attempt to give some evidences of the employment effect of MGNREGS on the rural employment using both primary and secondary data from the Mahabubnagar district. It was found that the employment creation effect of MGNREGS is a positive sign, but employment diversion effect of MGNREGS is little harmful to agriculture and allied sector and also labour-intensive industry as well. The structure of the research paper is as follows: the section titled 'Introduction' introduces the theme of the research paper; the section titled 'Literature Review' reviews critically some of the existing literature on MGNREGS; the next section discusses the conceptual framework; the subsequent section explains the methodology and data sources of the study; the section titled 'Performance of MGNREGS' evaluates the status of MGNREGS in India; the next section discusses the effects of MGNREGS on the rural employment; the following section analyses the status of implementation of MGNREGS in Mahabubnagar district; and the last section concludes the paper with some policy inputs.

Literature Review

The literature on various aspects of MGNREGS and its functioning are growing very fast as the programme encompasses the whole of rural India and huge budget compared to any other social welfare programme. Compared to the preceding programme, like the NFFWP (National Food for Work Programme), the MGNREGS has generated approximately three to four times person days. There are several studies focusing on the implementation, performances, problems and prospects of the MGNREGS, the most important among these studies are: Aiyar and Samji (2006), Bhatia and Dreze (2006), Chakraborty (2007), Comptroller and Auditor General (2008), Ambasta *et al.,* (2008), Jha *et al.,* (2009), Gopal (2009), Khera and Nayak (2009), Adhikari and Bhatia (2010), Jha *et al.,* (2011), Shankar *et al.,* (2011), Ghose (2011), Dutta *et al.,* (2012), Berg *et al.,* (2012), Ravi and Engler (2012), Inbert and Papp (2012), Shankar and Gaiha (2013), Jha *et al.,* (2013 a, b), Liu and Barrett (2013), Bose (2013), Emad (2013), Anderson *et al.,* (2013) and Dasgupta *et al.,* (2014).

Aiyar and Samji (2006) argued and stand for strengthening of social audit in order to improve the effectiveness of MGNREGS. The authors have also observed that the earlier wage employment programmes miserably failed due to the common problems of ineffective targeting, leakages and poor quality of asset creation. They emphasized for a clear separation of functions across tiers of the government. The Gram Panchayats (GP) along with Zila Panchayat should be responsible for all operational activities whilst the state government should be responsible for overall monitoring and regulation of the process. In such a system the regular flow of information would be crucial as well as the enhanced ability of citizens to exercise enforceability through tools such as social audits and community score cards will have to play a crucial role.

The Comptroller and Auditor General (CAG) has carried out a systematic review of MGNREGS. 558 village panchayats were selected for the survey spread over 68 districts and 141 blocks in 26 states. The study was observed that in as many as 70 percent of villages examined, there were no proper records available on the number of households, whose members demanded works and the actual number of people who benefited from the programme. As per the finding of survey, in 340 villages in 24 states, no meetings were conducted for identifying the households to be registered under MGNREGS. No door-to-door survey was conducted in 340 villages to identifying eligible persons. Some households were not registered despite submitting applications on the ground that their names did not feature in the BPL survey list.

Chakraborty (2007) has conducted a budgetary appraisal of MGNREGS. The study has observed that the existing institutional arrangements of poorer states were not good enough to implement the programme in an effective manner. Only half of the total available funds were utilised under MGNREGS and the utilisation ratio was particularly low in poorer states. There was an urgent need of vertical and horizontal coordination across the levels of governments within the states. At the end of the paper, the author has presumed that the devolution of responsibilities and strict accountability norms would accelerate capacity building at the level of the Gram Panchayats and the scheme could effectively function as a demand-driven one.

Dreze *et al.,* (2008) in their evaluation study of MGNREGS in the Chhattisgarh state noticed that functioning of employment guarantee scheme was far better than the other employment schemes. They were also noted there was virtually no check on the embezzlement of the NFFWP funds in the Surguja district in Chhattisgarh. The situation was so sad because nowadays the NFFWP considered as "Loot for Work Programme". At the same time, it was interesting to hear from a wide range of sources where the commencement of MGNREGS had led to a steep decrease in the incidence of corruption. This was borne out by the muster roll verification exercise. For instance, it was found that 95 percent of the wages that had been paid in a random sample of nine works implemented by Gram Panchayat according to the muster rolls had actually reached the labourers concerned. A similar exercise was done in Koriya, the neighboring district, led to the conclusion of "leakages" in the labour component of MGNREGS by only 5 percent or so. In Jharkhand, a detailed muster roll verification of MGNREGS works conducted in five randomly selected Gram Panchayats in Ranchi and was found leakages by 33 percent. There are a lot of problems in the implementation of MGNREGS in Jharkhand (Bhatia and Dreze 2006).

Afridi (2008) studied the nature and characteristics of monitoring of MGNREGS with a focus on the community control mechanisms existing in the two pioneering states: Rajasthan and Andhra Pradesh. Based on a closer look at the social audits process held, Afridi has stated that conduct of social audits in villages without the support of NGOs and members of civil society organisations is wishful thinking.

Jacob (2008) noted that MGNREGS has immense potential to reduce the gap between urban and rural divide in India and to lead rural development in terms of basic infrastructure such as roads and enhancing agricultural productivity from irrigation works.

Indian School of Women's Studies Development (2008) has observed that there were strong demands from the workers for increasing the work days to at least 200 per household both in Kerala and Karnataka. However, in both of these states, there were few complaints regarding non-payment of minimum wage, for instance. It is to be noted workers at many MGNREGS worksites e.g. in Uttar Pradesh and Jharkhand are earning less than the minimum wages. It is a gross violation of the Act.

Ambasta *et al.,* (2008) has analysed the performance of MGNREGS in its first two years in India. It was found some issues in the implementation of MGNREGS, like lack of trained professionals for time-bound initiation, under-staffing and administrative delay, lack of people's planning, poor quality of work and asset created, inapt schedules of rate, unnecessary bureaucratic interventions and mockery of social audits were hindering the implementation process.

Khera (2008) has observed that the role of farmers' organisation was very effective in ensuring a better performance of the MGNREGS. Aiyar and Samji (2009) documented the Andhra Pradesh experience of institutionalising social audit of MGNREGS and used it to analyse the social audit process. The paper draws on empirical work aimed at measuring the effectiveness of social audit conducted in Andhra Pradesh between March 2007 and December 2007. The paper offered some interesting insights into the effectiveness of regular, sustained social audits. Emerging empirical evidence on the social audit in Andhra Pradesh suggest that social audit in fact have a significant and lasting effect on citizen's awareness levels.

According to Sharma and others (2009), there were two possible outcomes of MGNREGS viz., i) slightly improved share of ST households in employment and ii) that the Act outshone the earlier employment schemes in terms of higher participation of women. The range of wages realised by workers under MGNREGS varied from one state to another but, in a large majority of states, the average wage was little higher compared to the statutory minimum wages.

Gaiha *et al.,* (2009) attempted to construct an intuitive measure of the performance of MGNREGS. An attempt was made to know whether excess demand responds to poverty and also whether recent increases in MGNREGS wages were inflationary. The analysis confirms responsiveness of excess demand to poverty. There are apprehensions expressed regarding the inflationary potential of hike of MGNREGS wage. The higher MGNREGS wage was likely to undermine self-selection of the poor in the programme. The study suggested the need for a policy imperative in order to ensure the poverty reducing potential of MGNREGS. Such a policy might guarantee a speedier matching of demand and supply in the districts that were highly poverty prone areas, as also to avoid the trade-offs between poverty reduction and inflation.

Kareemulla *et al.,* (2010) have evaluated MGNREGS in four states namely, Rajasthan, Karnataka, Andhra Pradesh and Maharashtra with a special emphasis on desirability, quality and durability of assets created and its effects on the livelihoods of workers. The study was noticed that a wide variety of works were taken up under the scheme including, work on soil and water conservation structures and rural connectivity, which matched the requirements of the people. However, it was found that the quality and maintenance of assets need more attention in the coming years so that investment made would not go futile. They concluded that the programme was achieving its primary objective of employment generation but the assets created were generally seen as a by-product in the study areas.

Adhikari and Bhatia (2010) noticed that the direct transfer of wages into workers' bank accounts was a substantial protection against larceny and corruption. The respondents had a fairly positive mind towards direct bank payments and showed their interest in learning how to use the banking system. It means that MGNREGS has good potential to improve financial literacy. However poor record keeping, inability to cope with mass payments of MGNREGS wages, large distance to the nearest banks and post offices caused hardship to the workers. While the wage payments through bank were reported a positive feature, the study disclosed the limited capacity of the banking and post office systems in fighting against corruption and misappropriation.

Dey (2010) has analysed the performance of MGNREGS from three perspectives. It reexamined the targeting aspect of the programme; the efficiency of the implementing PRIs; and the effect of the scheme on various results at household levels. The study had covered 500 randomly selected households, 2249 individuals and 70 schemes, located in 13 Gram Panchayats (GPs) in Birbhum District of West Bengal and found that the programme was likely to be accessed by poorer households with low landholding status, low per capita monthly income and other household related characteristics.

Harish *et al.,* (2011) have evaluated the impacts of MGNREGS on income generation and labour supply in agriculture in one of the districts in central dry zone of Karnataka. The study has found that with the implementation of MGNREGS, the number of days worked in a year has increased significantly to 201 days, reflecting 16 percent increase. It was also noticed that MGNREGS has contributed to an increase in consumption expenditure while reducing the debt burden of workers of the programme. A regression analysis of the determinants of participation revealed that size of family, gender and education of the workers were significant. The increase in income was 9 percent due to an additional employment generated from MGNREGS. Furthermore, the study was revealed that implementation of MGNREGS works has led to an increase in labour scarcity from about 30 percent to 53 percent for agricultural operations like weeding and sowing, respectively. There was a decrease in the areas for labour intensive crops such as tomato and ragi to the extent of 30 percent due to MGNREGS. It has happened in Kerala also (Nair *et al.,* 2009).

Ghose (2011) has evaluated the performance of the scheme and its impacts on the rural poor. The study was based on both primary and secondary data. Primary data was collected from 5 districts of West Bengal. It was found that all the districts showed highest employment generation during the 2008/09-2010/11. Major emphasis has been positioned on the development of agriculture and allied activities with the objective of ensuring sustainability. With the implementation of MGNREGA works, out migration members have decreased by 86.67 percent, 88.89 percent and 81.82 per cent in Japaguri, Malda and Nadia districts, respectively. It was found that 70 percent of house-holds got two full meals throughout the year 2009 due to MGNREGS works. The overall impacts of MGNREGS on food security are positive as it has improved food security of good majority of sample households. They recommended that a proper planning of work and proper monitoring of the execution of work improve MGNREGS and timely wage payment.

Imbert and Papp (2012) estimated the effect of MGNREGS on wage and employment using NSS employment and unemployment cross-sectional data. They used quinquennial surveys as well as thin round surveys starting from 60 rounds up to 66th round. The result of their study showed that MGNREGS has increased public works employment by 0.30 person days per month. Further, the casual wage income of the workers has increased by 4.50 percent.

Berg *et al.,* (2012) have analysed the effect of MGNREGS on agricultural wages at all India level and was found the effect was positive and significant. It was also found that MGNREGS intensity (MGNREGS person days per worker) treatment has boosted the real daily agricultural wage rates in given district by 1.60 percent. The wage effect appears to be increasing gradually and is driven by the gradual increase of the MGNREGS intensity.

Ravi and Engler (2012) studied the effect of MGNREGS on food security, savings and health outcomes of households. The study was based on primary data collected from a sample of 1064 households across 198 villages in Medak district in Andhra Pradesh. They were found that the monthly per capita consumption expenditure has increased by Rs. 25.8 per household but, not statistically significant and monthly per capita health expenditure of a household has increased significantly by Rs. 8. The number of meals foregone by households has significantly reduced due to MGNREGS.

Emad (2013) examined the impact of MGNREGS on expenditure in rural India, using 64th round National Sample Surveys cross section data of households in 461 districts from all the states except Maharashtra. The total sample households were 16692 for the year 2004-05 and 22429 for 2007-08. For analysis Difference-in-Difference (DID) estimation method was used. It was found that there was an increase in expenditure of durable goods by 29.13 percent and clothing and bedding by 6.2 percent, indicating that households are investing in long-term assets instead of consuming immediately. It leads to hypothesis that households have a propensity to smoothing consumption by investing a significant proportion of the transitory income received from MNREGA in durable goods and clothing

and bedding used it as savings for future. At the district level, it was observed that the share of expenditure on cereals and pulses has declined while there was an increase in the share of spending on vegetables, fruits and nuts, sugar and sugar products. It was noticed that there was a shift from staple diets to a more expensive vegetables. This study has concluded that MGNREGS has a significant effect on cereals, pulses and sugar and sugar products at the district level. The variance in consumption goes down for cereals and pulses and it goes up for sugar and sugar products.

Bose (2013) has re-examined the effect of MGNREGS on household consumption expenditures. A cross-sectional consumption data from the consumption expenditure survey conducted by the National Sample Survey Organisation was used in the year 2006-07. For the analysis 184 early implementation districts and 209 late implementation districts were chosen at national level. He said that the scheme has a positive and significant effect on consumption by about 10 percentage points. One could see that there is an increase in per capita consumption expenditure by 12 percentage points among lower castes in the early implementation districts, compared to late implementation districts. It is showing that MGNREGS has increased the per capita consumption of the relatively poor households in the country.

Dasgupta *et al.,* (2014) made an attempt to study the effect of the MGNREGS on Maoist affected regions in India. They covered 144 districts across the six central and eastern states and found that 90 percent of Maoist conflict deaths occurred in these regions. To assess the MGNREGS impact on Maoist affected regions, they used difference-in-difference identification strategy based upon the roll-out of MGNREGS across the districts in three phases between 2006 and 2008. It is noted that the programme caused a large scale decrease in violence in Maoist affected regions. MGNREGA has decreased violence and deaths by around 80 percent. They were also found that MGNREGA has a large impact on rural labour markets in the country and was reduced the violent civil conflicts by increasing workdays among workers.

Korra (2015) has carried out a study to examine the role of the MGNREGS in seasonal migration from Telangana state. In order to understand the effect of MGNREGS on seasonal migration, the author used both primary and secondary data. Primary data was collected from three villages in Mahabubnagar district of Telangana and a total of 240 households were selected using a multi-stage random sampling method. It was found that major portion of the job card holders received 30 to 60 work days in a year. They were paid wages ranging from Rs. 60 to Rs. 70 per day, indicating that wage discrimination was dominant in the study areas. At the end of the study, the author has suggested that in order to make the scheme more transparent, beneficial, effective, sustainable and outcome oriented, the focus should be given to enhancement of performance and proper, effective, corrupt-free implementation.

Das (2015) made an attempt to understand the role of local authorities in allocating works under MGNREGS in few areas of West Bengal. The study has also tried to look at whether households affiliated to the local ruling political party have a higher chance of receiving works under MGNREGA. The study was noticed that those households, whose members are affiliated to local ruling political party have received more number of days of work and wage income, as compared to the households whose members are not followers of the local ruling political party. In addition to this the study has attempted to know whether the households that attend political meetings and rallies and participate in campaigns are more likely to get more benefits than that of others. In the study, data were collected from two blocks of Cooch Behar district – the Haldibari and the Cooch-Behar-block. Details of 556 households were gathered from four villages using the structured schedule. It was found that political activism and affiliation of the households do matter in receiving work. At the end of the paper, the author recommended that there is a need to increase in the awareness of the rights and entitlements of the programme among workers to eradicate the problem of political clientelism.

Agarwal (2016) has studied about the issues of MGNREGS with special reference to Jharkhand and also initiatives taken by Jharkhand government to improve the performance of MGNREGS. In order to evaluate the problems of the scheme, the author used both primary and secondary data collected from the MGNREGS website, literature review and discussions with the activists working in Jharkhand. Main issues of the MGNREGS are denying demand for work, budget caps, delays in wage payment and large violations of the rights and entitlements of workers. The paper concluded that a decade after the inception of MGNREGS, the programme is still in need of serious attention. Government of Jharkhand has to take the following steps, that establishment of an independent social audit unit and draft rules for transparency and grievance redressal, activate its rules of payment of unemployment allowance and compensation for delayed payment.

Objectives, Methodology and Data Sources

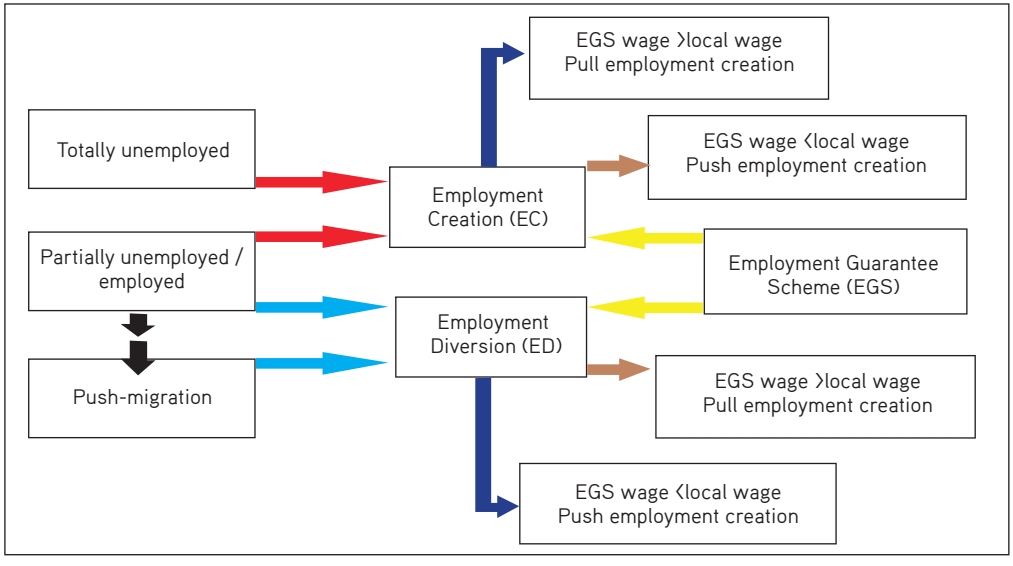
The primary objective of the study is to analyse the employment creation and diversion effects of MGNREGS. In order to perform the objective mentioned above, we have chosen Mahabubnagar district in Telangana because of the reason that it is a drought prone area. Devarkadra mandal, located in Mahabubnagar, was selected for conducting MGNREGS household survey. Dokur village was selected for the survey purposively as it was one of the sites for Village-Level Studies (VLS) of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Hyderabad. Dokur is a small village, located in Devarkadra mandal in Mahabubnagar. The village is one of the drought-prone villages and adequately represents the semi-arid tropics. The annual maximum temperature of the village is 40˚C and minimum temperature is 20˚C, while the normal rainfall in the village is 730 mm, distributed erratically. Traditionally, agriculture has been the major livelihoods of the Dokur villagers. A total of 270 MGNREGS worker households were sampled. Besides, the survey of the households using semi-structured schedule, the research methods such

as focused group discussions (FGDs) and other Participatory Research Appraisal (PRA) techniques such as field observation, transect walk, in-depth interviews, etc. were also employed for collecting reliable and required information. Furthermore, primary data was substantiated with the help of secondary data extracted from the Department of Rural Development of the Ministry of Rural Development, Government of India.

Conceptual Framework[1]

The MGNREGS has been creating two effects after its commencement: Employment Creation (EC) and Employment Diversion (ED). If one avails MGNREGS work when he or she has no other employment opportunities is called employment creation or in other words, employment creation means a situation in which he or she opts MGNREGS work when other employments are not available (EC). If one avails MGNREGS work when he or she has other employment opportunities is called employment diversion or in other words, employment diversion refers to a situation in which he or she prefers MGNREGS work when other employment opportunities are available (ED). Thus, employment diversion is an opposite effect of employment creation (see Figure-1).

Figure-1: Push and Pull Employment Creation and Diversion Effects of MGNREGS



Employment creation is divided into two effects: push-employment creation (PuEC) and pull-employment creation (PLEC). Therefore, the effect of MGNREGS may be analysed on the basis of net effect of employment creation and employment diversion (Figure-1).

1 The conceptual framework is actually presented by Manikandan (2014) in his paper "Conceptualising Employment Guarantee Scheme".

There was an evacuation of unskilled female workers from paddy fields to MGNREGS in Kerala (Nair *et al.,* 2009). It can be seen as a Push Employment Diversion (PuED).It is to be noticed that thousands of women SHG members became MGNREGS workers. In fact, they were unemployed women. It can be seen as a Push Employment Creation (PuEC). Why there are push employment diversion and push employment creation? This is because of MGNREGS wage is less than wage in local market, say for instance, MGNREGS wage is less than that of local market in Kerala. It would have become a pull employment diversion and pull employment creation, if MGNREGS wage is higher than local market wage.

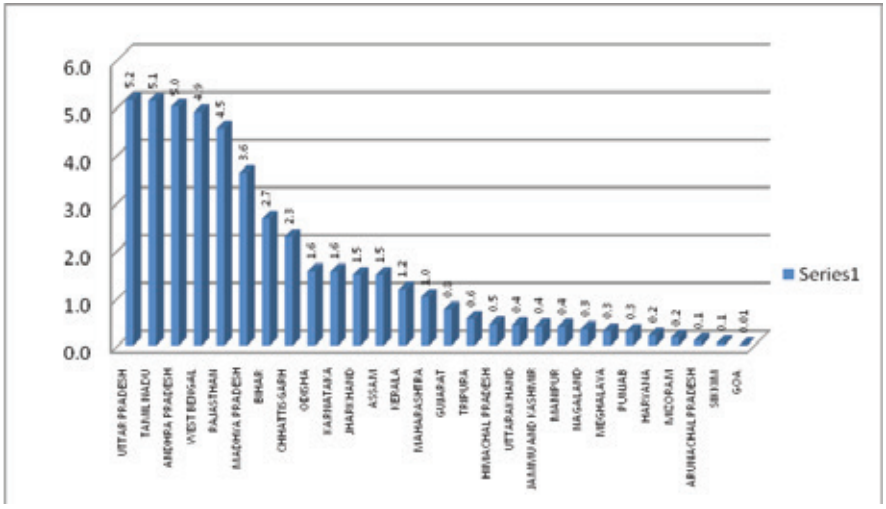
Performance of MGNREGS

While analysing the socioeconomic structure of the total person days generated, it was found that SCs and STs have availed around 23 percent and 17 percent of the total generated person days, respectively. Women have received about 55 percent of the total person days generated. As of now about 44 lakh works were taken up, of which, around 10 percent works were completed and the rest of the works were ongoing or incomplete.

Latest statistics said 119 crore households are issued job-cards during the period 2006/07 - 2016/17. Out of which, around 40 percent demanded works, of which, 97.5 percent of them were provided employment. About 46 crore households were provided employment during the period of 2006/07 - 2016/17, on an average 4.6 crore households working in MGNREGS per annum that constitutes roughly 30 percent of the rural households in the country as a whole.

Figure-2: Cumulative number of HH provided employment, 2006/07 - 2016/17

(values in crore)

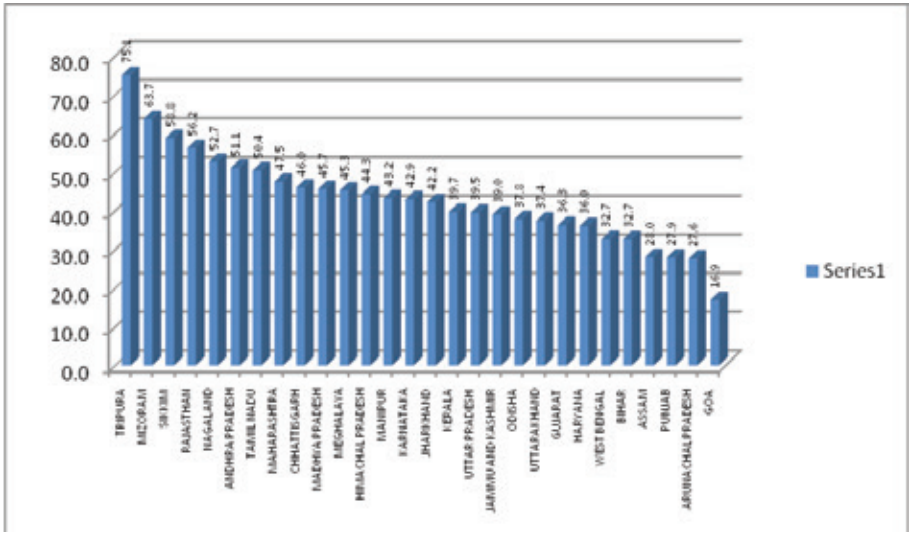


Source: www.nrega.nic.in

The states that provided employment to more than 3 crore households during the period 2006/07 - 2016/17 are Rajasthan, Uttar Pradesh, West Bengal, Tamil Nadu, Andhra Pradesh and Madhya Pradesh. The states that provided employment to one crore households to three crore households are Odisha, Karnataka, Bihar, Chhattisgarh, Assam and Jharkhand and the rest of the states have given employment just only to less than one crore households during this period (Figure-1).

Figure-2 shows state-wise average household person days during the period 2006/07 - 2016/17. The average household person days in north-east states viz., Tripura, Mizoram, Sikkim, Nagaland and Manipur is 75 days, 63 days, 58 days, 52 days and 43 days, respectively. Unlike other states, the average household person days in north-eastern states is high due to the administrative reform, for example, Sikkim has taken a few measures to the Ombudsman functional and a virtual complaint-free implementation (IRMA 2010).

Figure-3: Average Household Person days generated under MGNREGS, 2006/07 - 2016/17



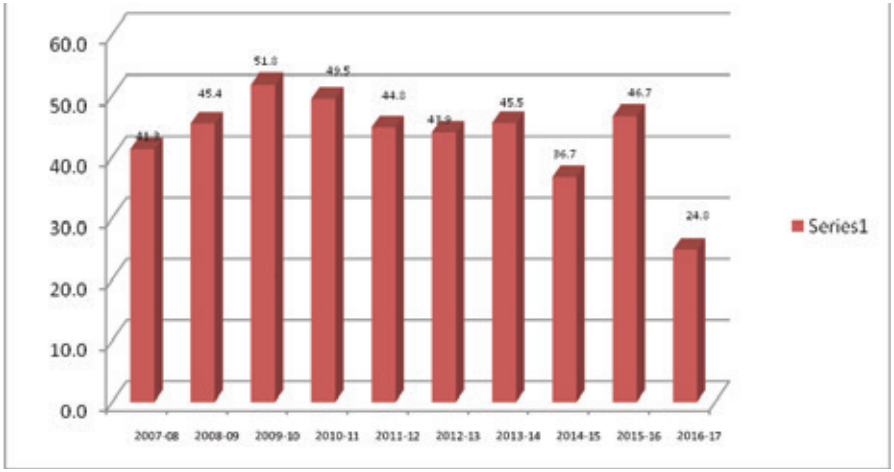
Source: www.nrega.nic.in

Figure-3 shows that the average household person days has increased from 41.30 days in 2007-08 to 46.7 days in 2015-16 in India. It is to be noted that the average person days per household has increased sharply from 41.31 days in 2007-08 to 51.80 days in 2009-10 and then it has decreased to 46.7 days in 2015-16. It was found that 29 percent of the total worker households completed 100 days of employment under MGNREGS in Tripura, followed by Mizoram (18%), Rajasthan (17%) Sikkim (16%), Nagaland (14%), etc. The state administration of Sikkim has achieved a good progress in a number of areas. It includes,

14 times increase in person days generated, 15 times increase in the job cards issued and 2 fold increase in the participation of women.

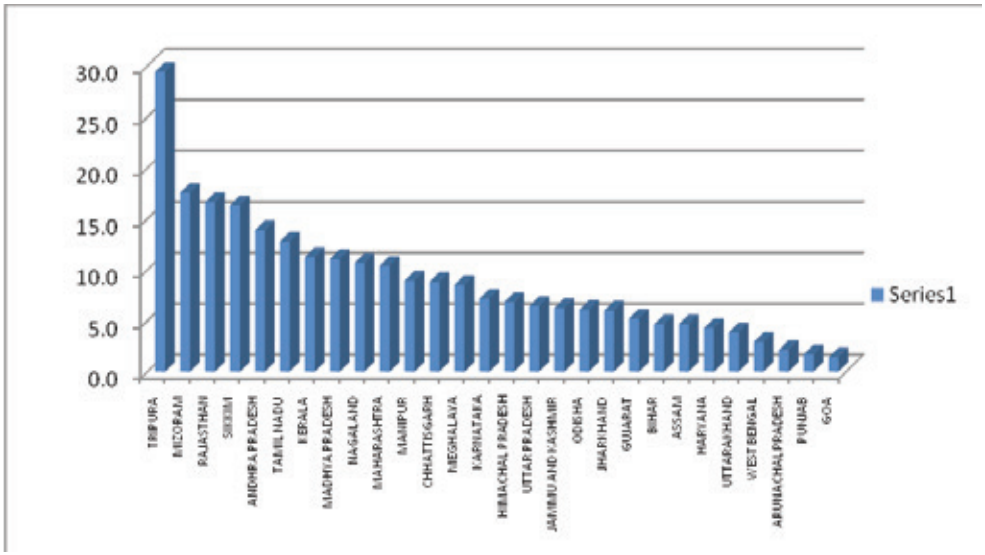
Figure-4: Average Household Person days Generated Under MGNREGS in India, 2007/08 - 2016/17

(values in nos.)



Source: www.nrega.nic.in

Figure-5: Percentage of Household Completed 100 Days of Work during the Period 2006/07 - 2016/17

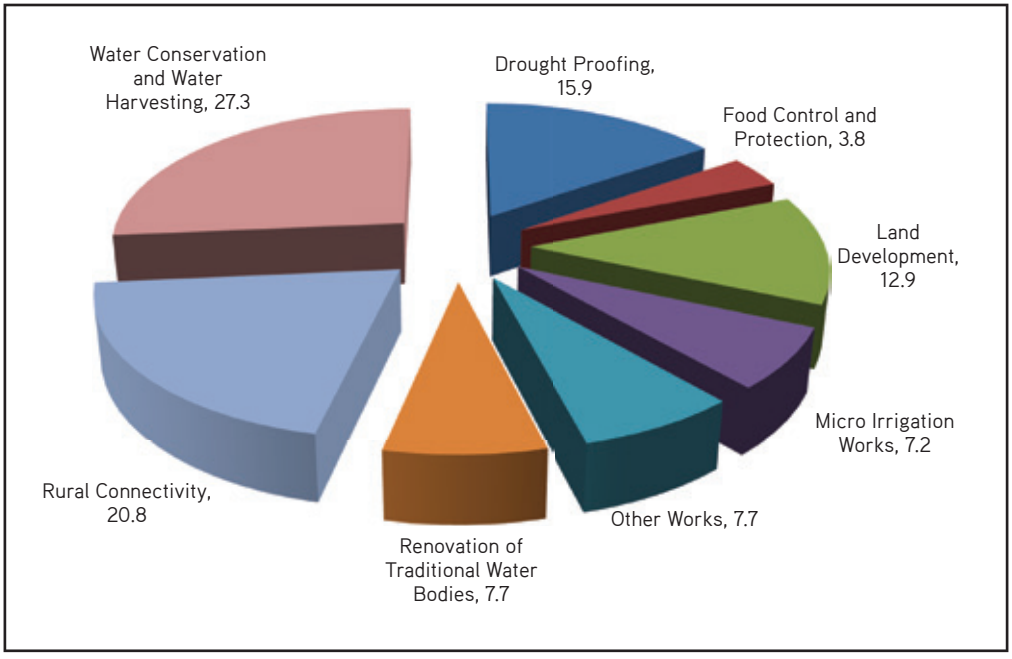


Source: www.nrega.nic.in

There are nine categories of work in which MGNREGS wage earners are employed. They are: a) rural connectivity; b) flood control and protection; c) water conservation and water harvesting; d) drought proofing; e) micro irrigation works; f) provision of irrigation facility to land owned by SCs, STs and others; g) renovation of traditional water bodies; h) land development; and i) other activities approved by the Ministry of Rural Development (MORD), Government of India. It is to be understood that rural connectivity and land development works are the most preferred works among the workers.

The percentage share of works completed and on-going during the entire period of MGNREGS is shown in Figure-5. Among the different works undertaken, water conservation was the leading activity which occupied about 27 percent of the projects (completed or under progress). This was followed by rural connectivity projects (20 percent), drought proofing (15 percent), provision of irrigation (14 percent), land development (12 percent), renovation of traditional water bodies (7 percent), micro irrigation (6 percent) and flood control (3 percent). Other works included, Rajiv Gandhi Seva Kendra has occupied about 7 percent of the total activities completed and on-going. Labourers are more interested on working MGNREGS funded work such as canal cleaning, road repairing, de-silting of tank, etc., than that of the regular agricultural works (MORD 2012).

Figure-6: Share of Different Activities in MGNREGS, 2006/07 - 2016/17



Source: www.nrega.nic.in

Effect of MGNREGS on Rural Employment

In the context of rising unemployment and social unrest in many parts of rural India in the early 2000s, to tackle these rural social unrests and rural unemployment, in the year of 2006, the Government of India implemented a path-breaking wage employment programme – a full-fledged social safety net scheme in India. This was enacted through the Indian parliament, which is popularly known as 'Mahatma Gandhi National Rural Employment Guarantee Scheme' (MGNREGS). In 2011-2012, the Government of India spent nearly US$ 8 billion for this programme, which forms 0.4 percent of the annual Gross Domestic Product (GDP) of India. Due to the scale of operation, it is one of the largest flagship schemes in the developing countries at present.

It was expected that the MGNREGS will ultimately help to increase in rural wage rates and help in millions of the rural poor who depend on wage earning for their livelihood. MGNREGS has a good potential to enhance wage of unskilled agricultural labourers in the rural areas. However, it was noted that after implementation of the programme, the quality of labourers deteriorated. It was also found that the effective working hours of labours have been decreased (Verma & Shah 2012). This is because of the reason that increases in the flow of labourers from agriculture to MGNREGS led to the hike in wage rate. As a consequence, labour requirement for the cultivation have increased the cost of cultivation for the different agricultural crops (Narayanmoorthy 2013). Increase in the cost of cultivation due to the increase in wage rate after the inception of the programme led to some unpleasant situations, e.g. the farmers belonged to fertile regions (East & West Godavari) of undivided Andhra Pradesh had declared "crop holiday" in a large area during the Kharif season in 2011 (Government of Andhra Pradesh 2011 and Alli *et al.,* 2012). It indicates that MGNREGS has created some visible impacts on agricultural wages and labour supply in the rural areas.

It is learned that agricultural sector experienced labour scarcity, meaning that exodus of labourers from agriculture to MGNREGS. This kind of exodus of labourers from one sector to MGNREGS is known as MGNREGS effect on rural employment. What are the main reasons of MGNREGS effect? Among other reasons, the most important reasons are the differences in wages, inclination towards the government works, risk aversion attitude, and agricultural lean season. If all other things held constant, the difference in local wage and MGNREGS wage could determine exodus of labourers from agriculture sector to MGNREGS. As stated, Kerala had witnessed an evacuation of labourers from agriculture sector to MGNREGS, although wage of the scheme is less than that of local market. Labourers do not wish to face the risk of agriculture works while they have other risk-free employment alternatives such as MGNREGS work, which is called push employment diversion. If labourers do not wish to work in agriculture sector when labourers have other employment alternatives, like MGNREGS works with high wage rate, compared to local market wage, is called pull employment diversion. This was happening in Mahabubnagar district. If labourers accepted MGNREGS works when they do not have any employment alternatives except MGNREGS work with low wage rate is

called push employment creation. If labourers accepted MGNREGS works when they do not have any employment alternatives with sole exception of MGNREGS work with high wage rate is called pull employment creation. Since the local market wage is less than that of MGNREGS wage in various parts of rural India, the chance of the incidence of pull employment creation is high in the country or in other words MGNREGS has a good potential to develop pull employment creation in India. It was noticed that pull employment creation is a positive sign. At the same time, it is to be noted that wherever and whenever the wage rate of MGNREGS is higher than that of local market, the chance of the incidence of pull employment diversion effect will be high. It is little harmful to agriculture sector and labour-intensive industries in rural areas of India.

MGNREGS in Mahabubnagar

It was noted that the total number of households provided employment in Mahabubnagar district has increased from 2.25 lakh in 2006-07 to 3.82 lakh in 2009-10 and then decreased to 3.22 lakh in 2015-16. As a consequence, the number of person days generated under MGNREGS decreased further. It would have an adverse effect on the rural poor in general and women in particular. One of the major reasons for decrease in the number of households that were provided employment is the process of urbanization, that is increasing in Mahabubnagar, because this district located adjacent to the city of Hyderabad

Table-1: Number of Households Provided Employment in Mahabubnagar District Between 2006-07 and 2016-17

Year	Household (Nos.)
2006-07	225748
2007-08	305864
2008-09	311560
2009-10	382196
2010-11	360497
2011-12	274703
2012-13	333968
2013-14	337199
2014-15	296095
2015-16	322524
2016-17*	118054

Note: from 2016-17 onwards Mahabubnagar district reorganized into two under district reorganisation.*

Source: www.nrega.nic.in

It was found that the total number of person days generated under MGNREGS in Mahabubnagar district has increased from 56.37 lakh in 2006-07 to 228.7 lakh in 2009-10

and then decreased to 166.1 lakh in 2015-16. The total number of person days generated under MGNREGS is sharply declined during the period 2009/10 - 2014/15. This is because of decrease in the number of households that were provided employment in the year of 2014-15.

Table-2: Total Number of Person Days Generated in Mahabubnagar District During the Period 2006/07 - 2016/17

Year	Total No of Person Days Generated
2006-07	5637634
2007-08	13133989
2008-09	14516469
2009-10	22876928
2010-11	20734426
2011-12	16413272
2012-13	19720167
2013-14	16368233
2014-15	11617321
2015-16	16612303
2016-17*	5542275

Note: from 2016-17 onwards Mahabubnagar district reorganized into two under district reorganisation.*

Source: www.nrega.nic.in

It was found that the average days of employment generated under MGNREGS in Mahabubnagar district has increased from 24.97 days in 2006-07 to 59.86 days in 2009-10 and then decreased to 51.51 days in 2015-16. There is a sharp decline in the average persondays under MGNREGS due to decrease in number of households that were provided employment and also person days generated. There is a shift from farm to non-farm livelihoods due to rural-urban migration in Mahabubnagar.

Table-3: Average Days of Employment Provided Per Household During the Period 2006/07-2016/17 in Mahabubnagar District

Year	Average Days Employment Provided
2006-07	24.97
2007-08	42.94
2008-09	46.59
2009-10	59.86
2010-11	57.52
2011-12	59.75
2012-13	59.05
2013-14	48.54
2014-15	39.24
2015-16	51.51
2016-17*	46.95

Note: from 2016-17 onwards Mahabubnagar district reorganized into two under district reorganisation.*

Source: www.nrega.nic.in

It is interesting to note that the average wage rate per person per day has increased over the years in Mahabubnagar. It was found that the total wage fund under MGNREGS in Mahabubnagar has increased from Rs. 4387 lakh in 2006-07 to Rs. 21179 lakh in 2009-10 and then decreased to Rs. 13221 lakh in 2014-15.

Table-4: The Total Household Wage and Average Wage Rate Per Day Per Person in Mahabubnagar During the Period 2006-07 to 2016-17

Year	Household Total Wage (in Rs. Lakhs)	Average wage rate per day per person (Rs.)
2006-07	4387.13	77.82
2007-08	10842.26	82.55
2008-09	11947.48	82.30
2009-10	21179.67	92.58
2010-11	20080.93	96.85
2011-12	15756.71	96.00
2012-13	20843.95	105.70
2013-14	16605.37	101.45
2014-15	13221.73	113.81
2015-16	21450.88	129.13
2016-17*	7323.21	132.13

Note: from 2016-17 onwards Mahabubnagar district reorganized into two under district reorganisation.*

Source: www.nrega.nic.in

Conclusion

Large number of scholars noted that the agriculture wage rate has increased due to MGNREGS, since this has taken agricultural forces for rural construction works, which otherwise would have been available for agricultural activities (Gulati, *et al.,* 2013; Azam, 2012, Chand and Srivastava, 2014). The main argument of some scholars is that MGNREGS has pushed up the average wage of casual workers, distorted the rural labour markets by diverting rural farm labourers to non-farm rural jobs. Thus, creating artificial labour shortage and raising the cost of production of agricultural commodities (Gulati *et al.,* 2013; Berg *et al.,* 2012). If all other things held constant, the differences in wage rate between MGNREGS and local market leads to the exodus of labourers from agriculture sector and non-agriculture sectors to MGNREGS and vice versa. This kind of exodus of labourers is called the employment diversion effect of MGNREGS.

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Political Economy of Public Debt: An Analysis on Debt Sustainability of Kerala

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ABSTRACT

Political economy of debt and deficit are extensively analyzed in literature as consequences of shortsighted opportunistic policies. The continuous increase in deficits goes along with the accumulation of debt raises the question of fiscal sustainability and solvency. This paper deals with an analysis on growing public debt of Kerala and sustainability of debt through indicator-based analysis as well as empirical exercises. The analysis on debt sustainability as attempted in this paper shows weak sustainability for the period in debt position of state at the aggregate level. This implies the extent of growing burden of debt and the requirement for a sound fiscal management.

Keywords

Public Spending, Fiscal Deficit, Debt, Economic Growth, Cointegration

Introduction

Government of Kerala enacted Fiscal Responsibility Budget Management Act (FRBM) in 2003, following the philosophy of growth inductive fiscal management and to reduce stock of debt with the aim to curtail deficits through cutting non-productive expenditures mainly revenue deficit and fiscal deficit. The adherence to these legislations was also supported by the implementation of Debt Swap Scheme (DSS) from 2002-03 to 2004-05 and Debt Consolidation and Relief Facility (DCRF) from 2005-06 to 2009-10. Subsequently, each finance commission recommended to curtail revenue deficit and restricted fiscal deficit to a level of 3 percent of GSDP. Under the fiscal consolidation path prescribed by the XIII Finance Commission, Kerala had to reach zero revenue deficit level by 2014-15 and restrict

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its fiscal deficit to a level of 3 percentage of GSDP from 2013-14 onwards. The continuous increase in deficits accompanied by the accumulation of debt raises the question of fiscal sustainability and solvency. In this context, this paper deals with an analysis on growing public debt of Kerala and sustainability of debt through indicator-based analysis as well as empirical exercises.

Debt Position of the Government

There has been a consistent increase in public debt due to unprecedented rise in fiscal imbalances. The total outstanding debt of the state government was Rs. 6466.98 crores in the year 1980-81 which increased to Rs. 40691.13 crores in 2003-04. The average of annual growth of total outstanding debt for the time period between 1996-97 and 2004-05 was 11.36 percentage, followed by a decline in average growth rate to 5.52 in the years between 2005-06 and 2010-11 as direct impact of fiscal consolidation. But the annual growth rate has increased in the last two years (2013 and 2014). Total outstanding debt of the state government has increased to around ten folds within the time period. In 1981-82 it was Rs. 6306.65 crores, which increased to Rs 13462.5 in 1991-92 and to Rs. 70847.6 crores in 2013-14. As a percentage of GSDP, the total outstanding debt is 31.03 percent in 2013-14, while it was only 15.3 percent in the year 1981-82 shows the extent of growth. A comparison of per capita debt and per capita income is imperative to understand the debt burden. Per capita debt in current price has increased from Rs. 1532.41 in 1990-91 to Rs. 8464.44 in 2003-04, an increase of more than five times within a period of thirteen years. If rising debt is supported with simultaneous rise in per capita income it will not be burdensome. However, in case of Kerala the rise in per capita income is not accompanied by decrease in public debt. In current prices, it has increased from Rs. 423 to Rs. 35177.55 and in constant prices from Rs. 2454 to Rs. 20080 during the same period. The ratio of per capita debt to per capita income was 15 percent in 1980-81 and increased to 35 percent in 2003-04, now stand at 30 percent indicates that, out of every rupee earned by an individual 30 paisa constitutes public debt.

Table-1: Debt Position of Kerala

YEAR	IP / RE	IP / GSDP	IP / FD	IP / RR	OUTLIA / GSDP
1981-82	7.57	0.81	92.54	6.71	15.36
1982-83	7.84	0.74	49.96	7.58	15.14
1983-84	9.22	0.97	30.57	9.79	16.80
1985-86	8.79	1.13	39.35	9.27	19.95
1986-87	10.71	1.40	40.30	11.80	19.64
1987-88	11.97	1.53	47.59	13.44	20.27
1988-89	11.86	1.58	59.34	12.89	18.88
1989-90	12.75	1.68	48.51	14.31	20.04
1990-1991	12.06	1.69	42.63	14.17	24.78
1991-1992	15.03	1.99	60.20	16.95	24.17

YEAR	IP / RE	IP / GSDP	IP / FD	IP / RR	OUTLIA / GSDP
1992-93	14.84	1.94	74.11	16.35	23.88
1994-95	16.18	2.16	73.91	17.57	24.48
1995-96	15.86	2.01	70.93	17.04	23.31
1996-97	16.36	2.10	71.96	18.07	23.31
1999-2000	16.88	2.61	43.03	24.58	29.01
2000-01	19.01	2.87	58.22	25.86	32.77
2001-02	21.35	2.95	76.15	27.49	34.45
2002-03	19.97	3.14	59.01	27.70	35.98
2003-04	21.48	3.18	60.09	28.17	37.52
2004-05	21.04	3.03	81.14	26.76	36.71
2005-06	20.62	2.80	90.85	24.84	35.29
2006-07	20.12	2.72	109.62	23.04	34.06
2007-08	17.39	2.47	70.98	20.51	33.30
2008-09	16.51	2.30	73.43	19.01	32.70
2009-10	17.00	2.28	67.23	20.27	32.35
2010-11	16.41	2.16	73.60	18.36	31.27
2011-12	13.67	2.01	49.11	16.56	29.81
2012-13	13.47	2.07	48.02	16.32	31.21
2013-14	13.67	2.09	48.78	16.81	31.32

Note: computed by author.

Source: .GOK, Budget in Brief, various issues

Table-2: Per Capita Debt and Per Capita Income

YEAR	PD(N)	PD(R)	PI(N)	PI	% of PD/pI
1981-82	423.36	2454.05	2756.13	15976.00	15.36
1982-83	482.99	2476.23	3189.87	16353.95	15.14
1983-84	598.91	2586.58	3565.60	15399.13	16.80
1984-85	694.48	2843.63	3881.27	15892.35	17.89
1985-86	825.00	3254.40	4136.40	16316.83	19.95
1986-87	906.34	3113.12	4615.40	15853.03	19.64
1987-88	1006.62	3203.47	4966.37	15805.02	20.27
1988-89	1027.39	3237.15	5441.72	17145.92	18.88
1989-90	1220.51	3543.03	6089.91	17678.47	20.04
1990-91	1532.41	4189.61	6937.50	18967.07	22.09
1991-92	1772.10	4055.21	8308.49	19012.83	21.33
1992-93	1994.26	4190.82	9451.50	19861.73	21.10
1993-94	2406.32	4910.17	10509.51	21444.88	22.90
1994-95	2919.60	5316.64	12549.20	22852.21	23.27
1995-96	3315.85	5179.26	15076.75	23549.37	21.99

YEAR	PD(N)	PD(R)	PI(N)	PI	% of PD/pI
1996-97	3711.13	5220.15	17163.59	24142.57	21.62
1997-98	4145.89	5393.12	19048.27	24778.62	21.77
1998-99	5017.58	6113.97	21531.76	26236.58	23.30
1999-00	6398.99	7472.43	23728.88	27709.36	26.97
2000-01	7531.88	8668.27	24748.17	28481.94	30.43
2001-02	8464.24	9552.47	26471.44	29874.63	31.98
2002-03	9660.36	10490.85	29233.44	31746.40	33.05
2003-04	11574.26	12000.76	32324.28	33515.30	35.81
2004-05	12879.59	12879.59	36679.83	36679.69	35.11
2005-06	14057.17	13586.34	41882.15	40184.23	33.81
2006-07	15191.03	13993.94	46840.23	43148.97	32.43
2007-08	16794.98	14776.61	53085.95	46706.07	31.64
2008-09	19084.82	15308.63	61167.69	49064.67	31.20
2009-10	21303.70	16305.84	69642.16	53303.92	30.59
2010-11	23563.26	16959.73	79002.04	56861.96	29.83
2011-12	26660.90	17134.97	93227.93	59917.63	28.60
2012-13	30759.25	18822.98	103314.34	63222.72	29.77
2013-14	35177.50	20080.25	117135.90	66864.27	30.03

Note: The table shows the IP as percentage of RE, RR, GSDP and FD is considerably declining after 2004-05. With the declining trend in interest payment outstanding debt is also show a decline since 2004-05.

Source: .GOK, Budget in Brief, various issues

The capacity of an economy to go for borrowing greatly depends on state income. Over the years, the rise in public debt as percentage of GSDP shows the debt burden of the state economy. It can be seen (Table-2) that public debt was around 19.35 percent of GSDP from 1980-81 to 1990-91 and after that it started increasing and reaches 37 percent in 2003-04 and stand at 31.31 percent in 2013-14. The debt burden of the state is on the decrease as evident from the debt-GSDP ratio and since 2006-07 a decrease in interest payment as percentage of both revenue expenditure and revenue receipt is seen to Debt Consolidation and Relief Facility (DCRF) from 2005-06 to 2009-10. In the year 2004-05, almost 21.04 percent of the revenue receipts went into payment of interest and remaining left to pay for other routine expenses. But, there has been a decline in interest payment both as percent of revenue receipts and revenue expenditures in post-FRBM Act period.

Debt Sustainability

Different approaches have been documented in literature to assess debt sustainability. In this section the debt sustainability is analysed through three main approaches: Domar debt sustainability condition, sustainability indicators analysis and through a long term analysis on fiscal variables (Buiter and Patel 1992; Khundrakpam 1998; RBI 1999, 2001, 2002 &

2013; Pattnaik, Prakash, & Misra, 2004). But the results from these analyses prove weak sustainability. The indicator-based analysis reveals the fact that the debt repayment capacity and interest burden indicators lagged behind their respective performance levels achieved from 1981-82 to 1991-92. But most of these indicators show a significant improvement in debt sustainability between 2004-05 and 2012-13 compared to earlier periods.

Domar's (1944) condition proposes both necessary and sufficient conditions for sustainability. The necessary condition is that the growth rate of real income must exceed the real interest rate and the sufficient condition is that the adequate primary surplus should be maintained to finance debt services. The necessary condition is symbolised as,

$y-r > 0$

$r_t = IP/ (OD)_{t-1}$

Figure-2(a): Growth Rates of GSDP and Interest Rates (Real)

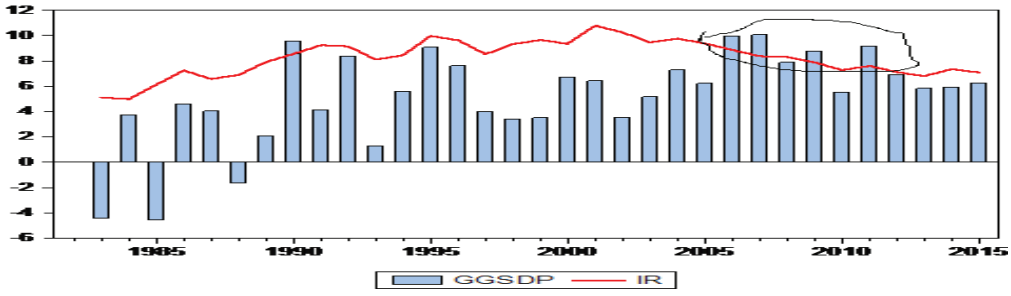
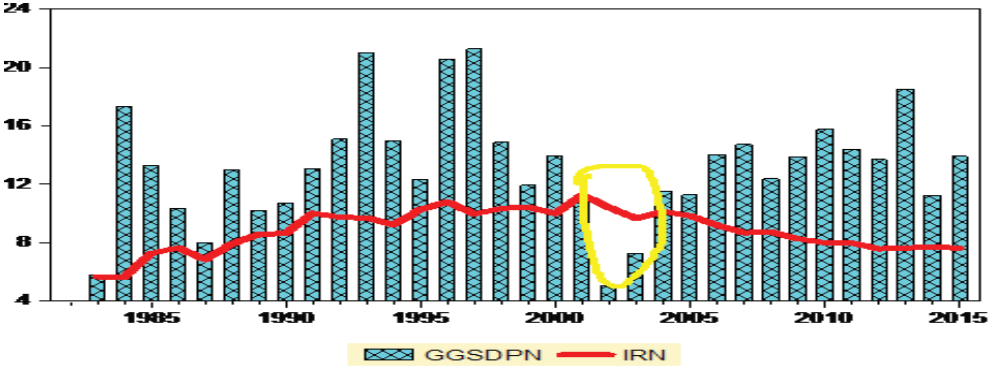


Figure-2(b): Growth Rates of GSDP and Interest Rates (Nominal)



Note: Plotted by author based on data of public finance, Kerala. It shows the difference between nominal and real data. The second figure (2.b) shows a sustainable condition. But, the figure (2.a) indicates a reverse after 2011.

where, *Y* = Growth of GDP, r = Average interest rate, IP = interest payment, OD = Outstanding debt and t=Time period. The following figures depict it. In nominal term [Figure 2(b)] shows the growth rate of GSDP is higher in all the years except in the years of 2002 and 2003. While in real term [Figure 2(a)] the GSDP growth rate is more than that of interest rate only for the period between 2006 and 2011 (rounded) explicates the difference and emphasises the need for sound fiscal policy.

Sustainability Based on Indicator Analysis

The following table shows that the debt sustainability based on alternative conditions, which are taken to capture the different aspects of debt sustainability condition (with their symbolic representation). For this, the time period is divided in to three phases as in earlier analyses, first for pre-reform period (1980-81 to 91-92), then for post-reform period, which is further divided in to two periods, between 1992-93 and 2003-2004 and the next after fiscal reform (FRBM) from 2004-2005 to 2013-14. So, the first two phases represent pre-FRBM periods and the latter represents post-FRBM period. The values are period averages of the different phases. The analysis shows that real rate for interest is higher than growth of real GSDP which hits the Dormer (1944) necessary condition for sustainability (growth rate of real income must exceed the real interest rate) excluding these years 1988-89, 2004-05 to 2006-07 and 2010-11 [see figure 2(a)]. As per the sustainability indicators (see the symbolic representations), the fiscal position of the state during PRE-FRBM period was unsustainable as indicated by most of the indicators. During the PRE-FRBM years, real GSDP growth was lower than the real interest rate except the year 1988-89. It was due to comparatively very low inflation rate in that year compared to that of the other years. But there has been a significant improvement in the post-FRBM years which attained the required condition of sustainability that GSDP growth should be greater than growth of debt and interest rate. However, the additional condition that primary balance to be non-negative has not been met out in the whole period of analysis. Even though all variables are in opposite direction (symbolic representation in column 2 and 3), there has been a significant decline in extent of increase in the IP as percentage of RR, RE and GSDP as an impact of FRBM.

Fiscal and Debt Sustainability of the State – Long-term Analysis

Fiscal sustainability questions whether current policies are consistent with the inter-temporal budget constraint. The idea behind cointegration analysis is to examine whether the state has maintained inter-temporal budget constraint during the period of study. That is, whether there exists an error correction mechanism, which pushes government finances towards equilibrium. Lack of cointegration among the variables implies that under unchanged fiscal policies, the debt stock of the state government is unsustainable. As already explained fiscal consolidation can eventually occur either through increase in revenue or decrease in expenditure or balancing both of them.

Table-3: Indicator Analysis of Debt Sustainability

Sl. Nu.	Indicators	Symbolic Representation	Phase-I 1981-82 to 1991-92	Phase II 1992-93 to 2002-03	Phase III 2003-04 to 2013-14
1	Rate of growth of real GDP (Y) should be more than growth rate of debt (D)	y-D > 0	-3.44	-4.56	0.88
2	Rate of growth of debt (D) should be lower than rate of growth rate of nominal GDP (gn)	D <gn < 0	3.74	4.50	-0.95
3	Real output growth (y) should be higher than real interest rate (r)	y -r-> 0	-4.585	-3.88	-0.320
4	Rate of growth of debt (D) should be lower than effective interest rate (i)	d-r<0	-0.44	-0.41	-1.206
4(a)	Primary deficit (PD) should not be rising faster than GSDP	PD/GSDP<0	1.47	1.44	1.19
4(b)	Revenue Receipts (RR) as a per cent to GDP should increase over time	RR/ GDP ↑↑	11.390	11.545	11.82
4(c)	Primary revenue balance (PRB) should be in surplus	PRB/GDP > 0	-0.577	-0.114	-0.075
4(d)	OD/Y(r-y)-PD/Y<0	OD/GSDP* (r-y)-PD/ GSDP<0	81.571	113.12	9.3407
5(a)	Debt to revenue receipts ratio should decline over time	TD / RR ↓↓	165.69	230.07	281.9
5(b)	Debt to tax revenue ratio should decline over time	TD / TR ↓↓	123.37	165.46	211.41
5(c)	Debt to own tax revenue ratio should decline over time	TD/OTR ↓↓	304.87	366.79	423.83
6(a)	Interest burden defined by interest payments (IP) as a per cent to GDP should decline over time	IP / GDP ↓↓	1.26	2.28	2.46
6(b)	Interest payments (IP) as a per cent of revenue expenditure (RE) should decline over time	IP / RE ↓↓	10.34	16.61	17.39
6(c)	Interest payments (IP) as a per cent of revenue receipts (RR) should decline over time	IP / RR ↓↓	11.07	19.95	20.96

Note: The values are average per periods. The data trend from the table depicts a slight improvement in last period. PRB = revenue deficit – interest payment.

Source: Computed by author on the basis of data compiled from various issues of Kerala Public Finance Statistics.

Likewise, if the decision for increase revenues and expenditure takes simultaneously then it would have an ambiguous impact on deficits. While, interdependence between expenditures and receipts could obstruct efforts at deficit reduction or control to attain fiscal consolidation. The consequent fiscal stress makes financial management an increasingly difficult task. That means, in the conduct of the budget process the higher the dispersion between opportunistic and long-term targets of budgetary policy, the higher the probability of an inter-temporally inefficient budget policy. Thus, the basis for analysis of fiscal sustainability is an understanding the path for public expenditure and revenue.

Due to the absence of co-integrating relationship between government expenditure and revenue, here an attempt has been made to test, whether there exists a long-run equilibrium (steady state) relationship between revenue expenditure and state revenue in terms SDP through cointegration tests with the assumption that the error correction mechanism would push government finances towards the levels required by the inter-temporal budget constraint and ensure fiscal and debt sustainability in the long-term. But, it cannot find a co-integrating relationship between total state revenue and revenue expenditure as a as a percentage of SDP (Sr/sdp and re/sdp). Finally, to find the effect of developmental expenditure on state revenue, the relationship between total developmental expenditure and state revenue is also tested.

The testable functions and representation is as follows:

$$\Delta lsr/sdp_t = \alpha + \sum_{i=1}^{p} \beta\, \Delta lsr/sdp_{t-i} + \sum_{i=1}^{p} \phi\, \Delta lre/sdp_{t-i} + \lambda ecm_{t-1} + frbm + \varepsilon_{1t} \quad (6.1)$$

$$\Delta lre/sdp_t = \alpha_2 + \sum_{i=1}^{p} \beta_2\, \Delta lre/sdp_{t-i} + \sum_{i=1}^{p} \phi_2\, \Delta lsr/sdp_{t-i} + \lambda_2\, ecm_{t-1} + \phi frbm + \varepsilon_{1t} \quad (6.2)$$

$$\Delta\, lsr_t = \alpha + \sum_{i=1}^{p} \beta\, \Delta lsr_{t-i} + \sum_{i=1}^{p} \phi\, \Delta ltde_{t-i} + \lambda ecm_{t-1} + \phi frbm + \varepsilon_{1t} \quad (6.3)$$

$$\Delta\, ltde_t = \alpha_2 + \sum_{i=1}^{p} \beta_2\, \Delta ltde_{t-i} + \sum_{i=1}^{p} \phi_2\, \Delta lsr_{t-i} + \lambda_2\, ecm_{t-1} + \phi frbm + \varepsilon_{1t} \quad (6.4)$$

The result from the analysis shows (Table-4) co-integrating relationship between total development expenditure (TDE) and total state revenue(SR) and a equilibrating function when SR is dependent variable (Table-5), also a significant dummy for FRBM (after FRBM rule) that means a positive effect of it. It implies the need of increase in total developmental expenditure and to curb the growing non-developmental expenditures.

Conclusion

The state government has been facing serious fiscal crisis since eighties due to low income generation capacity of the state with increasing expenditure need of the state. Increase in revenue expenditures without revenue mobilisation widens the gap to a persistent and seemingly unsustainable path leading fiscal management at risk. The adverse imbalance between revenue receipt and revenue expenditure has originated and established continually since 1983-84. The burden of debt becomes unsustainable in the sense that the state government is facing hardships to repay the principal as well as interest liability. The analysis on debt sustainability as attempted in this paper through indicator-based analysis as well as empirical exercises shows weak sustainability for the

period in debt position of state at the aggregate level. This implies the extent of growing burden of debt and the requirement for a sound fiscal management.

Moreover, the test result shows no feedback effect between total revenue receipts and total expenditure. So a comprehensive analysis is required to test the relationship between revenue and expenditure. In Kerala, any deficit ratio can be impacted through the interaction between revenue expenditures and capital receipts so either by augmenting revenues or curtailing expenditures or implementing both deficits, thus, reveal the fiscal health of an economy. This indicates the need that there should be effective measures to improve the tax administration so that tax evasion tendency may be checked and other malpractices may be avoided. This would facilitate checking revenue and fiscal deficits of the state. Besides, the period witnessed 5 changes in the state government alternating between the United Democratic Front (UDF) and Left Democratic Front (LDF) dispensation every five years. It is widely arguing that Public expenditure is determined by political will of the leading forces in a state, their priorities, their desired state model, and their interpretation of current economic and political phase (Buchanan and Wagner, 1977; Alesina and Rodrik, 1994; Meltzer and Richard, 1981; Persson and Tabellini, 1994; Rogoff; 1990, Rogoff and Sibert; 1988 Sasmal, 2004 Marjit and Maity; 2006). As in Politico-economic models, deficit is the result of opportunistic behavior of incumbent that circumscribed by institutional constraints and rigidities, which cause delay in governmental action to take consolidation policies leading to debt accumulation. So further investigation is required for understanding such an effect on budgetary policy choices of the state. This may open new understandings on state finances. The paper indicates the need that the policy intervention of state finance has to consider measures to curb non-developmental revenue expenditure growth and to boost the growth of GSDP of the state. The government should direct public spending in such a way to generate more employment and income opportunities in Kerala, keeping unproductive revenue expenditure in check, reducing subsidies by effective targeting of the genuinely needy groups and increasing capital expenditure by better use of all sources available, including Central Assistance and Private Investment, taking effective measures to improve the tax administration, without increase in tax base, will improve the quality of public finance.

Figure-3: Correlogram of Residuals

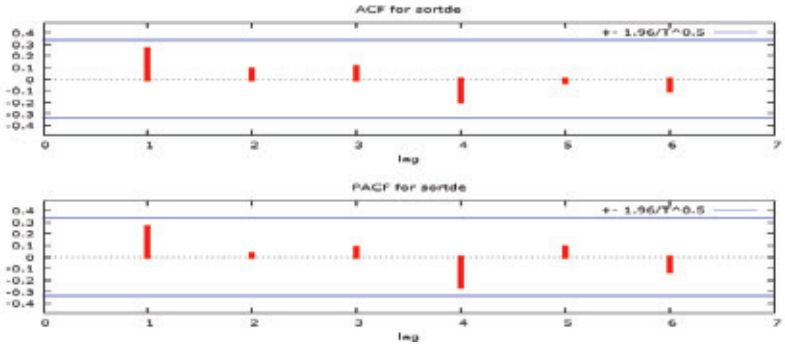


Table-4: Results from Cointegration test

Variables	TDE-SOR	sr/sdp-re/sdp	rr/sdp-re/sdp
Lmax-test			
None	15.451 (0.03) **	19.556-0.005	17.48 (0.01)
At Most One	0.0003 (-0.98)	5.08-0.0242	2.86 (0.09)
Trace Test			
None	15.451 (0.07)	24.48 (0.01)	20.34 (0.007)
At most One	0.0003 (-0.98)	5.06 (0.09)	2.86 (0.09)

*Note: The numbers in parenthesis are the p-values. *, **, and * ** denotes significant at 10%, 5% and 1% level respectively.*

Table-5: Results from Vector Error Correction Model for SR and TDE

variables	ΔL TDE – 1	ΔL SR - 1	ΔL StR – 1	ECM	frbm	R2	DW	Constant
Coefficients	-0.09	0.073		-8.04	0.99	0.58	1.71	-3.3
	(-0.07)	(-0.79)		(4.22)8***	(2.52)**			(-1.32)

*Note: The numbers in parenthesis are the t-statistics. *, **, and * ** denotes significant at 10%, 5% and 1% level respectively.*

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Impact of Futures Trading on Spot Market Volatility

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ABSTRACT

The present study investigates whether introduction of futures trading affect stock market volatility. To empirically examine the impact of futures trading on spot market closing prices Sensitive Index from April 2, 1990 to March 31, 2016 has been considered by splitting the whole study period into pre-derivative introduction and post-derivative introduction. GARCH family models reveal that volatility in spot market declined marginally subsequent to the introduction of derivative trading. The main reason behind this may be attributed to smaller trading volume of futures. As the volume of trading in futures reaches new heights, spot market volatility is expected to further reduce. The study found that the impact of recent news and that too bad ones implying negative shocks contributes to increase in volatility but introduction of futures trading has reduced the volatility persistence and contributed towards spot market efficiency.

Keywords

GARCH, Volatility Spikes, Volatility Persistence, Leverage, Spot Prices, Futures

Introduction

Trading in financial markets is both a need and cause behind the determination of rational prices for various financial instruments. The main purpose of trading in financial markets is to ascertain the accurate price of the financial assets. The level of efficiency of a stock market depends upon the degree of accuracy in forecasting the future prices of financial assets and whether this future price is contingent upon the past information, recent information or future events. A market is considered to be efficient only if it is

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able to forecast the future price with fair amount of accuracy by taking into account the current and future scenario. Since market is exposed to ever changing and highly dynamic environment, market has to bear the sensitivity to multiple factors. Stock market can never be expected to be perfectly efficient to avoid volatile feature of every new piece of information. This sensitivity of stock market to various factors leads to variation in stock prices. The resultant variability in stock prices is known as volatility. Volatility is the unwanted feature which has adverse impact for decisions pertaining to investors' portfolio management and thus allocation of resources. Volatility leads to increased uncertainty of investors with regard to holding of stocks. As a result of this uncertainty investors demand higher risk premium which in turn leads to higher cost of capital and eventually lower investment. The prevailing inefficiency in emerging securities markets including India further magnifies the problem of volatility. Many reforms have been introduced in the Indian capital market for improving the information efficiency of the Indian stock market so that volatile behaviour of the stock market can be controlled. Derivative trading in the form of listing of futures and options contract was expected to reduce the volatility by increasing the speed of flow of information between spot market and futures market. Spot market is characterised by original equity indices and stocks while futures market is based on derivative instruments such as futures and options contracts derived from spot market equity indices and stocks. The derivative trading by means of futures contract and options has been launched to increase the avenues for risk transferability and enhanced liquidity. But with the introduction of derivatives in equity markets, the volatile feature of stock markets has become more complex due to increased opportunities for speculation also along with hedging avenues.

In this paper, an effort has been made to empirically analyse the volatility implications of the introduction of derivatives trading on the spot market also called cash market which will provide the evidence regarding whether the listing of futures and options leads to any significant change in the volatility of the spot market in India. In India, trading in derivatives started in June 2000 with the launch of futures contracts in the BSE S&P Sensitive Index (Sensex) and the S&P CNX Nifty Index on the Bombay Stock Exchange (BSE) and National Stock Exchange (NSE), respectively. Introduction of derivative trading on Bombay Stock Exchange (BSE) and National Stock Exchange (NSE) since June 12, 2000 is a milestone in controlling volatility.

The average daily turnover for BSE's Sensitive index based Futures and Options segment had surged to Rs. 9358.5 millions in June 2014 from Rs. 1419.1 millions in May 2014. By November 2014, it had gone up to Rs. 17447.0 millions. To implement the programme initially several volume-based, quote-based and open interest-based cash incentives were announced. The exchange had also lowered transaction fees for all active trading members. Index futures based on the 30-share Sensex, alone account for 90 per cent of the total derivatives turnover on BSE, with index options and stock derivatives accounting for the rest 10 per cent of derivatives. Sensex futures turnover is just nine per cent of futures turnover on NSE Nifty, however in terms of value, Sensex based futures alone account for three times the value of futures based on Nifty. Hence, even with small percentage of BSE

Sensex futures trading volume in comparison to NSE Nifty futures, spot market of BSE will provide more robust results of changes in volatility behaviour subsequent to introduction of derivative trading. In the present paper an effort has been made to empirically analyse the impact of BSE Sensex futures trading on BSE Sensex spot market volatility pattern.

Review of Literature

To be able to formulate problem precisely and pinpoint rationale for its undertaking it seems logical to present brief review of literature which is related directly or indirectly to the problem. Available literature on the volatility effects of derivatives listing provided mixed results. The modeling of asset returns volatility continues to be one of the key areas of financial research. It provides significant information on the risk involved in investment and transaction processes. A number of works have been performed in this direction and much more still needs to be done.

Santoni (1987) examined that an increase in the S&P 500 futures contract trading volume does not increase the volatility of the underlying spot price index. Edwards (1988) observed whether stock Index futures trading is the cause behind instability of spot market in the long run. Applying variance ratio F test for the period from June 1973 to May 1987, the study concluded that the introduction of futures trading has not changed spot volatility in the long run. Harris (1989) analysed volatility after introduction of trading in Index futures by comparing daily return volatilities during the pre-futures (1975 - 1982) and post-futures (1982 - 1987) period considering S&P 500 and a non S&P 500 group of stock. He concluded that increased volatility was a general trend in different markets and Index futures trading may not be considered to have contributed to volatility. Pericli and Koutmos (1997) investigated the behaviour of conditional variance after the introduction of index futures and options by applying a non-linear exponential GARCH model considering the asymmetry in stock return volatility. It has been found that the volatility of the S&P 500 index has reduced after the introduction of futures trading.

Rahman (2001) analyzed the impact of DJIA index future and future option trading on the conditional volatility of underlying stock component by applying GARCH model on intra-day return before and after introduction of these index future and future option. The study concluded that the launch of index future and future option has no affect on the conditional volatility of underlying stocks. Alexakis (2007) examined the impact of introduction of stock index future on volatility of its counterpart spot market equity stocks using GARCH model on FTSE 20 Index. He observed that derivative trading has no impact on underlying spot market equity. According to Drimbetas et. al (2007) the introduction of derivatives led to a reduction of conditional volatility in the FTSE/ASE20 Index and consequently contributed to its efficiency.

In India, there is a lack of robust evidence regarding the impact of derivatives trading on stock market volatility. Trading in derivatives contracts in India has been initiated for the last fifteen years. The length of period is quite adequate to empirically examine the impact of derivatives on underlying Indian indices and stocks to ascertain the resultant spot market volatility reaction.

Objectives of the study

Study has been undertaken to achieve the following objectives:

- To study the impact of futures trading on spot market volatility.
- To analyse the differential impact of volatility if any in response to recent news versus old news.
- To examine the impact of Informational asymmetry on spot market volatility.

Data Base

Return on Sensex (BSER): Sensex has been considered as barometer of Indian capital market and constitutes 30 stocks of blue chip companies. For the present study return on Sensex has been taken as benchmark of returns on Indian scrips. Returns have been proxied by the log difference in the current and previous day closing values of Sensex.

$$BSER_t = \log P_t - \log P_{t-1} \quad \text{..... (01)}$$

Where:

P_t = Closing value of Sensex on time 't'

P_{t-1} = Closing value of Sensex on time 't-1'

Days when there was no trading have been omitted and the price change has been calculated from the last day the market was open.

Volatility of spot market based upon daily Sensex returns (BSER) is estimated by GARCH (1,1) and E-GARCH models for pre-derivative introduction period from April 2, 1990 to June 9, 2000 and post-derivative introduction period from June 12, 2000 to March 31, 2016. Further, volatility has also been calculated for the whole sample period from April 2, 1990 to March 31, 2016 by including a dummy variable as '0' from April 2, 1990 to June 9, 2000 and '1' from June 12, 2000 to March 31, 2016.

For the purpose of calculation of descriptive measures and estimation of volatility (GARCH) models returns on Sensex (BSER) based on spot prices and returns on Futures Sensex (FSER) based on futures market prices have been considered.

Methodology

Volatility has been Estimated Applying following GARCH Family Models:

To ascertain the order of integration is the prerequisite for almost all the econometric models and same has been determined for all the models using Augmented Dickey Fuller (1979) unit root test. A data series is stationary if its mean and variance are constant (not changing) over time and the value of covariance between two time periods depends only on the distance or lag between the two time periods and on the actual time at which the covariance is computed. The correlation between a series and its lagged values are assumed to depend only on the length of the lag and not the starting point of the series.

A series observing these properties is called a stationary time series. It is also referred to as a series that is integrated of order zero I(0). The unit root test checks whether a series is stationary or not. For this the following types of Augmented Dickey Fuller (ADF) regression has been applied:

$$\Delta Y_t = \alpha_1 Y_{t-1} + \sum_{m=1}^{n} \beta_m \Delta Y_{t-m} + \mu_t \quad \text{.....(02)}$$

$$\Delta Y_t = \alpha_0 + \alpha_1 Y_{t-1} + \sum_{m=1}^{n} \beta_m \Delta Y_{t-m} + \mu_t \quad \text{.....(03)}$$

Where, μ_t is white noise. The equation (02) is without intercept but equation (03) is with intercept. The additional lagged terms have been included to ensure that errors are uncorrelated. The following hypotheses have been tested by applying unit root tests:

H_o : Y_t is not I (0) i.e., [Y_t is not integrated of order zero].

H_1: Y_t is I (0) i.e., [Y_t is integrated of order zero].

If the calculated ADF statistics are insignificant then the null hypothesis (H_o) is accepted and the series are taken as non-stationary or not integrated of order zero. Hence, unit root exists. Alternatively, if the calculated ADF statistics are significant then the alternate hypothesis (H_1) is accepted and the series are taken as stationary or integrated of order zero. Hence, unit root does not exist.

GARCH (1, 1) Model

Generalised Conditional heteroscedasticity (GARCH) model has been applied to measure volatility for Indian capital market. GARCH is a symmetric model and it captures the effect of volatility clustering or persistence of volatility shocks in stock market returns (Bollerslev, 1986). The two distinct specifications for GARCH (1,1) model are: one for conditional mean specification and another for conditional variance.

These specifications are expressed as follow:

$$Y_t = c + e_t \quad \text{.....(04)}$$

$$\sigma_t^2 = \alpha_0 + \alpha e^2_{t-1} + \beta \sigma^2_{t-1} \quad \text{.....(05)}$$

Equation (04) is the mean specification equation where c is constant and e_t is error term. On the other hand, equation (05) represents the conditional variance specification and is a function of following three terms:

The mean, α_0

News about volatility from the previous period which is measured as the mean lag of the squared residual from the mean equation e^2_{t-1} and is called the ARCH term (α) which implies impact of recent news and 'spiky volatility'.

Last period's forecast variance i.e., σ^2_{t-1} which is called the GARCH term (β) which implies the impact of old new on the market prices and leads to 'volatility clustering'.

Exponential GARCH (E-GARCH)

Stock return volatility has also been estimated using asymmetric GARCH (E-GARCH) model. This model captures the leverage effect existing in most of emerging market stock return series (Nelson, 1991). Stock market returns in India are non-normal. Asymmetric E-GARCH model that allows for non-normality of stock return series is therefore considered appropriate to estimate volatility. Thus, this model captures both leverage and volatility clustering effects. Under E-GARCH model two distinct specifications for mean and variance are as follow:

$$Y_t = c + e_t \quad \text{..... (06)}$$

$$\log(\sigma_t^2) = \alpha_0 + \beta \log(\sigma^2_{t-1}) + \alpha |e_{t-1}/\sigma_{t-1}| + \gamma .. e_{t-1}/\sigma_{t-1} \quad \text{..... (07)}$$

The equation (06) is mean equation specification and equation (07) variance equation specification. In this model β is GARCH term, which measures the impact of last period's forecast variance. Thus, GARCH coefficient shows the effect of old news on volatility and implies that volatility is persistent. A positive and significant β indicates that volatility clustering is associated with further positive changes and vice-a-versa.

α is the ARCH term, which measures the effect of news about volatility from the previous period on current period volatility. Thus, ARCH coefficient shows the effect of recent news on volatility which implies 'spikes' in volatility. γ.. measures leverage effect which implies the impact of informational asymmetry on spot market volatility. γ.. is expected to be negative implying that bad news has a bigger impact on volatility than good news of the same magnitude.

Empirical Analysis

Table-1 exhibits the summary statistics. In case of spot market as represented by the Daily Returns on Sensex (BSER) has shown positive mean return in pre-derivative implementation, post-derivative implementation period and even for the whole sample period taken together. It further signals that mean return for the spot market were higher during pre-derivative period while declined during post-derivative implementation period.

Table-1: Summary Statistics of Daily Returns on Sensex (BSER)

Sample period	Mean	Skewness	Kurtosis	Jarque Bera Statistic	Standard Deviation
Pre-Derivative Period (April 2, 1990 to June 9, 2000)	0.000783	-0.020337	7.08996	1601.088* (0.00000)	0.020213
Post-Derivative Period (June 12, 2000 to March 31, 2016)	0.000442	-o.162286	10.69843	9858.093* (0.00000)	0.014977
April 2, 1990 to March 31, 2016	0.000564	-0.072652	9.096823	9738.199* (0.00000)	0.17079

** significant at one per cent level of significance and ( ) P-value.*

The main cause behind this may be the increased arbitrage opportunities available to the investors, whereby investors shift from cash market to futures market in lure of higher profits in futures market due its lower transaction cost and hedging measure. Similarly, Table-2 shows that daily mean returns on Sensex Based Futures Index (FSER) have also been observed to be positive. The BSER and the FSER, both the series exhibit negative skewness and positive kurtosis. Also the Jarque-Bera test conducted to test the null hypothesis for the normality of the distribution of the series reveal very low p values of the computed chi-square statistic and rejected the normality assumption in both the BSER and FSER series.

Table-2: Summary Statistics of Daily Returns on Sensex Based Futures Index (FSER)

Sample period	Mean	Skewness	Kurtosis	Jarque Bera Satatistic	Standard Deviation
June 12, 2000 to March 31, 2016	-0.0005	-0.00050	18.8798	36953.34* (0.00000)	1.26769

**significant at one per cent level of significance and ( ) P-value.*

Thus, it is clear from the results that both the series are non-normal, giving a signal of prevailing informational asymmetry in Indian stock market. Standard deviation for the cash (spot) market (BSER) has reduced marginally during post-derivative introduction period but for the whole sample period it has shown the results almost similar to pre-derivative introduction period.

Table-3: Augmented Dickey-Fuller Unit Root Test of Returns on Sensex (Spot Market)

Sample Period	ADF value (Actual)	ADF value (Critical)	P-Value
April 1, 1990 to June 9, 2000	-43.72*	-3.43	0.00
June 12, 2000 to March 31, 2016	-44.87*	-3.43	0.00
April 1, 1990 to March 31, 2016	-72.87*	-3.43	0.00

**significant at one per cent level of significance.*

The results of the standard Augmented Dickey Fuller unit root test, applied for determining the order of integration for the spot market i.e. BSER are presented in Table-3. It is clear from the table that calculated or actual ADF statistic is higher than critical values of ADF from Fuller's tables and these are significant at 1% level of significance. Thus, null hypothesis for existence of unit root is rejected for the daily returns on spot market. Hence, BSER is zero-mean stationary and integrated of order zero I(0) for pre and post-derivative introduction period and also for whole sample period.

Volatility Measurement by GARCH (1,1)

Table-4 exhibits the results of GARCH (1, 1) model. The size of ARCH and GARCH parameters determine the short-run dynamic of the resulting volatility time series. Large GARCH Coefficient normally indicates the persistence of volatility and large ARCH

coefficient implies that volatility is less persistent and more spiky. Table-4 shows that the sum of ARCH and GARCH parameters for Symmetric GARCH (1,1) model in all cases i.e., (i) prior to the introduction of derivatives on Bombay stock exchange i.e., from April 2, 1990 to June 9, 2000 (ii) post-introduction of derivatives on Bombay stock exchange i.e., from June 12, 2000 to March 31, 2016 and (iii) for the whole study period from April 2, 1990 to March 31, 2016 including Dummy as '0' before June 12, 2000 and '1' from June 12, 2000 and onwards are very close to one. In addition, size of GARCH coefficients is large in comparison to ARCH coefficients. This clearly implies that volatility shocks are quite persistent in Indian spot market returns. Hence, it confirms the volatility clustering effect in Indian stock market returns in both pre and post-introduction of futures trading. But the reduced volatility impact could not be traced in the sum of ARCH and GARCH coefficient. Rather sum of ARCH and GARCH coefficient (0.97) indicate that volatility persistence has remained static during both pre-derivative and post-derivative period. However, the results of GARCH (1,1) model by splitting the data into pre and post-derivative period and by incorporating dummy variable exhibited that futures trading have reduced the volatility of spot market as reflected by significant and negative coefficient of dummy variable. But the decline in volatility in spot market is quite marginal due to small value of dummy coefficient. The main reason behind this may be attributed to smaller trading volume in futures. It further signals that with rise in the volume of trading in futures, volatility is expected to decline to a greater extent. The impact of listing of futures on Indian bourses if analysed in terms of differential impact of recent news versus old news, shows some interesting insights of changes in volatility pattern.

Table-4: GARCH (1,1) For Daily Returns on Sensex

Sample Period	ARCH (α)	GARCH (β)	Dummy (Ø)	Sum of ARCH and GARCH ($\alpha + \beta$)	Constant
April 1, 1990 to June 9, 2000	0.09* (9.58)	0.88* (93.01)	----------	0.97	7.98E-06* (5.38)
June 12, 2000 to March 31, 2016	0.11* (15.88)	0.86* (105.85)	--------	0.97	4.73E-06* (8.20)
April 1, 1990 to March 31, 2016 including Dummy as '0' before June 12, 2000 and '1' from June 12, 2000 and onwards	0.11* (18.95)	0.86* (143.52)	- 4.87E-06* (-5.54)	0.97	9.18E-06* (8.25)

**significant at one per cent level of significance. Figures in ( ) are Z-values.*

ARCH component of volatility has increased marginally from 0.09 to 0.11 while GARCH volatility has shown a decline of equivalent value from 0.88 to 0.86. This highlights a shift in the volatility feature from volatility clustering towards spiky form of volatility. Thus, with the advent of hedging instruments such as futures and options, only the spiky

volatility the effect of which is temporary is expected to rise but volatility persistence will decline. Hence, with increase in trading volume of futures, volatility persistence which leads to volatility clustering in spot market will get reduced and spot market efficiency will improve.

Volatility Measurement by Exponential GARCH (E-GARCH) and Leverage Effect in Indian Spot Market Data

Leverage effect (Volatility asymmetry) implies that the amplitude of relative price fluctuations of stock indices tends to increase when its price drops. Thus, leverage effect is a negative volatility-return relationship whereby a large price drops for the market as a whole, trigger a significant increase in trading volume and leads to increased volatility. Since volatility in emerging stock markets, like India is generally not symmetric, symmetric GARCH model is not capable of capturing leverage effect present in asymmetric stock return series of such emerging markets. In order to capture the presence of leverage effect in Indian stock return series due to prevailing informational asymmetry which is exhibited in negatively skewed stock return series (Table-1), asymmetric GARCH models have been applied. Spot market return volatility is estimated using asymmetric GARCH (E-GARCH) methodology. As indicated by the summary statistics presented in Table-1, the stock returns in India are non-normal, asymmetric E-GARCH model which allows for leptokurtosis and skewness is therefore considered as more suitable to estimate volatility of spot market subsequent to introduction of derivative trading on BSE. The results of E-GARCH model are presented in Table-5. The important feature of volatility that emerges from E-GARCH estimation analysis is that the Spot market return data in India reveals high volatility persistence throughout the sample period. Sum of ARCH and GARCH coefficients, in pre-derivative period, turns out to be 1.17. Since the sum of ARCH and GARCH coefficients is more than 01 and also GARCH coefficient is higher than ARCH coefficient which implies volatility persistence in pre-derivative trading period.

Table-5: E-GARCH Model for Daily Returns on Sensex

Sample Period	ARCH (α)	GARCH (β)	Leverage (λ)	Dummy ($\emptyset$)	Sum of ARCH and GARCH ($\alpha + \beta$)	Constant
April 1, 1990 to June 9, 2000	0.19* (11.55)	0.98* (228.06)	0.02 (1.99)	----------	1.17	-0.32* (-8.13)
June 12, 2000 to March 31, 2016	0.21* 18.03)	0.97* 302.17)	-0.08* (12.43)	--------	1.18	-0.44* (-13.19)
April 1, 1990 to March 31, 2016 including Dummy as '0' before June 12, 2000 and '1' from June 12, 2000 and onwards	0.24* (23.37)	0.97* (362.61)	-0.04* (-8.52)	-0.03* (-6.55)	1.21	-0.41 (-16.17)

**significant at one per cent level of significance. Figures in ( ) are Z-values.*

Sum of ARCH and GARCH coefficients in post-derivative period, considering the date of derivative introduction on BSE has been observed to be 1.18. Also, when whole study period by incorporating dummy variable is considered, sum of ARCH and GARCH coefficients turns out to be 1.21.

All this shows that volatility after introduction of derivatives has increased marginally. But considering components of volatility ARCH and GARCH separately, it is the ARCH volatility which has contributed to rise in volatility from 0.19 to 0.24 but GARCH volatility has declined from 0.98 to 0.97 subsequent to derivative trading. Hence, whatever the increase in volatility has occurred is spiky volatility, the effect of which does not persist. Thus, results of E-GARCH model have also shown decline in volatility persistence subsequent to introduction of derivative trading on Indian stock market.

Moreover, considering the data for the whole study period consisting of pre and post-derivative periods by incorporating dummy variable for the day of implementation of futures trading exhibited that futures trading have reduced the volatility of spot market since the dummy variable has turned out significant and negative. But the decline in volatility in spot market is not much pronounced due to small value of dummy coefficient. The main reason behind this again may be attributed to smaller trading volume in futures and with increase in the volume of trading in futures volatility is expected to decline to a greater extent.

The results based on daily spot market returns further show that the coefficient of leverage in the Indian stock market during post-derivative implementation period and for the whole study period with dummy variable is negative and significant. This signifies that negative shocks (bad news) trigger more trading volume and contribute towards increase in the volatility than positive shocks (good news) of the same magnitude. Thus, the main cause behind the increase in level of spot market inefficiency and volatility is not the trading in derivative instruments but the greater sensitivity of spot market prices towards bad news. Thus, with increase in trading volume of futures, volatility persistence which leads to volatility clustering in spot market will get reduced and spot market efficiency is expected to improve. Thus, on the basis of above findings it can be concluded that the impact of recent news and that too bad ones implying negative shocks contributes to increase in volatility but introduction of futures trading has reduced the volatility persistence and contributed towards spot market efficiency.

All the versions of GARCH model are based on only first-order autoregressive variance and squared error terms. The correctness for this variance equation specification has been diagnosed by checking correlogram of squared standardised residuals.

Table-6: Normality and Autocorrelation Tests for Residuals of GARCH Family Models

Model and Sample Period	Lags	Q-Statistic	Jarque-Bera
GARCH (1,1)	1	0.5050 (0.477)	308.13*
April 1, 1990 to June 9, 2000	2	2.3468 (0.309)	(0.0000)
	3	2.3483 (0.503)	
GARCH (1,1)	1	0.0234 (0.878)	532.84*
June 12, 2000 to March 31, 2016	2	0.6263 (0.731)	(0.0000)
	3	2.1971 (0.533)	
GARCH (1,1)	1	0.4681 (0.494)	852.23*
April 1, 1990 to March 31, 2016 including	2	0.4904 (0.783)	(0.0000)
Dummy as '0' before June 12, 2000 and	3	1.4550 (0.693)	
'1' from June 12, 2000 and onwards			
E-GARCH	1	2.47 (0.119	263.21*
April 1, 1990 to June 9, 2000	2	3.17 (0.205)	(0.0000)
	3	3.5 (0.319)	
E-GARCH	1	0.2910 (0.590)	656.15*
June 12, 2000 to March 31, 2016	2	0.5069 (0.776)	(0.0000)
	3	1.1328 (0.769)	
E-GARCH	1	0.9162 (0.338)	893.09*
April 1, 1990 to March 31, 2016 including	2	0.9979 (0.607)	(0.0000)
Dummy as '0' before June 12, 2000 and	3	2.0422 (0.564)	
'1' from June 12, 2000 and onwards			

*Q stands for Ljung-Box Q-statistic. *significant at one per cent level of significance.*

Table-7: ARCH Test for Residuals of GARCH Family Models

Model and Sample Period	F-statistic	Obs*R-squared
GARCH (1,1) April 1, 1990 to June 9, 2000	0.503887	0.504215
	(0.477869)	(0.477654)
GARCH (1,1) June 12, 2000 to March 31, 2016	0.023397	0.023409
	(0.878437)	(0.878400)
GARCH (1,1) April 1, 1990 to March 31, 2016 including Dummy as	0.467707	0.467821
'0' before June 12, 2000 and '1' from June 12, 2000 and onwards	(0.494069)	(0.493991)
E-GARCH April 1, 1990 to June 9, 2000	2.433357	2.432898
	(0.118916)	(0.118813)
E-GARCH June 12, 2000 to March 31, 2016	0.290593	0.290717
	(0.589871)	(0.589761)
E-GARCH	0.915494	0.915652
April 1, 1990 to March 31, 2016 including Dummy as '0' before	(0.338698)	(0.338619)
June 12, 2000 and '1' from June 12, 2000 and onwards		

The correctness for this variance equation specification has been diagnosed by checking correlogram of squared standardised residuals. Table-6 and 7 present that all the Q-statistics, F-statistics and observed R squared statistics for remaining autocorrelation

and ARCH respectively are insignificant. Hence, there is no remaining autocorrelation and ARCH in variance equation and specification of the variance equations is correct in all the cases considered for analysis.

Conclusion

Indian spot market as represented by the Daily Returns on Sensex (BSER) has shown positive mean return in pre-derivative period, post-derivative period and even for the whole sample period taken together. The mean return for the spot market was higher during pre-derivative period while declined during post-derivative implementation period due to the increased arbitrage opportunities available to the investors with the availability derivative instruments. Investors shift from spot market to futures market in lure of higher profits in futures market due its lower transaction cost and hedging measure.

The results of symmetric GARCH (1, 1) model estimated the sum of ARCH and GARCH parameters which turned out to be close to one. In addition, size of GARCH coefficients is large in comparison to ARCH coefficients. This leads to conclude that volatility shocks are quite persistent in Indian spot market returns and the volatility clustering effect existed in Indian spot market prices during both pre and post-introduction of futures trading. However, the results of GARCH (1,1) model when considered splitting the data into pre and post-derivative period along with a dummy variable for the date of derivative introduction exhibited that futures trading have reduced the volatility of spot market as reflected by significant and negative coefficient of dummy variable. But this decline in volatility in spot market is too low due to small value of dummy coefficient. The main reason for this can be attributed to smaller trading volume in futures which further signals that with increase in the volume of trading in futures, volatility is expected to decline to a greater extent.

The analysis of impact of listing of futures on Indian bourses to ascertain the differential impact of recent news versus old news, further clarified the changes in the volatility pattern. A shift in the volatility feature from volatility clustering towards spiky form of volatility has been observed. With the advent of hedging instruments such as futures and options, only the spiky volatility the effect of which is temporary is expected to rise but volatility persistence will decline gradually. Hence, with increase in trading volume of futures, volatility persistence in the spot market prices will get reduced and spot market efficiency will improve which in turn will contribute toward spot market efficiency.

Spot market return volatility has also been estimated using asymmetric GARCH (E-GARCH) methodology since Indian spot prices are non-normal. The important feature of volatility that emerges from E-GARCH estimation analysis is that the spot market return data in India reveals high volatility persistence throughout the sample period. Sum of ARCH and GARCH coefficients, in pre-derivative period as well in post-derivative period turns out to be more than unity and also GARCH coefficient is higher than ARCH coefficient which implies volatility persistence throughout the sample period. Moreover, ARCH and GARCH volatility collectively after introduction of derivatives has increased marginally. But considering component wise, it is the ARCH volatility which has contributed to rise in volatility from 0.19 to 0.24 but GARCH volatility has declined from 0.98 to 0.97 subsequent to derivative trading. Hence, whatever the increase in volatility has occurred is spiky volatility, the effect of which does not persist. Thus, results of E-GARCH model also indicate decline in volatility persistence subsequent to introduction of derivative trading on Indian stock market.

Moreover, considering the data for the whole study period consisting of pre and post-derivative periods by incorporating dummy variable for the day of implementation of futures trading exhibited that futures trading have reduced the volatility of spot market. But the decline in volatility in spot market is not much pronounced due to small value of dummy coefficient. The main cause for this smaller decline in volatility may be attributed to lower trading volume in futures and with increase in the volume of trading in futures, volatility is expected to decline to a greater extent.

The results further show that the coefficient of leverage in the Indian stock market during post-derivative implementation period is negative and significant. This signifies that negative shocks (bad news) trigger more trading volume and contribute towards increase in the volatility at higher rate than positive shocks (good news) of the same magnitude. It can be said on the basis of above findings that the main cause behind the increase in level of spot market inefficiency and volatility is not the trading in derivative instruments but the greater sensitivity of spot market prices towards bad news.

It has been observed that with increase in trading volume of futures, volatility persistence which leads to volatility clustering in spot market will get reduced and spot market efficiency is expected to improve.

Thus, on the basis of above findings it can be concluded that the impact of recent news and that too bad ones implying negative shocks contributes to increase in volatility but introduction of futures trading has reduced the volatility persistence and contributed towards spot market efficiency.

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An Analysis of Sector-Wise Implementation of Priority Sector Lending: A Comparative Study of Jaipur and Alwar Districts

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ABSTRACT

Priority sector lending has been a tool of financial inclusion for the last five decades. Priority sector lending (PSL) is aimed to provide institutional credit to those sectors and segments for whom it is difficult to get credit. According to priority sector norms, scheduled commercial banks have to give 40% of their loans (measured in terms of Adjusted Net Bank Credit or ANBC) to the identified priority sectors in accordance with the RBI regulations. The regulations are modified periodically by setting limits for subsectors and other qualifications for the beneficiary groups. Thus it is important to assess the execution of the norms for a better policy regime and revision of guidelines. The lead bank which is allotted a specific district is supposed to play the role of 'consortium leader' of all the banking and financial institutions to implement priority sector lending. District credit plan is an essential part of a lead bank scheme. The district credit plan covers particularly the priority sector activities in rural areas. The present paper deals with the implementation of the priority sector lending among various sectors in a comparative fashion for Jaipur and Alwar districts. The study has made use of district credit plans of the Punjab National Bank and UCO Bank which are lead banks of Alwar and Jaipur district respectively. For this purpose the completion of the target for various sectors has been taken as a performance indicator. Mann Whitney "U" test has been used to determine if there is any significant difference in performance of priority sector lending in Alwar and Jaipur districts through the respective lead banks. Here, classified analysis has been made for agriculture and allied sectors, medium, small and marginal industries (MSME), other priority sector and total priority sector for the period from 1st March 2006 to 1st April 2017.

Keywords

Priority Sector Lending, Mann Whitney U Test, Hypothesis, MSME (Micro, Small and Medium Enterprises), Lead Bank

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Introduction

Priority sector lending has emerged as a solution to provide institutional credit to the erstwhile credit starved sectors like agriculture and small scale industries in 1972 after the National credit council's recommendations. It was Dr. K.S. The Krishnaswamy committee initially has defined the sectors to be designated as priority sector . In this context a study group which was presided over by Prof. Dr Gadgil found that the Banking needs of the rural areas in general and backward in particular were not taken care of by the Commercial Banks. Besides, the credit needs of Agriculture, SSI and allied activities remained neglected. Therefore, the group recommended the adoption of an area approach for bridging the spatial and structural credit gaps. So the lead bank scheme came into being in1969. Following this the banker's committee, headed by S. Nariman, concluded that districts would be the units for area approach and each district could be allotted to a particular bank which will perform the role of a lead bank. The lead bank was to act as a consortium leader for coordinating the efforts of all credit institutions in each of the allotted districts for expansion of branch banking facilities and for meeting the credit needs of the rural economy. The lead bank functions through the mechanism of District Consultative Committees and District Credit Plans.

The Usha Thorat committee in 2009 to revitalize the scheme gave recommendations like giving greater role to private sector banks, enhancing the scope of the scheme and suggested a sharper focus on facilitating financial inclusion, encouraging the business correspondent model among others.

Against this backdrop, our study focuses on the performance analysis of two lead banks in terms of disbursing loans to the various categories of priority sector.

Objective of the Study

The present study aims at finding if there is any difference in achievements of target for priority sector lending among various sectors through the lead banks of the Jaipur and Alwar districts. For this purpose data obtained from lead bank office of Jaipur and Alwar districts has been analyzed over a period of 11 years.

Review of Literature

Silony (2011)[8] in her thesis examined the performance of commercial banks in terms of number of offices, bank deposits, credit and priority sector advances. She also outlined the opinion of beneficiaries regarding priority sector in Punjab during 1998 to 2008. The Study revealed that the public sector banks in Punjab gave much attention to the other priority sector than agriculture and small-scale industry. In private sector banks, the share of agriculture sector was more than others and SSIs during the study period. The study highlighted that banks were able to achieve the target set by RBI for priority sector from 1990 to 2008 but in case of weaker section, banks achieved it only in first 4 years of the study.

Sasirekha (2011)[7] in her thesis studied and compared the performance of public and private sector banks regarding priority sector loan in Tiruchirappalli district from 2002 to 2007. The researcher also studied the perception of 200 borrowers regarding priority sector loan in both public and private sector banks in the district. The study of primary data revealed that the repayment performance of the literate and small families was better than illiterate and large families respectively. Moreover, the repayment performance of the borrowers of public sector banks was influenced by a number of factors like sex, education status, adequacy of loan and status of employment while in private sector banks. the repayment performance was influenced by adequacy of loan and status of employment.

Raman (2013)[6] in his paper evaluated the performance of commercial banks in Tamil Nadu with respect to priority sector lending from 2000 to 2010. He found that activity wise performance of commercial banks in agriculture loan, education loan and housing loan improved during the study period. There was an increase in the network of bank branches and the share of bad loans from agriculture sector increased during the study period. He suggested that the private sector banks should concentrate on education loan segment and NPA cell should be established to accelerate the recovery process.

Biswajit (2013)[3] in his research paper studied financing requirements of micro, medium and small-scale enterprises (MSMEs) in India. The researcher highlighted that the share of small and medium enterprises in all MSME units was lesser than micro enterprises. The researcher found that the high percentage of MSME units was dependent upon self-finance than institutional and non-institutional finance. The researcher further revealed that after 2010, a large number of micro, medium and small enterprises turned into sick units and high proportion of NPAs was posing a significant risk for the banks.

Methodology

Source of Data

The study is mainly based on secondary data. The data required for study were collected from books, journals, lead bank annual reports and web sites.

Period of Study

The study covers the 11 annual credit plans starting from April 1, 2006 to 31st March 2017 for the Jaipur and Alwar districts of Rajasthan.

Data Analysis

For the purpose of comparing the distribution of advances in sub-categories of priority sector Mann Whiney 'U' two tailed test is used.

Mann-Whitney 'U' test is a non-parametric test, so it does not assume any assumptions related to the distribution of sample. There are, however, some assumptions that are assumed

- The sample drawn from the population is random.

- Independence within the samples and mutual independence is assumed. That means that an observation is in one group or the other (it cannot be in both).
- Ordinal measurement scale is assumed.

Calculation of the Mann-Whitney 'U'

$$U_1 = R_1 - \frac{n_1(n_1+1)}{2}$$

$$U_2 = R_2 - \frac{n_2(n_2+1)}{2}$$

Where:

U=Mann-Whitney U test
N_1 = sample size one
N2= Sample size two
R_i = Rank of the sample size

The smaller value of U_1 and U_2 is the one used when consulting significance tables.

Hypotheses

Ho: There exists no significant difference in the achievement of targets of priority sector lending among various sectors in Jaipur and Alwar districts.

H_1: There exists a significant difference in the achievement of targets of priority sector lending among various sectors in Jaipur and Alwar districts.

Findings

In order to draw conclusion we compare the calculated U statistics with its tabulated value at significance level .05. If calculated U is greater than tabulated value then we accept the Null Hypothesis.

Table-1

Sectors	Value of U statistics Smaller between U_1 and U_2	Critical/ tabulated value at 5% significance for $n_1=n_2=11$	Result (difference)
Agriculture and allied sector	29	30	Significant
MSME sector	34	30	Not Significant
Other Priority Sector	42	30	Not Significant
Total Priority Sector	21	30	Significant

Note: (Refer to Appendix 1- 4)

Result and Discussion

It is evident from Table 1, the calculated value (U) is greater than the table value of (U) 30 at 5 per cent level of significance in respect of Small Scale Industries Sector and other priority sector while it is less for agriculture sector and total priority sector . So, it can be said that for small and medium industries and other priority sector there exists no significant difference in terms of meeting the targets. But in agriculture sector and the total priority sector a significant difference has been found in performance of both the banks. Hence, we conclude that there was a significant difference in the achievement of targets of priority sector in Jaipur and Alwar districts. Hence ,the null hypothesis is rejected and we conclude that there was a significance difference between the achievement of total priority sector lending in Jaipur and Alwar districts during the 11 years study period i.e from 2006-07 to 2016-17.

Appendix 1

Priority Sector Lending Target Achievement in Agriculture and Allied Sector

Financial Year	Jaipur	Alwar	Rank 1 (for Jaipur)	Rank 2 (for Alwar)
	Agriculture and Allied Target Achievement % (1)	Agriculture and Allied Target Achievement %		
2016-17	93.24	100.2	6	8
2015-16	87.86	103.37	3	12
2014-15	103.92	103.4	15	13
2013-14	96.05	100.39	7	9
2012-13	112.61	103.56	18	14
2011-12	107.5	102.67	17	11
2010-11	141.61	104.66	20	16
2009-10	235.59	91.42	22	5
2008-09	215.02	82.74	21	2
2007-08	131.96	89.92	19	4
2006-07	100.88	80.73	10	1
Sum of Ranks			158	95
Mann Whitney U values			U1 =92	U2 = 29

Source: Annual Credit Plans: Lead Bank Office UCO Bank (Jaipur) and Lead Bank Office Punjab National Bank (Alwar)

Appendix 2

Priority Sector Lending Achievement in MSME Sector

Financial year	Jaipur		Alwar		Rank 1 (for Jaipur)	Rank 2 (for Alwar)
	MSME Target	Achievement %	MSME Target	Achievement%		
2016-17	116.92		127.04		5	6
2015-16	190.68		202.79		15	17
2014-15	136.8		143.63		7	10
2013-14	146.14		172.48		11	14
2012-13	142.78		116.35		9	4
2011-12	150.09		110.97		12	3
2010-11	223.41		139.18		20	8
2009-10	359		211.05		22	19
2008-09	231.57		198.99		21	16
2007-08	207.39		84.38		18	1
2006-07	172.18		87.25		13	2
Sum of Ranks					153	100
Mann Whitney U values					U1=87	U2 = 34

Source: Annual Credit Plans: Lead Bank office UCO Bank (Jaipur) and Lead Bank office Punjab National Bank (Alwar)

Appendix 3

Priority Sector Lending Achievement in Other Priority Sector

Financial Year	Jaipur		Alwar		Rank 1 (for Jaipur)	Rank 2 (for Alwar)
	Other Priority Sector Target	Achievement %	Other Priority Sector Target	Achievement %		
2016-17	55.93		102.94		2	14
2015-16	68.7		71.92		5	7
2014-15	77.1		88.09		8	10
2013-14	105.19		60.35		15	4
2012-13	97.02		85.83		11	9
2011-12	12.36		100.68		1	12
2010-11	57.54		101.05		3	13
2009-10	70.96		133.54		6	17
2008-09	110.08		214.4		16	21
2007-08	170.03		200.5		19	20
2006-07	248.64		145.56		22	18
Sum of Ranks					108	145
Mann Whitney U values					U1=42	U2=79

Source: Annual Credit Plans : Lead Bank office UCO Bank (Jaipur) and Lead Bank office Punjab National Bank (Alwar)

Appendix 4

Priority Sector Lending Achievement in Total Priority Sector

Financial year	Jaipur		Alwar		Rank 1 (for Jaipur)	Rank 2 (for Alwar)
	Total Priority Sector Target	Achievement %	Total Priority Sector Target	Achievement %		
2016-17	92.66		103.81		1	10
2015-16	105.33		107.82		12	15
2014-15	102.31		104.96		6	11
2013-14	109.61		102.03		16	5
2012-13	113.43		102.62		17	7
2011-12	107.22		101.54		14	3
2010-11	115.21		107.16		18	13
2009-10	167.81		103.8		22	9
2008-09	164.35		103.64		21	8
2007-08	158.81		100.55		20	2
2006-07	154.47		101.6		19	4
Sum of Ranks					166	87
Mann Whitney U values					U1=100	U2=21

Source: Annual Credit Plans: Lead Bank Office UCO Bank (Jaipur) and Lead Bank Office Punjab National Bank (Alwar)

Note:

1. Target Achievement % = Total Amount Disbursed / Targeted amount to be distributed

For Example:

Target Achievement % for Agriculture and Allied Sector in Jaipur District for Financial Year 2016-17

= Amount disbursed till March 2017 / Target 2016-17

= (4886.17 / 5240.36) x 100

= 93.24

(Amount is in Rs. Crores as per Annual Credit Plan for 2017-18 UCO bank Jaipur)

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Migration of Immigrant Labourers in to the Construction Sector of Kerala Labour Market

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ABSTRACT

Ever since the dawn of the human civilisation, the growing uneven and imbalanced pattern of economic, social, political and cultural development of various parts and regions of the earth has initiated the migration of people from one place to another. Higher wage rate for the unskilled labourers, large employment opportunities, shortage of local labourers and high level of educated unemployment are the hallmarks of the domestic labour market leaving larger space for the inflow of unskilled and semi-skilled immigrant labourers into the state. Labour market in Kerala is unique by its nature, composition and buoyancy. Along with the varying characteristic feature, the labour market of Kerala is mainly determined by the demand for and supply of immigrant labourers into the state. The high inflow of immigrant labourers into the labour market of Kerala experiences the dynamics of labour, labour market and its constituents. A cross section of the immigrant workers engaged in the regional economy exhibit that their presence and involvement are quite visible in almost all sectors including construction, trade, hotel, transport, storage, communication, finance, real estate, business and services. The labour compositions of the immigrant labourers in Kerala are more particular to semi or unskilled segments leaving lesser proportion to the skilled category. Majority of the immigrant labourers are making their livelihood by doing unskilled nature of work namely construction. The identified push and pull factors of immigrant labourers makes the development to both the origin as well as the destination state of the country. The longer duration of immigrant labourers into the labour market of Kerala reveals that the state Kerala becomes a migrant dependent economy. The positive leverage released by the advent of immigrant labourers in economic activity of the state has become a live topic of debate on the development discourse of the state.

Keywords

Migration, Construction Sector, Labour Market, Push and Pull Factors

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In the present era of globalisation and liberalisation, the study of migration has become one of the most dynamic aspects of human beings. It has brought about structural transformations in the economic set up of both the developed and the developing countries. In a broader framework, the process of migration involves the movement of the whole of the population of a country within and across national and international boundaries (Anil Kumar Verma 2011). The labour market in Kerala is unique in its nature, structure, characteristics and its constituents. In contrast to the national pattern, the state of Kerala is having the characteristics of higher rate of unemployment and under-employment, lower rate of productive employment, inadequate levels of skill creation and training, low level of labour force participation and low worker population ratio (Prakash, 1999). However, at present, the labour market of Kerala is experiencing the high inflow of immigrant labourers in to the state. Among the total number of immigrant labourers employed in the labour market of Kerala, a small section of the labourers are professionals and skilled workers, the large majority of them are unskilled or semiskilled workers. The immigrant labourers came to Kerala labour market and became an institutionalized process. The immigrant labourers are actively employed in all the economic activities of the state namely agriculture, trade, construction, commerce etc. and majority of the labourers are employed in the sector, construction (60%) (GOK, 2016).

As one looks into account the total size of the immigrant workers engaged in all sectors of economic activity in the region including construction sector altogether constitute 25 lakhs (Narayana 2013) where are mainly hailing from five states of India. The state of domicile of immigrant labourers reveals that the 63 % of them are hailing only from two sates namely West Bengal (47%) and Orissa (16%) followed by Assam, Karnataka and Bihar (9% each) and remaining 10 % of the labourers are from other states of India (GOK 2016).

The review of literature as detailed in (Narayana et. al 2013, Patrie 2012, Mallika 2011, Prakash 2011, Joseph 2011, Zachariah and Rajan 2007, Rajan *et. al.,* 1999) explain the various dynamics of immigrant labour market experienced in Kerala economy including their nature of migration, wage, income and employment. In the given context, a detailed discussion on the prevalence of immigrant labourers in Kerala, India is worthwhile. In response to the critical gap identified a micro level study is attempted to the migration of immigrant labourers in the construction sector of Kerala labour market.

Methodology of the Study

The study under discussion is mainly analytical and descriptive in nature which is based upon relevant data base. As there is paucity of reliable data base on the various characteristics of the immigrant labour market in Kerala by census method, the investigator proceeded to compile primary data. The investigator identified the two districts from the regional economy of Kerala with the high incidence of immigration i.e., Eranakulam and Kannur. The researcher collected the 240 of samples each from the selected construction sites of two districts and the total sample size is altogether comprised of 480 with the representation of rural and urban segmentization. From the field investigator the

researcher finds that 60% of construction works are happening at the rural areas. Hence the present study undertaken the rural and urban classifications of immigrant labourers with 60:40 proportions. The study used snowball sampling method for collecting data from the sample respondents.

Theoretical Overview of the Study

As one looks into the theoretical underpinnings of labour market and labour migration it is well documented that Lewis (1961) argues that the labour migration happened from labour abundant traditional sector to labour scarce modern sector. Harris Todaro model (1970) has become a cornerstone model of rural-urban migration. The main assumption of the model is that the migration decision is based on 'expected income differentials' between rural to urban areas rather than just 'wage differentials'. William Petersen (1959) had made an attempt to bring together of both internal and international migration into one typology. The theory tried to make a distinction between innovative and conservative forms of migration in terms of level of aspirations. Conservative migration, in which the mover changes residence to maintain his present standard of living and innovation migration, where the mover is made in order to improve the living standards.

Prevalence of Immigrant Labourers in to the Construction Sector of the Kerala Labour Market

The characteristic features of the immigrant labourers are varying from one immigrant labourer to another with respect to their reasons for migration, reasons for opting construction work, recruitment agents of the construction work and reasons for opting Kerala as a destination state. The basic intension of the immigrant labourers migrate from their origin to destination state was to acquire the larger employment opportunities, higher wage rate and better standard of living. Hence it involved the large number of social as well as economic factors in the decision for migration of labourers from their origin to better destination places.

With regard to the decisions of migration of labourers from their origin to destination state, the researcher classifies the same as 'individual decision and household decision'. Where, from the study area the investigator finds that 87.5 %, and 100 % of the immigrant labourers involved in the two selected districts of Kerala taking the decisions for migration individually and only 12.5 % of immigrant labourers from Eranakulam district taking the decisions for immigration to Kerala by households of the labourers.

The theoretical arguments of the typology of immigration substantiated about the two types of migration ie., innovative as well as conservative types of migration. Where, innovative migration means that the migrant labourers migrated to their destination place because to maximise their standard of living and the migrant labourers are tried to maintain their standard of living in conservative nature of migration. By maximising and maintaining the standard of living with migration of the labourers from their origin to destination places implies the rational choice decision of the immigrant labourers. Where, 79.17 %,

and 23.33 % of the immigrant labourers from the selected two districts opined that the intention of innovative nature of immigration and 20.88%, and 76.67% of the immigrant labourers prefer to conservative nature of immigration in the selected two districts of the construction sites. Along with the 'typology of migration', the reasons for migration will decided the quantity, direction and magnitude of immigrant labourers from their origin to better destination places. The reasons for migration are generally termed as the broad category of 'push and pull factors of migration'.

Push and Pull Factors for Semi Immigration

The depressing factors faced by the immigrant labourers at their origin state are generally termed as the push factors for immigration. The push factors is the major obstacles faced by the immigrant labourers for attaining the better social, economic and standard of living of their origin state. Whereas, the pull factors of immigration implied that the attracting factors of the immigrant labourers at the destination state than that of their origin state. As mentioned earlier the 'Typology of migration' gets significant in the context for pull factors of immigration with the consideration of maximizing and minimizing the standard of living at the destination state.

Table 1 and 2 discussed about the major push and pull factors of immigration in the construction sites of the selected districts of Kerala labour market. The present study enlisted the push factors of the immigrant labourers at their origin state as lack of employment opportunities, lower wages, lack of suitable jobs in their native places, family moved, marriage, natural calamities, financial problem and lack of water availability. There are many other factors that also influenced the push factors of the labour migration other than that of the listed reasons for immigration. It includes no social security, lack of employment opportunities and lower wage rate, irregularity in wage payments, lack of employment opportunities, irregularity in wage payments and financial problems of the labourers.

Table-1: Push Factors for Immigration

Reasons	Eranakulam (N= 300) Immigrant (N=240)		Kannur (N= 300) Immigrant (N=240)	
	Rural	Urban	Rural	Urban
Lack of Employment Opportunities	25 (10.42)	50 (20.83)	21 (8.75)	31 (12.92)
Lower Wages	42 (17.5)	68 (28.33)	42 (17.5)	56 (23.33)
Lack of Suitable Jobs in their Native Place	-		3 (1.25)	12 (5)
Family Moved	2 (0.83)	1 (0.42)	2 (0.833)	-
Marriage	1 (0.42)	2 (0.83)	1 (0.42)	-
Natural Calamities	8 (3.33)	2 (0.83)	2 (0.833)	2 (0.833)
Financial Problem	12 (5)	16 (6.67)	25 (10.42)	15 (6.25)
Lack of Water Availability	6 (2.5)	5 (2.08)	-	15 (6.25)
Others	-	-	-	13 (5.42)
Grand Total	96 (40)	144 (60)	96 (40)	144 (60)

Source: Sample Survey, 2016

Note: Values in parenthesis is detailed as Frequencies

The above given Table 1 explains the push factors of immigration of the labourers in the selected districts of Kerala with the representations of rural and urban segmentization. It reveals that around 40% of the immigrant labourers from the rural and urban areas of selected districts show that the single most reason for migration is lower wage rate i.e., 35.44%. It was followed by the lack of employment opportunities at the rural and urban areas of kannur district i.e., 10.42% and 20.83%, urban areas of kannur i.e., 12.92%. The financial problems of the rural areas of kannur district i.e., 10.42% is the second dominant reason for immigration in to the labour market of Kerala. It reveals that the lack of employment opportunities and lower wages existed at the origin states of the immigrant labourers in the labour market of Kerala is directly reveals with the financial problems faced by the immigrant labourers in the construction sector of Kerala labour market. The studies and reports reveal that among the listed reasons for immigration, the lack of employment opportunities as well as lower wage rates exited at the labourers origin state is the predominant reasons for immigration into the better destination places (Census 2011, UNICEF 2012). The statement also reveals that among the all cited reasons for immigration the phenomenon of labour migration is relevant and burgeoning one.

In addition to that, the researcher finds that many of the labourers are used to employ with NREGA at their origin state. However, most of them own the NREGA 'Job card' and majority of them do not receive exact wage rate. Wages from NREGA was found to be very low ranging from Rs. 80 to Rs. 110 and irregularity in the wage payments are also experienced by the immigrant labourers at their state of origin.

On the other hand the pull factors for immigration are encouraging the labourers to migrate from their origin to better destination places as well as the further migration in future. Where, the enhanced employment opportunities, higher wages, better educational facilities, good living and working conditions and better law and order are the identified pull factors for immigration into the labour market of Kerala. It includes better employment and better wage rate and comparatively better attitude of Keralities towards the immigrant labourers are the other category of pull factors attracted to the immigrant labourers into the labour market of Kerala.

Table-2: Pull Factors for Immigration

Reasons	Eranakulam (N= 300)		Kannur (N= 300)	
	Immigrant (N=240)		Immigrant (N=240)	
	Rural	Urban	Rural	Urban
Better employment opportunities	12 (5)	42 (17.5)	33 (13.75)	28 (11.67)
Better wage	64 (26.67)	92 (38.33)	63 (26.25)	104 (43.33)
Better educational facilities	-	-	-	-
Better living and working conditions	12 (5)	1 (0.42)	-	5 (2.08)
Better law and order	6 (2.5)	-	-	5 (2.08)
Others	2 (0.83)	9 (3.75)	-	2 (0.83)
Grand Total	**96 (40)**	**144 (60)**	**96 (40)**	**144 (60)**

Source: Sample Survey, 2016

Note: Values in parenthesis is detailed as Frequencies

The Table-2 reveals that the single most reason for the migration of labourers from their origin state to Kerala as the existing higher wage rate at the labour market of Kerala. It is reported that 65%, and 69.58% of immigrant labourers employed in the selected districts like Eranakulam, and Kannur with the influence of higher wage rate existed in the labour market of Kerala. Gopikuttan (1990) in his study on housing boom in Kerala opined that the wage rates in the construction sector accent well ahead of those in the unorganized sector. For instance a Tamil Worker employed in the labour market of Kerala getting an average amount of Rs. 250 at their origin state gets at the same time an average amount of Rs. 500-600 at the labour market of Kerala especially in the construction sector. It reveals that the destination state Kerala's wage rate is twofold higher than their origin state's wage rate. It will make a chance for further migration into the labour market of Kerala in future also.

The existing higher wage rate in the labour market of Kerala is further followed by the better employment opportunities than that of state of origin of the immigrant labourers. That's why, the immigrant labourers considered the labour market of Kerala as the 'Gulf' of the labourers. The high inflow of immigration happened in the labour market of Kerala have the reminiscence to the emigration happened from Kerala to Middle East during the mid 1970s. During the period the labourers from Kerala were also attracted to the higher wage rate as well as the better employment opportunities prevailed in the Middle East countries and migrated for acquiring higher standard of living than compared to their state of origin. In the migration scenario, the agents make the role for supplying of the vast majority of immigrant labourers from different parts of the country to the state Kerala.

Channels for Immigration in to the Labour Market of Kerala

The labour suppliers to the labour market of Kerala are termed as channels for labourers. The agents are those who give information to the labourers about the availability of the employment at the labour market. They recruited the labourers from their origin state to better destination places with larger availability of employment opportunities. The investigator classifies the channel for inmigration in the labour market of Kerala are the immigrant labourers, friends, relatives, agents etc. The other category of channels for inmigration include contractors, supervisors and neighbors. The recruiting channels mainly recruited the immigrant labourers from the rest of the country to the labour market of Kerala.

Table-3: Channels for Immigration

Channels	Eranakulam (N= 300)		Kannur (N= 300)	
	Immigrant (N=240)		Immigrant (N=240)	
	Rural	Urban	Rural	Urban
Alone (Self)	19 (7.92)	25(10.42)	12(5)	25(10.42)
Friends	23(9.58)	29(12.08)	22 (9.17)	26(10.83)
Relatives	10(4.17)	17(0.71)	4(1.67)	7(2.92)
Agents	41(17.08)	61(25.42)	42 (17.5)	86(35.83)
Others	3(1.25)	12(5)	16 (6.67)	-
Total	96(40)	144(60)	96(40)	144(60)

Source: Sample Survey, 2016

Note: Values in parenthesis are detailed Frequencies

From the study area the investigator finds that the majority of the immigrant labourers are migrated from their origin to destination state with the help of channel agents i.e., 42.5% and 53.33%. The proposed study collected representative samples from the selected construction sites of Kerala labour market with the classifications of labourers employed with the contractors, without the contractors, major construction sites and minor construction sites. Because of the field experience, the investigator finds that the large number of immigrant labourers are employed with the contractors as well as major construction sites. The higher proportional importance is given to the labourers employed with the contractors as well as the labourers employed with the major construction sites ie. 30 %. It reveals that the large number of immigrant labourers are employed with the contractors' construction sites and for major construction sites the labourers are supplied by the labour agents considering the nature of construction work. It is one of the reasons for the high representation of channel as agents in the construction sector of Kerala especially in the study area. The channel as alone, friends and relatives are mainly involved in the case of individual / Construction sector without the contractors and minor construction sites in the study area. Some of the immigrant labourers reported that at the initial time of their immigration they migrated with the help of contractors and does come under the category of 'others' dealt in the Table-3.

The Work Experience of Immigrant Labourers in to the Labour Market of Kerala

Normally in a migration movement, there would be a few persons with some previous experience in migration and termed the phenomenon as "Stock Effect" (Joseph 1986). The previous work experiences of the labourers in the labour market of Kerala makes ample chances for positively significant to the labourers wage, employment opportunities at the labour market, relative bargaining power of the labourers, better living and working conditions and the availability of the social security measures in the labour market of Kerala. The revisit of the immigrant labourers in the labour market of Kerala reveal that the availing wage, employment and living and working conditions leverage the further immigration into the labour market of Kerala. From the field investigation, the researcher finds that 4.17%, and 2.08% of the immigrant labourers in the labour market are having the previous experience of work at the labour market of Kerala especially the brick industry of Valapattanam (Kannur district), plywood industry of Perumbavoor (Eranakulam district) etc.. During the period, due to the lack of employment opportunities existed in the labour market of Kerala they migrated to other places in the rest of the country. After the higher significance of construction activities in the state and the existing higher wage rate as compared to other sectors, the immigrant labourers were attracted to the employment of Kerala labour market. It reveals that the immigrant labourers are quite flexible to do any work without any hesitation. Analyzing the duration of stay of immigrant labourers in the construction sector of Kerala reveals that the intensity or the prevalence of immigrant labourers in the labour market of Kerala.

Duration of Work in the Construction Sector of the Kerala Labour Market

The phenomenon of immigration got significance after 1970s however, the experiences from the field as well as the information gathered from the contractors as well as the supervisors argues that the high inflow of immigration started after 2010 especially in the construction sector. The infrastructural developments of the state of Kerala makes the subsector of secondary sector i.e. construction as one of the most labour intensive sector. The labour market in the construction sector is mainly demand determined and supply of labourer is adjusted with the fluctuating demand because the labour market of Kerala is unstable in its development. The report finds that the major chunk of the immigrant labourers from the rest of the country is employed in the labour market of Kerala (GOK 2016). The inmigrant labourers that came to Kerala have become an institutionalized process. The Study finds that the larger employment opportunity and higher wage rates persuaded the inmigrant labourers to their longer duration stay at the destination state, Kerala.

For getting a clear picture about the dynamics of migration happening in the labour market of Kerala, the proposed study considered the immigrant labourers with at least 6 months of duration of stay at the labour market of Kerala. The immigrant labourers reported that the easy to entry, larger availability of employment opportunities and higher wage rate are the influencing factors to the construction sector of Kerala.

Table-4: Duration of Work among Immigrant Labourers in the Construction Sector of Kerala

Duration	Eranakulam (N= 300)		Kannur (N= 300)	
	Immigrant (N= 240)		Immigrant (N= 240)	
	Rural	Urban	Rural	Urban
6 months to 2year	18 (7.50)	11 (4.58)	8 (3.33)	21 (8.75)
2-4 years	22 (9.17)	28 (11.67)	24 (10.00)	32 (13.33)
4-6 Years	29 (12.08)	78 (32.50)	31 (12.92)	51 (21.25)
6-8 Years	19 (7.92)	15 (6.25)	12 (5.00)	23 (9.58)
More than 8 Years	8 (3.33)	12 (5.00)	11 (4.58)	17 (7.08)
Total	96 (40)	144 (60)	96 (40)	144 (60)

Source: Sample Survey, 2016

Note: Values in parenthesis is detailed as Frequencies

The Table-4 reveals that the majority of the immigrant labourers in the labour market of Kerala having a stay of 4-6 years by the labourers employed in the rural and urban areas of Eranakulam and Kannur districts. The larger duration and high inflow of immigrant labourers in to the labour market of Kerala reveals that the economy of Kerala becomes a migrant dependent economy in the present days of experience as well as in future.

Conclusion

To sum up, one could see that the migration to Kerala from the rest of the country is registering a significant space in the socio political economy of the state. It becomes an indispensible factor in the state's development initiatives as well as in the labour market. The larger prevalence of immigrant labourers into the labour market of Kerala reveals that the Kerala economy depends upon the immigrant labourers for the infrastructural development of the state. With the shortage of local labourers and the infrastructural development of the state, the economy experiences the high inflow of immigrant labourers in present day as well as in future.

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Does Agricultural Sector Matter for the Growth of an Oil Dependent Economy? – Empirical Evidence from Nigeria

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ABSTRACT

The Nigerian economy is largely mono-cultural with oil being the main stay of the economy. The agricultural sector, though being the highest employer of labour and major constituent of the rural economy has continued to receive less attention from the government over time. Viewing this, the study employed the Vector Error Correction Model (VECM) to examine the role of agricultural sector in the growth of an oil dominated economy by utilizing annual data series for the period from 1981 to 2015. The Augmented Dickey Fuller (ADF) test for unit root shows all variables to be integrated of order one while Johansen Cointegration Trace and Max Eigen-Value tests confirm the presence of long-run relationship among the variables. VECM result shows agricultural sector as having a significant positive impact on economic growth of Nigeria. Oil sector was also found to exert positive effect on economic growth. Short-run causality result showed the presence of significant causality, running from agricultural sector to growth. Short-run causality running from oil sector to growth was found to be insignificant. The innovation accounting tool of Impulse Response Function (IRF) indicates that the response of economic growth to both agricultural and oil sector shock is positive, however, the response of growth to shocks in oil sector is higher than that of the agricultural sector shocks. Forecast Error Variance Decomposition (FEVD) plot also shows both sectors as having impact on growth, but the impact of oil sector was also found to be higher. The study concluded that although the oil sector was found to exert higher impact on the economy than the agricultural sector, the role of agricultural sector cannot be underplayed considering the fact that over-reliance on oil exposes the economy to risk of external shocks in the oil market and also the determination of many nations to shift focus to clean energy has the tendency of negatively affecting predominantly oil dependent economies. The study recommended the need for the government to focus more on the agricultural sector as a diversification drive for the economy considering its enormous potentials as well as its role in stabilizing the rural economy, food security, revenue drive and high employment potentials.

Keywords

Agriculture, Oil Sector, Economic Growth, Nigeria

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Introduction

The Nigerian economy largely depends on oil so much so that the economy is termed mono-cultural. Though the oil sector contributes less than 15 percent to Gross Domestic Product (GDP) at least for the past decade – 7.15 percent in Q4 2016 (NBS, 2017a), the sector happens to be the mainstay of the economy; over and above the agricultural sector which contributes higher to GDP – 20.48 percent in Q4 2016 (NBS, 2017a) and employs the highest labour force. Nigerian economy was predominantly agriculture-based prior to independence and immediately after independence. With huge production of oil after independence, particularly in the 1970's, the agricultural sector began to witness a decline in attention by the government (see Olajide, Akinlabi and Tijani, 2012; Sertoglu, Ugural and Bekum, 2017). The oil windfall of mid to late seventies further exacerbated the decline as government attention was largely skewed to the oil sector. Over the years, the neglect has continued though government has at intervals rolled out policies to revive the sector, not much success has been recorded. The overreliance of the Nigerian economy on oil exposes Nigeria to external shocks because any effect on the international market for oil poses an opportunity or threat to the Nigerian economy. In the early eighties, particularly during the oil glut period, the Nigerian economy suffered from the collapse of price of crude oil forcing the government to adopt measures such as the austerity measures and afterwards the Structural Adjustment Programme (SAP) in 1986.

The current economic recession being faced by Nigeria is another indication of exposure of the economy to external shocks; facilitated via the oil sector. The international price of crude oil which reached an all-time high of over 100 dollars per barrel from 2011 through to 2014 saw a decline to about 30 dollars per barrel in 2015 (EIA, 2017), which posed a negative effect on the economy because, though, oil contributes little to GDP, it doubles as the highest source of government revenue and also the highest source of foreign exchange earning of the nation. With low external reserves and dwindling foreign exchange earning coupled with collapse of price of crude oil and sharp reduction in oil production caused by instability in the Niger Delta region, it is quite natural for the Nigerian economy to slide into recession. Aside from negative GDP growth rate, foreign exchange market instability became common place with the expansion of margin between the parallel and official market. Nigerian being also an import dependent economy for even its basic needs was bound to suffer from imported inflation. It is worthy to note that most of the economic challenges faced by the Nigerian economy can be related to its over dependence on oil.

The agricultural sector of the Nigerian economy has a huge potential. Apart from being the largest employer of labour, the vast arable land and favorable climate are other factors that portray its potentials. Although the agricultural sector has received neglect over the years, with the present economic recession, the sector has witnessed a renewed interest and attention from both the government and populace. Policies are now being put in place to revive the sector ranging from access to agricultural credit, in-country fertilizer blending and availability, encouragement of agricultural exports and completion of the agricultural value among others. The boost in agricultural sector can be seen in how its contribution to GDP grew from 17.77 percent in Q1 2015 to 20.48 percent in Q1 2016 to 21.35 percent

in Q1 2017 (NBS, 2015; NBS, 2016; NBS, 2017b). It is in light of the potentials of the agricultural sector that the study examines the role the sector can play in the growth of the oil-dependent Nigerian economy, while also exploring its role in ameliorating the current recession faced by the Nigerian economy.

Trend Analysis of Agricultural Output and Oil Revenue

In this section, the trend analysis of the agricultural sector and oil sector will be made. The agricultural sector represented using agricultural output as a proxy, as for the oil sector, oil revenue was used as a proxy.

Figure-1: Trends of Agricultural Output and Oil Revenue

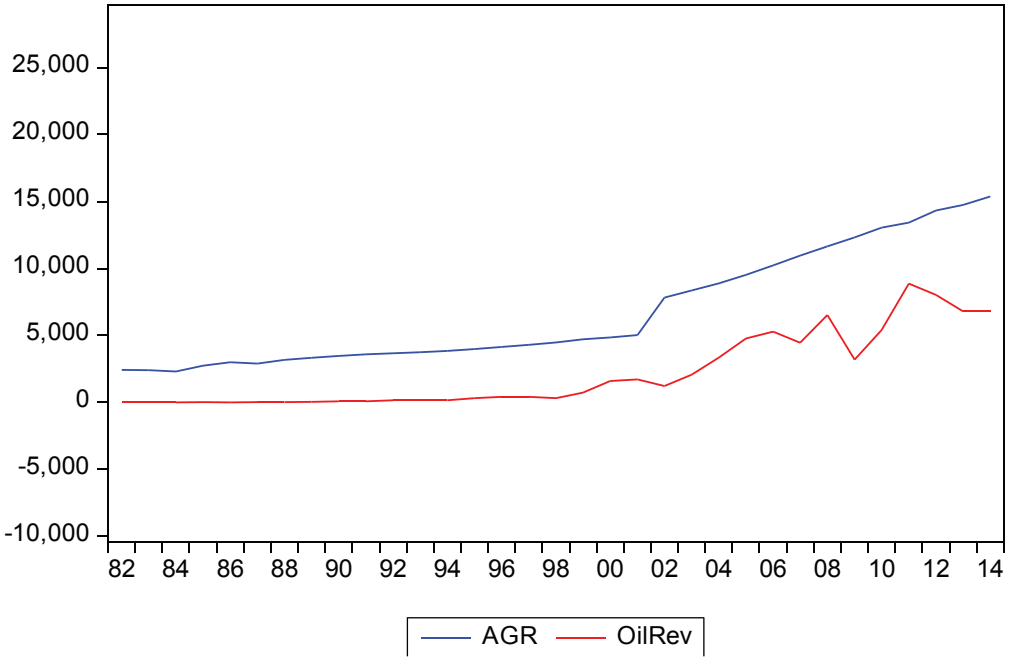

Figure-1 presents the trends of both sectors. From the graph, it can be noticed that both sectors experience growth over the study period, however the growth of the agricultural sector exhibited a more stable growth path than the oil sector. Agricultural output from 1982 to 2001 grew marginally continuously but around year 2002, a sharp growth was noted and afterwards up to 2015 the growth continued, but at a rate higher than the pre 2001 period. Oil revenue also grew marginally over the years from 1982 to 2002, but afterwards a sharp rise in oil revenue was also witnessed, reaching its peak around 2012, though a fall in oil revenue was noticed around year 2008 (during the global economic crises) and after 2012 a continuous decline in oil revenue set in up to 2015 (this decline can be attributed to the fall in world oil price).

Theoretical Consideration and Empirical Literature Review

Lewis (1954) in his dual-sector model categorized the economy into two sectors; the traditional or subsistence sector and the capitalist sector. The model sees development as a product of transition of labour of surplus labour from the traditional sector, chiefly the agricultural sector to the capitalist sector. The model generally underplayed the role of agriculture in economic development. Fei-Ranis (1961) in their development model built-upon the Lewis model on the premise of economic development being a result of labour transition, but however, the model underscores the importance of agriculture on economic development by pointing out that sufficiency of agricultural output is required to support the economy with food and raw materials and hence emphasizing the role of agriculture in attaining economic growth and development.

Sertoğlu *et. al.,* (2017) in their study on the contribution of agricultural sector on economic growth of Nigeria by employing the VECM model found agricultural sector to have a positive long-run impact on economic growth of Nigeria. Olukunle (2013) carried out a primary study on the employment and income effect of cassava production and value chain in Nigeria. His finding shows the cassava production and value chain as having the tendency of rising income and employment in Nigeria. Petterson *et. al.,* (2010) employed panel data analysis to examine the effect of startups in agricultural sector on employment and growth in Sweden. Findings of their study showed startups in agricultural sector as having a positive impact on growth and employment generation. Uma *et. al.,* (2013) appraised the influence of agriculture on economic growth of Nigeria by carrying out a disaggregated analysis and utilizing annual series from 1970 to 2009. The error correction model was used for analysis. Findings of the study showed the combined effect of the agricultural subsectors as having a significant positive effect on growth of the Nigerian economy. Chaudhuri and Banerjee (2010) employed the general equilibrium model to examine the impact of agricultural FDI on welfare and both skilled and unskilled unemployment in a developing economy. Findings of the study showed FDI in agriculture as having a mitigating effect on both types of unemployment. Salako *et. al.,* examined the effect of agriculture on economic growth and development of Nigeria by employing the VAR framework. Findings of their study depicted how the sector has been neglected with attention given to other sectors, the study further underscored the significance of the agricultural sector in ensuring economic growth of Nigeria. Micheal (2017) examined the contribution of agricultural sector performance on economic growth of Nigeria by employing the VECM. Findings of the study showed agricultural productivity as positively impacting growth in Nigeria. Gilbert *et. al.,* (2013) examined the impact of agricultural export on economic growth in Cameroon by employing an extended Cobb-Douglas production function as a theoretical base and utilizing annual data from 1975 to 2009. Findings of their study shows a mixed effect on growth, while some agricultural commodities exhibited positive impact on growth, others exhibited a drag on growth. Ehui and Tsigas (2009) examined the role of agricultural sector in Nigeria's economic growth by employing the general equilibrium analysis methodology and using the Global Trade Analysis Project framework for estimating the model. Findings of the study show a better

performance of the agricultural sector than the oil sector in terms of welfare benefits, return on investment and unskilled labour. Izuchukwu (2011) examined the contribution of Agricultural sector to the development of Nigerian economy by employing the multiple regression analysis on annual series. Findings of the study indicated a positive impact of the agricultural sector via public agricultural expenditure on economic growth of Nigeria.

Odetola and Etunmu (2013) studied the contribution of agriculture to economic growth of Nigeria by employing the growth accounting framework and Granger Causality test to annual series from 1960 to 2011. Findings of the study showed a consistent positive contribution of agriculture to economic growth. Crop production was found to exert the most impact. Olajide *et. al.,* (2012) analysed the nexus between agriculture resource and economic growth in Nigeria by employing the ordinary least squares estimation technique. Results of the study revealed a positive cause and effect relationship between GDP and agricultural output hence underscoring the importance of the sector to economic growth of Nigeria.

Matthew and Mordecai (2016) in their study on the impact of agricultural output on economic development in Nigeria employed the VAR methodology to analyze annual series from 1986 to 2014. Findings of the study shows agricultural sector as having a significant role in contributing positively to economic growth of Nigeria. Ijirshar (2015) employed the error correction model to examine the impact of agricultural exports on economic growth of Nigeria by utilizing annual data spanning 1970 to 2012. Findings of the study shows agricultural exports as having a positive effect on growth and hence buttressing the significance of the sector.

Methodology

The study employed the Vector Error Correction Model (VECM) for analysis. The Augmented Dickey Fuller (ADF) test for unit root was employed to determine the order of integration of the variables i.e. to examine whether or not the study variables are stationary at their level form or they have to be differentiated before becoming stationary. When series are found to be non-stationary, a regression analysis between them yields spurious regression unless if their linear combination yields a stationary process, then we could say the series have long-run association (cointegrated) and the regression is no longer spurious (see Abubakar, 2016).

After determining the order of integration of the variables, the study further employed the Johansen Cointegration test. The Johansen cointegration test utilizes the Trace test and Max-Eigen Value to determine whether or not the variables are cointegrated. Variables are said to be cointegrated if they have long-run association. Having determined the presence of long-run relationship among the variables, the study then employed the Vector Error Correction Model (VECM) to examine the short-run causality, long-run relationship and the speed of adjustment of the economy to long-run equilibrium following a shock in the economy. The innovation accounting tools of Impulse Response Function (IRF) and Forecast Error Variance Decomposition (FEVD) were also employed for further inferences.

Model Specification

The study adapted the Cobb-Douglas Production function as its analytical framework, but however the function was augmented to accommodate the variables of interest. The Cobb Douglas production is specified as:

$$Y = f(K, L) \quad (1)$$

Where: Y- Economic Growth (GDP)

K- Capital [INV] (gross capital formation)

L- Labour (total labour force)

This function is augmented to capture the dynamics of the Nigerian economy, hence the model becomes:

$$Y = f(K, L, Agr, Oil) \quad (2)$$

Where: Agr- Agricultural Output (proxy for agricultural sector)

Oil – Crude Oil Price (proxy for oil sector)

The econometric form of the model is specified as:

$$GDP_t = \beta_0 + \beta_1 INV_t + \beta_2 Lab_t + \beta_3 Agr_t + \beta_4 Oil_t + \mu_t \quad (3)$$

In order to correct for outliers and avoid the problem of hetroskedasticity in the model, the variables were converted to their logarithmic form as:

$$\ln GDP_t = \beta_0 + \beta_1 \ln INV_t + \beta_2 \ln Lab_t + \beta_3 \ln Agr_t + \beta_4 \ln Oil_t + \mu_t \quad (4)$$

The Vector Autoregressive (VAR) Specification of the Model is given as:

$$Y_t = C + \pi_1 Y_{t-1} + \pi_2 Y_{t-2} + \ldots + \pi_p Y_p + \mu_t \quad (5)$$

Where: Y_t is a (n x 1) vector of endogenous variables = $\begin{bmatrix} lnGDP \\ lnINV \\ lnLab \\ lnAgr \\ lnOil \end{bmatrix}$

C is an (n x1) vector of intercept term.

π_i is an (n x n) coefficient matrix.

μ_t is an (n x1) vector of error term.

The long-run cointegrating equation is specified as:

$$Z_t = lnGDP_t - (\beta_0 + \beta_1 lnINV_t + \beta_2 lnLab_t + \beta_3 lnAgr_t + \beta_4 lnOil_t) \quad (6)$$

The Vector Error Correction Model (VECM) is specified in equation (7):

$$\Delta Y_t = C + \sum_{i=1}^{p} \alpha_i \Delta Y_{t-i} + \theta(Z_{t-1}) + \varepsilon_t \quad (7)$$

Where: α_i-Short-run coefficient matrices.

θ - Error correction term / speed of adjustment.

Δ - Short-run operator.

Z_{t-1} - First lag of long-run cointegrating equation.

ε_t - Vector of error term.

Annual data on the study series were collected for the period from 1982 to 2015. Data on GDP and AGR were sourced from the Central Bank of Nigeria Statistical Bulletin, LAB and INV were sourced from World Bank Development Indicators while Oil was sourced from the American Energy Information Administration.

Findings and Discussions

Under this section, results of the econometric tests applied will be presented and discussed.

Stationarity Test Result

The study employed the ADF test for Unit root, the result is presented in Table-1.

Table-1: ADF Unit Root Test Result

Variables	Level		First Difference		Order
	Intercept	Intercept & Trend	Intercept	Intercept & Trend	
GDP	0.72	-2.22	-3.38*	-3.60*	I(1)
CAP	-0.21	-1.68	-3.88*	-3.44	I(1)
LAB	1.08	-1.71	-4.31*	-2.94	I(1)
AGR	0.29	-2.07	-5.64*	-5.62*	I(1)
OIL	-1.04	-2.28	-5.25*	-5.16*	I(1)

Source: Author's computation.

**indicates statistical significance at five percent level.*

HO: Series are not stationary.

Table-1 presents the result of ADF unit root test. Under the ADF unit root test, the null hypothesis of non-stationarity of series is rejected if the computed tau statistic is greater than the tau critical values or if the probability value is less than 0.05 (for five percent level of significance). From our result, all series were found to be non-stationary in their level form, indicating that they had to be converted into their first difference before they became stationary. We could thus conclude that all our series are integrated of order one I(1).

Cointegration Test Result

Having established that our series are non-stationary in their level, it becomes imperative to check whether or not they have long-run association (cointegrated) in order to avoid falling into the situation of spurious regression. To check for the presence of cointegration, the study employed the Johansen Cointegration test, the result is presented in Table-2.

Table-2: Johansen Cointegration Test Result

Hypothesized No. of CE(s)	Trace Statistic	Probability	Max-Eigen Value Stat	Probability
None *	110.5930	0.0000*	47.52609*	0.0007
At most 1 *	63.06693	0.0010*	32.06424*	0.0124
At most 2	31.00269	0.0362*	17.51725	0.1490
At most 3	13.48545	0.0982	13.07517	0.0764

Source: Authors computation.

HO: Series are not cointegrated.

** denotes rejection of the hypothesis at five percent level*

Table-2 presents the Johansen Cointegration test. Under the test, the null hypothesis of no cointegration among the series is rejected if the test statistic is greater than the critical values or if the probability value is less than 0.05. The trace test result shows the presence of three cointegrating equations while the Max-Eigen value result shows the presence of two cointegrating equations. We could thus conclude that the variables are cointegrated. Meaning, that they have long-run association.

Long-run Relationship

Having confirmed the presence of cointegration among the variables, the next step in the analysis is to examine the long-run relationship among the variables. The long-run relationship estimated equation is given by:

$$GDP = 8.90 + 0.23AGR^* + 0.34^*OIL^* + 1.35LAB^* - 0.23INV^* \quad (8)$$

Where *depicts statistical significance at 5 percent level.

Equation (8) presents the long-run relationship among the variables. From the result, Agricultural productivity was found to have a significant positive effect on economic growth of Nigeria in the long-run. It is estimated that a percentage change in agricultural productivity leads to a 0.23 percent increase in economic growth of Nigeria. This finding points to the significance of agricultural sector in contributing to the Nigerian economic growth. Oil price was also found to exhibit a significant positive impact on economic growth of Nigeria. A percentage change in oil price leads to a 0.34 percentage increase in GDP. This also shows the significance of oil sector in positively affecting the Nigerian economy. Labour force also exhibited a positive impact on growth. A percentage increase

in labour force was found to increase GDP by 1.35 percent. However, investment (using GCF) as a proxy was found to negatively affect economic growth. This finding can be justified considering the nature of investment in Nigeria where most of investment is not geared towards the real sector but rather for speculation which has the tendency of not impacting much on growth and also shocks in speculative activities have the tendency of negatively affecting growth.

Short-run Analysis

Under the VAR framework, the models are usually over parameterized and therefore, we give less emphasis on individual coefficient estimates and focus on the major tools of analysis of causality test and innovation accounting tools comprising of the Impulse Response Function (IRF) and Forecast Error Variance Decomposition (FEVD).

Short-run Causality Result

The short-run causality examines whether or not the past values of a series is useful in forecasting the future values of the other series. If it is useful, we could thus say that causality runs from the first variable to the other variable.

The result of short-run causality is presented in Table-3.

Table-3: Short-run Causality Result

Direction	F- Statistic	Prob	Conclusion
OIL > GDP	1.36	0.28	No Causality
AGR > GDP	5.73	0.03*	Causality Exist
INV > GDP	0.42	0.67	No Causality
LAB > GDP	1.81	0.19	No Causality

** Indicates statistical significance at five percent level.*

From the result of short-run causality presented in Table-3, the presence of causality is confirmed if the test probability is below 0.05. The test result indicates that only agricultural output was found to have a significant causal effect on economic growth in the short-run. We could thus conclude that the past values of agricultural output are useful in forecasting the future values of economic growth in the short-run.

Impulse Response Function (IRF)

The IRF plot indicates the time path response of a variable in the system following a shock to another variable in the system. In other words, it shows how a variable behaves over time horizon into the future in response to a unit standard deviation shock to the other variable in the system. The IRF plots are presented in Figure-2.

Figure-2: Response of GDP to AGR and OIL Shocks

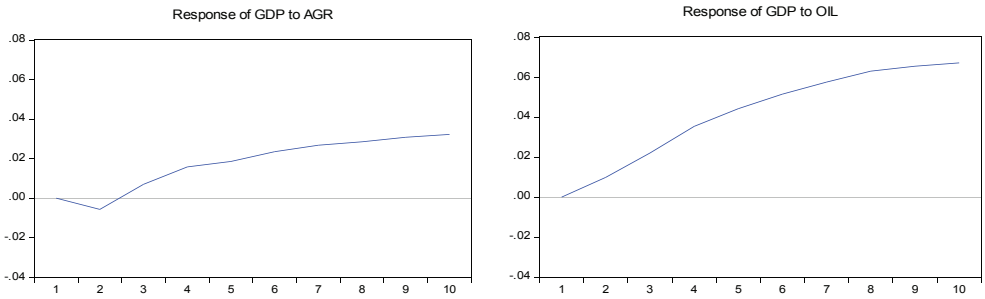

Figure-2 depicts the response of GDP into time horizon to a unit standard deviation shock to AGR and OIL. The first graph shows the response of GDP to agricultural shock. It can be seen that following a unit shock to agricultural output, a mild drag response of GDP was noticed around the second period, but towards the third period up to the tenth period horizon, a progressive positive response was observed. This finding is an indication that the agricultural sector exerts a long-term positive effect on economic growth. The second graph indicates the response of growth to shock in oil price. Following a shock to oil price, GDP was found to respond positively to shocks in oil price from the first period up to the tenth period horizon and also, at a higher pace as compared to its response following a shock to agricultural output. This finding is an indication that oil plays a larger role on economic growth than agricultural output in Nigeria.

Forecast Error Variance Decomposition (FEVD)

The FEVD depicts how variation of a variable over time is caused by its own shocks and shocks of other variables in the system. It traces the path of how shock to a variable and other variables in the model contributes to movement or forecasting error of a variable. The FEVD result is presented in Table-4.

Table-4: Forecast Error Variance Decomposition of GDP

Period	S.E.	GDP	AGR	OIL	LAB
1	0.025911	100.0000	0.000000	0.000000	0.000000
2	0.042947	82.29134	1.765121	5.331883	7.026148
3	0.059929	64.40866	2.275456	16.29207	9.412364
4	0.079095	46.39202	5.298896	29.40337	12.12600
5	0.099462	35.23810	6.827173	38.37766	13.61042
6	0.120652	27.37969	8.438731	44.30896	14.03276
7	0.141679	21.64875	9.691027	48.65500	14.42788
8	0.162422	17.72102	10.44695	52.06632	14.67103
9	0.182280	15.08644	11.14464	54.24340	14.67818
10	0.201124	13.09108	11.71923	55.71532	14.73667

Source: Author's computation.

Table-4 presents the result of FEVD of GDP. From the result, it can be seen that in the first period, all the variations in GDP was caused by shocks to GDP, all the other variables did not contribute to the forecast error of GDP. Coming down to the fifth period, about 35 percent forecast errors in GDP was caused by shocks to GDP, oil shocks contributed about 38 percent, labour shocks contributed about 13 percent while about 6 percent was contributed by agricultural productivity. At the tenth period horizon, GDP shocks contributed about 13 percent to its forecast errors while agricultural productivity shocks contributed about 11 percent, labour shocks contributed about 14 percent and oil shocks contributed about 55 percent to forecast errors of GDP. What can be inferred from the above finding is that oil has the most dominating role on the Nigerian economy but agricultural sector also has a role to play in the growth of the economy.

Robustness Checks

The study carried out some post-estimation robustness checks on the estimated model. Breusch-Pegan-Godfrey Test for hetroskedasticity was employed to estimate whether or not the residuals of the estimated model suffers from hetroskedasticity or not. Breusch-Godfrey Serial Correlation test was also employed to check whether the residuals of the model satisfy the absence of serial correlation condition. The R-squared and F-statistic are also reported. Results of the tests are presented in Table-5.

Table-5: Robustness Check Results

Test	Test Statistic	Prob.	Inference
BPG Hetroskedasticity	14.37	0.50	Residuals are homoscedastic
BG Serial Correlation	5.82	0.12	Absence of serial correlation
F-Stat	3.49	0.01	_
R-squared	0.66	_	_

Source: Author's computation

Table-5 presents the robustness checks employed by the study. The BPG test for hetroskedasticity showed absence of hetroskedasticity in the residuals of the estimated model, while BG serial correlation test result shows the residuals of the estimated model not to be suffering from serial correlation. Both findings are desirable. R-squared also known as the coefficient of determination shows how many percent variations in the dependent variable are caused by the independent variables. The R-squared coefficient of 0.66 indicates that about 66 percent variations in the dependent variable are caused by the independent variables. The F-statistic measures the overall significance of the model. The f-stat and its probability value show the overall significance of the model.

Conclusion and Recommendations

The study sought to examine the role of agricultural sector in the growth of the Nigerian economy which is predominantly an oil driven economy. From the results of econometric tests employed, agricultural sector was found to play a significant role in impacting

positively on the growth of the economy. But in comparison to oil sector, the agricultural sector contributes lower to economic growth; the oil sector was confirmed to be mainstay of the economy, however, this should be a source of worry to policy makers considering the volatility of the crude oil market and how the Nigerian economy is seriously exposed to external shocks. Also, the need for diversification of the productive and revenue base of the economy is now necessary more than ever before, this is so as a result of the drive by most advanced nations to convert to using clean energy and drastically reduce the use of energy sources such as crude oil. This drive will further dampen the prospects of the oil market and the oil as a commodity in the near future.

Specifically, the study recommends among others the need for reduction in over reliance of the economy on oil and focus should be shifted to other sectors with potentials, particularly the agricultural sector. To boost the agricultural sector, a friendly investment climate and massive government investment in the sector is needed to make the sector achieve its potentials.

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Multidimensional Poverty in Kashmir: A Comparative Study of Four Districts

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ABSTRACT

Although poverty is one of the most acquainted and continuing condition known to humanity, it is an enormously intricate concept to understand. Some researchers view it as a reaction to the stress of being poor, whereas others perceive it as a process of adapting to the condition of poverty. Abundant factors subsidize to the concept of poverty including political, economic, social, and cultural forces. The present study examines the multidimensional poverty in Kashmir. The study is based on the primary data collected during the first quarter of 2016 from purposively selected four districts, namely, Srinagar, Bandipora, Anantnag and Shopian. Eight dimensions with twenty-nine indicators of human well-being have been used which enhances the peculiarity of this study. The comprehensiveness of multidimensional poverty in rural Kashmir has been measured by making use of Alkire-Foster method. Considerably much disadvantaged population in Kashmir region of Jammu & Kashmir has been the principal focus of the study which in turn would be advantageous for the policy makers to focus on the dimensions accountable for such an incongruity.

Keywords

Multidimensional Poverty, Headcount, Poverty Gap, Jammu & Kashmir

Introduction

Poverty is a widely used concept in all countries in the world (Gordon, 2006). Poverty affects different aspects of people's lives and it exists when people are denied opportunities to work, to learn, to live healthy lives etc. Poverty is capturing the outcome or end result

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of an individual (Abraham & Kumar, 2008). Poverty is a situation in which there is scarcity of vital facilities, resulting from insufficient income (Gordon *et al.,* 2003). It is based on basic and fundamental needs which not only includes food and shelter but also education, health etc. (Agu, 2014). Flowing from the outmoded base of essential needs and income, the contemporary definition of poverty is based on the lack of opportunities (Sarshar, 2010). As per the modern connotation, poverty does not merely mean lack of basic income or inability to meet basic human needs but also denial of better opportunities (Jayaraman, 2013). Some people do have a potential to evacuate themselves from poverty as they have good health and can live a prolific life, however, still are deprived of seemly opportunities. The unstated disowning of opportunities impulses them into unemployment resulting in loss of income and finally are unable to meet basic needs (Gayathri, 2013). Since the seminal work of Sen (1976, 1979, 1981, 1985 and 1987), poverty has been recognized as a multidimensional phenomenon and has expanded the consideration of researchers, economists and policy makers. But the concept was accepted theoretically by most of the economists (Anand & Sen, 1997; Brandolini & D'Alessio, 1998; Tsui, 2002; Atkinson, 2003; Abraham & Kumar, 2008; Thorbecke, 2007; Duclos *et al.,* 2006). However, the concept was bought into practice after the development of multidimensional poverty index by the Oxford Poverty and Human Development Initiative in 2010. Various studies have been accompanied using different dimensions in order to find out the multidimensional poverty in various countries. Duclos *et al.,* (2006) makes multidimensional comparisons and found weak correlation between income and other dimensions of well-being. They also found that there are differences in poverty by comparing one-dimensional and multidimensional poverty. However, Maltzahn & Durrheim, (2008) argued that the picture of poverty remains same by using different measures. Ningaye *et al*., (2013) used welfare dimensions to capture the multidimensional poverty and claims that each type of poverty has specific determinants although several dimensions of poverty has common determinants and each region (rural or urban) is affected by particular types of poverty. Dewilde, (2008) found that institutional arrangements influence the risk of multidimensional poverty. Castro *et al.,* (2012) argues that relying only on one dimensional or monetary standards, it is difficult to classify the poor and non-poor individuals who are suffering from significant deprivations in other dimensions like water, sanitation, health etc. Azevedo & Robles, (2013) used multidimensional targeting approach and concludes that the method expressively helps in the selection of households having children who are most deprived in the dimensions. Jayaraj & Subramanian (2010) used family of headcount indices of multidimensional poverty based on individual deprivations using National Family Health Survey and found India has shown significant decline in multidimensional poverty during 1991-92 and 2005-06. Guedes *et al*., (2012) analyzed poverty and inequality among small holders and found that there is reduction in both poverty and inequality among small holders however; the reduction in inequality is more among original settlers. Bhuiya *et al*., (2007) multidimensional poverty in rural Bangladesh using food, clothing, shelter, health, education and social involvement as indicators of multidimensional poverty and concludes that multidimensional poverty is prevailing in Rural Bangladesh. Battinson *et al.,*

(2013) analyzed multidimensional poverty in six Latin American countries during 1992 to 2006 and concluded that major contributors of multidimensional poverty in all countries are sanitation and education. Berenger *et al*., (2009) argued that the increase in income has little impact on the increase in the standard of living of people due to the presence of multidimensional deprivations. In this line various studies provide the evidence of prevalence of multidimensional poverty in various countries by using Alkire-Foster method (Awan*et al,* 2013; Batana, 2013; Salahuddin & Zaman, 2012; Yu, 2013; Trani, 2013). The results exposed from these studies reveal that in the rural areas multidimensional poverty is much predominant as compared to urban areas (Batana, 2013). However in most of the countries like China, multidimensional poverty has shown decline both in incidence and intensity (Yu, 2013). Education is the important variable by which a country can be made developed in multiple dimensions.

At global level, in 102 countries covering 75 percent of world population, 1.6 billion people are multidimensionality poor (OPHI, 2016). It was also found that most of the poorest billion live in middle income countries (Kanbur & Sumner, 2012). Bottom billion poor people live in 28 countries out of which India and Afghanistan accommodated 65.4 percent of poor people (Alkire *et al.* 2015). The State of Jammu and Kashmir is also facing a problem of poverty. There is a variation in the number or percentage of poor published in different government reports. According to GoI report 2001, the percentage of J&K population below poverty line was only 3.48%. J&K's economic survey of 2013-14 puts BPL number at 24.21 lakh people or 21.63% of total population. But the most stimulating, rather contradictory fact is that in terms of OPHI multidimensional poverty index 2015, the percentage of MPI poor population in J&K is about 41%. In 2016, the value of MPI in Jammu and Kashmir is 0.194 which confirms that the problem of poverty is not severe. Therefore, it is a matter of apprehension and needs empirical investigation in order to find out the facts about the poverty in Jammu and Kashmir. In this regard a few studies have been conducted in the state which focus mainly on social groups (Bhat & Manzoor, 2012; Koundal, 2012; Bhat, 2013; Din, 2015) and realize the presence of multidimensional poverty among social groups in Jammu and Kashmir. As there is a dearth of studies regarding the multidimensional poverty in Jammu and Kashmir and also the literature provide the evidence of prevalence of multidimensional poverty is more in rural areas as compared to urban areas. Therefore, present study will be an attempt to find out the multidimensional poverty in rural Kashmir. The study hypothesizes that the rural Kashmir is facing the problems of multidimensional poverty.

Data and Methodology

In order to examine the multidimensional poverty in rural Kashmir, this study uses primary data collected through the household survey in the rural vicinity of Kashmir. Four districts have been purposively selected from 10 districts of Kashmir division, two from highest BPL population concentration districts (Srinagar with 38.77% and Bandipora

with 34.96%) and another two from lowest BPL concentration districts (Anantnag with 12.93% and Shopian with 15.03%) as per 2011 census. Purposively selected districts have been divided into Blocks, and two Blocks from each district have been chosen by using Lottery Method of simple random sampling. Two Blocks each have been randomly selected from Anantnag and Bandipora districts. As other two districts have two Blocks each, all those have been selected for study. Thus, the selected Blocks are Dachnipora and Breng from Anantnag district; Bandipora and Hajan from Bandipora district; Shopian and Keller from Shopian district; and Srinagar and Ganderbal from Srinagar district. The selected. From the Dachnipora Block, Adlash Magam village (320 households), from the Breng Block, Niamat Pora / Drawari village (313 households), from Shopiyan Block, Zaina Pora village (331 households), from Keller Block, Zerakan / Zorakan village (306 households), from Srinagar Block, Faqir Gujri village (309 households), from Ganderbal Block, Sangam village (276 households), from Bandipora Block, Anayat Pora/Khar Pora village (338 households), and from the Hajan Block, Push Wari village (333 households) have been selected through Lottery method of simple random sampling (Census, 2011). All the dwellings/households in the selected villages have been included in the survey which comprises the sample size of 2526 households. The required data related to twenty-nine household level indicators have been collected by formulating a structured schedule that was being finalized through a well-designed pilot survey. These indicators fit to economic, health, employment, empowerment, and social participation dimensions of socio-economic capabilities in which people may be deprived. For analysing the collected data, Alkire-Foster (AF) method have been used (Alkire & Foster, 2007; Alkire & Foster, 2011a; Alkire & Foster, 2011b) which has been applauded in the existing empirical poverty literature for assessing incidence as well as the intensity of poverty (Alkire & Roche, 2011; Alkire & Santos, 2014; Roche, 2013; Alkire *et al.,* 2016, Haq & Zia, 2013; Terzi, 2013; Wust, 2012; Unterhalter, 2009; Dotter & Klasen, 2014). This method is also significant from the policy makers' point of view as it helps in identifying who is poor (Alkire & Roche, 2011).

AF method requires each dimension to be assigned equal weightage, and also each indicator under each dimension to be assigned equal weightage. In our case, we have eight dimensions, and thus, each dimension is having a weightage of 1/8. Further, economic dimension has two indicators within it, and thus, each indicator is having a weightage of 1/16. And, a household is called deprived if the per capita income and expenditure per day is less than Rs. 130/- approximately ($1.90 in international standard as specified by World Bank) and the Rs. 47/- respectively. It is in this line of weightage assignment, education dimension based indicators would have 1/24 weightage each, and the household is deprived if no adult member have completed 5 years of schooling, at least one school going child aged 6-14 years is not enrolled and if there is no adult literate member in the household; health dimension based indicators would have 1/32 weightage each, and the household is deprived if there is any child death, underweight child, anaemic women present in the household and the household is unable to avail health care facility and professional

treatment for serious and non-serious problem with own money of the household; wealth dimension based indicators would have 1/72 weightage each, and the household is deprived if it does not own house, the floor is made of mud/clay, it does not have separate kitchen, the toilet is shared and uncovered pit latrine, more than 4 people are sleeping in one room, the source of drinking water is river, spring, canal and stream and is more than 30 minutes' walk, it does not have electricity or having electricity for less than three hours a day, the cooking fuel is cow dung, coal, wood, agricultural crop waste, and if it does not own more than one of motorcycle, car, telephone, television, pressure cooker, refrigerator, computer, sewing machine, bicycle and radio respectively; work and Employment dimension based indicators would have 1/24 weightage each, and the household is deprived if no household member is engaged in either formal or informal sector; ownership of productive assets dimension based indicator would have 1/8 weightage, and the household is deprived if does not possess any piece of land; empowerment dimension based indicators would have 1/16 weightage each, and the household is deprived if no female member is allowed to take decision regarding market, treatment, bank account, study outside, and if the children are not allowed to play outside and watch television; and social participation dimension based indicators would have 1/40 weightage each, and the household is deprived if no member of the household is participating panchayat, village, community, block and district level and above programmes.

Furthermore, AF method suggests that the second cut-off point, called poverty cut-off, should be one dived by the total number of dimensions expressed as percentages. In our case, it is 12.50. It means if a household is deprived in at least 12.5 numbers of indicators out of 29 total indicators, then it would be called poor. Since, it is illogical to interpret 12.5 numbers of indicators, we consider the poverty cut-off as 13. Thus, a household is to be considered multidimensionally poor in the rural Kashmir if the number of deprivations is at least 13.

Results and Discussion

At the outset, the household profile of all 2526 households included under the study have been prepared and is presented in Table-1 for all the four sample districts viz, Srinagar, Bandipora, Anantnag and Shopian representing the rural Kashmir. It is visible in the table that in sampled districts the total number of households is 2526 in which 11998 individuals are living. 22.55 percent are living in the Srinagar district, 25.00 percent in the Bandipora district, 27.15 percent in Anantnag district and 25.28 percent in Shopian district respectively. The remarkable issue is that only 3083, that is, 25.69 per cent of total individuals are working and rests are dependants (74.30 percent). In addition, only 20.43 per cent of the total working persons are engaged in the formal sector and rests are in the informal sector (79.56 percent) where they face the apparent hitches of informal sector such as seasonal income loss, job loss, and unpleasant working environment.

Table-1: Population Profile of Four Districts

Districts	No. of Households	Number of individuals	Employed	Dependent	Employed in Formal Sector	Employed in Informal Sector
Srinagar	585	2706 (22.55)	713 (26.34)	1993 (73.65)	120 (16.83)	593 (83.16)
Bandipora	671	3000 (25.00)	854 (28.46)	2146 (71.53)	215 (25.17)	639 (74.82)
Anantnag	633	3258 (27.15)	788 (24.18)	2470 (75.81)	149 (18.90)	639 (81.09)
Shopian	637	3034 (25.28)	728 (23.99)	2306 (76.00)	146 (20.05)	582 (79.94)
Total	2526	11998 (100)	3083 (25.69)	8915 (74.30)	630 (20.43)	2453 (79.56)

Source: *Researchers' Own Calculations on Primary Data; Values in parentheses are percentages*

This obviously discloses the presence of deprivations and vulnerabilities among the rural populace in the Kashmir region of J&K. In order to elucidate this point, we employed the AF method for identifying deprived households in our sample districts. And, the household level observations are presented in Table-2. This portrays the number of deprived households with its percentage in parentheses.

Table-2: Multidimensional Deprivations in Rural Kashmir

Dimensions	Indicators	Highest BPL Population			Lowest BPL Population		
		Srinagar	Bandipora	Total	Anantnag	Shopian	Total
Economic	Income (household average daily income less than Rs.130/-)	466 (79.65)	453 (67.51)	919 (73.16)	528 (83.41)	527 (82.73)	1055 (83.07)
	Expenditure (household average daily expenditure less than Rs.47/-)	174 (29.74)	53 (7.89)	227 (18.07)	234 (36.96)	177 (27.78)	411 (32.36)
Education	Completed less than 5 Years of Schooling	236 (40.34)	80 (11.92)	316 (25.15)	173 (27.33)	171 (26.84)	344 (27.08)
	No Child Enrolment in the School going age of 6-14	26 (4.44)	7 (1.04)	33 (2.62)	3 (0.47)	22 (3.45)	25 (1.96)
	No Adult Member is Literate	237 (40.51)	80 (11.92)	317 (25.23)	173 (27.33)	171 (26.84)	344 (27.08)
Health	Child Mortality	0	2 (0.29)	2 (0.15)	0	1 (0.15)	1 (0.07)
	Underweight Child	3 (0.51)	2 (0.29)	5 (0.39)	7 (1.10)	4 (0.62)	11 (0.86)
	Anaemic Women	2 (0.34)	5 (0.74)	7 (0.55)	12 (1.89)	2 (0.31)	14 (1.10)
	No Physical Access to Healthcare Centre	323 (55.21)	243 (36.21)	566 (45.06)	415 (65.56)	277 (43.48)	692 (54.48)

Dimensions	Indicators	Highest BPL Population			Lowest BPL Population		
		Srinagar	Bandipora	Total	Anantnag	Shopian	Total
Wealth	No Primary Residence (no own house)	0	0	0	7 (1.10)	0	7 (0.55)
	Housing Condition in terms of floor type (muddy)	374 (63.93)	187 (27.86)	561 (44.66)	278 (43.91)	306 (48.03)	584 (45.98)
	No Separate Kitchen	20 (3.41)	21 (3.12)	41 (3.26)	42 (6.63)	22 (3.45)	64 (5.03)
	No Toilet Facility	423 (72.30)	271 (40.38)	694 (55.25)	429 (67.77)	421 (66.09)	850 (66.92)
	Persons per Room (4 or more persons)	16 (2.73)	44 (6.55)	60 (4.77)	37 (5.84)	93 (14.59)	130 (10.23)
	No Access to Safe Drinking Water	36 (6.15)	123 (18.33)	159 (12.65)	25 (3.94)	32 (5.02)	57 (4.48)
	Electricity (as a source of getting light for 3 or less hours a day)	6 (1.02)	17 (2.53)	23 (1.83)	8 (1.26)	1 (0.15)	9 (0.70)
	Fuel for Cooking (Cow Dung)	436 (74.52)	351 (52.30)	787 (62.65)	569 (89.88)	457 (71.74)	1026 (80.78)
	No Consumer Durables (Pressure cooker / refrigerator / computer / sewing machine / PNT or Mobile Phone / T.V, etc.)	395 (67.52)	182 (27.12)	577 (45.93)	126 (19.90)	253 (39.71)	379 (29.84)
Ownership of Productive Assets	No Agricultural Land Holdings	171 (29.23)	11 (1.63)	602 (47.92)	28 (4.42)	33 (5.18)	224 (17.63)
Work and Employment	Employment Deprivation (No Household member is employed anywhere)	18 (3.07)	431 (64.23)	29 (2.30)	97 (15.32)	127 (19.93)	61 (4.80)
Women Empowerment	Not Allowed to Travel to Market, Health Centre, Study Outside etc.	136 (23.24)	217 (32.33)	353 (28.10)	97 (32.38)	294 (46.97)	499 (39.29)
	No Power of decision making for Health Care Services for own Needs	579 (98.97)	641 (95.52)	1220 (97.13)	591 (93.36)	605 (94.97)	1196 (94.17)
Social Participation	No Participation at Village Level	580 (99.14)	616 (91.80)	1196 (95.22)	597 (94.31)	626 (98.27)	1223 (96.29)
	No Participation at Panchayat Level	580 (99.14)	633 (94.33)	1213 (96.57)	587 (92.73)	527 (82.73)	1114 (87.71)
	No Participation at Community Level	580 (99.14)	651 (97.01)	1231 (98.00)	616 (97.31)	630 (98.91)	1246 (98.11)
	No Participation at Block Level	580 (99.14)	668 (99.55)	1248 (99.36)	620 (97.94)	632 (99.21)	1252 (98.58)
	No Participation at District Level	585 (100)	671 (100)	1256 (100)	622 (98.26)	632 (99.21)	1254 (98.74)

Source: *Researchers' Own Calculations on Primary Data. Values in parentheses are percentages*

It is clear that in highest BPL population districts (Census, 2011) Srinagar and Bandipora), 919 households (73.16 percent) are having average income of less than Rs. 130/- per day. 1055 numbers of households (83.07 percent) in the lowest BPL population districts (Census, 2011) (Anantnag and Shopian) are having average income per day less than Rs. 130/-. Similarly, 227 numbers of households (18.07 percent) in the highest BPL concentration districts and 411 numbers of households (32.36 per cent) in the lowest BPL population concentration districts are having average expenditure per day less than Rs. 47/-. Thus, these households are economically underprivileged. When we compare the deprivation levels across the districts, it is apparent that relatively greater degrees of economic deprivation are there in the lowest BPL concentration districts. Similarly, in the education dimension deprivation is relatively more in the lowest BPL population districts. However, in the health dimension, both the highest and lowest BPL population districts are in a better position however, both are having more deprivation in physical access to health care centre indicator (Highest BPL population districts 45.06 percent and Lowest BPL population districts 54.48 percent). In terms of housing conditions, availability of toilet facilities, and fuel used for cooking, Anantnag and Shopian districts (lowest BPL population districts)are relatively more deprived than the Srinagar and Bandipora districts (highest BPL population districts). Again, a larger number of households in the highest BPL population districts are not having agricultural land holdings. And, in this context the observation for highest BPL concentration districts are slightly better. There are only 61 households in the Anantnag and Shopian 29 households in the Srinagar and Bandipora district are absolutely deprived in employment dimension as not a single member in these households are engaged in the formal or informal sector. Besides, the women empowerment indicators for all the four districts evidently specify the incidence of deprivations and thus, gender disparity. In terms of social participation of both the genders are absolutely lacking in both the districts.

It is determined from this observation that rural Kashmir region of J&K provides the evidence of the presence of multidimensional poverty. Thus, an effort has been made to construct the MPI for both the districts using AF method. MPI is the product of Headcount (H) and Average Poverty Gap (A) (Dehury & Mohanty, 2015) Headcount is the number of households deprived at least in 13 indicators out of 29 total indicators in our study. Average poverty gap is the 'sum of the ratio of number of indicators in which a household is deprived and total number of indicators' divided by the total number of households (Santos & Alkire, 2011). On the basis of the primary survey data for the sample districts, we estimated that the Headcount (H) for the highest BPL population districts is 0.346, and that of for lowest BPL population districts is 0.334. It means about 34.63 percent of total households in duo districts Srinagar and Bandipora district, and 33.46 percent in Anantnag and Shopian district are multidimensionally poor, generally termed as the incidence of poverty. Similarly, the average poverty gaps (A) as estimated by AF method for both the districts are same 0.4952 for highest BPL population district and 0.4909 for lowest BPL population districts respectively. It means on an average a household is deprived in almost half of the indicators considered in this study. Therefore, as per AF method the Multidimensional Poverty Index (MPI = H x A) for highest and lowest BPL

population districts are 0.1715 and 0.1642 respectively. Therefore, it follows that the highest BPL population districts are having higher intensity of poverty in comparison to that of lowest BPL population concentration districts. However, it is important to note that these sampled districts consist of unequal number of households which might have resulted in differences in the incidence of poverty measured in terms of Headcount ratio. Nonetheless, the average poverty gap is same for all the four districts. Multidimensional poverty is higher in highest BPL population districts as compared to lowest BPL population concentration districts. This finding is critical for establishing our hypothesis of the presence of multidimensional poverty in rural areas of Kashmir region of J&K.

Conclusion

Across time and space, poverty is considered as a complex phenomenon and is influenced by large number of factors which can be studied through various perspectives and is a most important socio-economic condition that many countries have been suffering from a long time. Poor people always face all natures of denials as lack of material goods, but also as paucity in other important areas such as social capital, human capital, power and voice (Norton *et al.,* 2012). In other words poverty is a multidimensional concept rather than a uni-dimensional one and its necessity in poverty measurement is widely accepted and various measures have been developed for this purpose. Despite of having remarkable growth rate in Indian economy, World Bank has classified India in lower middle income countries which witnesses the prevalence of poverty in the country and has remained as important issue in the economy as one in five Indians is poor (World Bank, 2016). So, the present study is an attempt to study the multidimensional poverty in rural areas of Kashmir based on data collected from households in the first quarter of 2016 from four sampled districts namely, Srinagar, Bandipora, Anantnagand Shopian. The prevalence of multidimensional poverty in rural areas of Kashmir has been established through the AF method. The value of MPI is slightly higher in highest BPL population concentration districts as compared to lowest BPL concentration districts. A large junk of people are dependent which may be the one reason for pervasiveness of multidimensional poverty in rural Kashmir. Despite of having good education, people are working in informal sectors (mainly labours), which clearly shows the lack of pecuniary opportunities. People in rural Kashmir lack better-quality housing, improved sanitation, and better means for cooking which may be due to the engagement of people mostly in informal sector. Despite having various employment schemes including MNREGA, Self-employment scheme, Sher-E-Kashmir employment welfare programme for youth, Voluntary service allowance, J&K women's development corporation etc. for youth and women executed by the Government of India as well as the state government, the scenario has not yet been changed to a great extent. It may be due to lack of awareness of people, and also due to lack of efficient implementation of the schemes. Therefore, it may be said that the problem of poverty in Kashmir is multidimensional which is cherished basically by underemployment of people in the informal sector (Clark, 2003; Alkire & Sarwar, 2009; Dehury & Mohanty, 2015). Therefore, it is proposed that efforts should be made by both government and

non-government organizations to enhance the productivity of rural people by improving infrastructure for better job facilities.

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Political Economy of Human Development Expenditure in Rajasthan Since 1980

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ABSTRACT

Human development is the basic objective of any society instead of focusing on economic growth alone. Human development is a process which enlarges people's choices to live longer, healthier and better. Existing measures of human progress failed to account for the true purpose of development-to improve people's lives.

Strong policy actions are needed for the generation and better distribution of primary income. The policy makers should, therefore not only need to understand the factors that affects growth of a particular economy, but also the factors that helps redistribute the effects of growth more effectively & evenly.

Since the aim of a government is to enhance social welfare, therefore public spending is considered a powerful instrument in achieving this goal. This paper examines the trends and patterns of public spending on human development/ human development expenditure in Rajasthan. It attempts to explain these trends in view of overall changes in the fiscal situation of the State and examines in detail the composition of public expenditure in sectors which are important for human development.

Keywords

Political Economy, Human development expenditure, Human development indicators, Social Priority Ratio, Social Allocation Ratio, Human expenditure ratio, Public expenditure Ratio

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Introduction

Rajasthan began it's journey towards development with a number of disadvantages and also some notable advantages. It is the largest state in terms of its area, land locked from all sides, two third's of its area is arid or semi arid, has low rainfall resulting in it's over dependency on monsoon every year and has less fertile land compared to its neighbouring states. The notable advantages are its rather peaceful social & political environment, excellent rail & road network, its close proximity with national political power, a huge mineral & mining base and growing tourism industry. But despite all these it is a predominantly agrarian state.

The earlier mentioned handicaps are further compounded by the rapidly growing population, which is among the highest in the country, and widening gaps in provision for social sectors like education & health and creation of basic infrastructures has to be addressed by the successive governments. The fragile state of its economy makes the task of resource mobilization towards these sectors even more challenging for the policy makers.

Being one of the top performing states of India in which the contribution of Agriculture is 28 percent to that of service sector an impressive 43 percent and remaining contribution coming from Industrial sector being 29 percent of the state GDP. The economic growth of 7-7.5 percent annually promises a long term development and has the potential to reach 14-15 percent growth in future. At the same time the urban-rural differential is quite significant. As a result the rural areas face a number of tougher challenges as compared to urban areas. This requires well planned multilevel approach by policy makers. The approach has to be a long term strategic thinking which has the mandate of its people's aspirations, led by proactive & visionary political leadership and the support of central government. This will ensure sustainable development of Rajasthan in terms of inclusive & responsible development. As we all know human development has in recent time drawn maximum attention of Economic policy makers.

The human development concept was developed by economist Mahbub ul Haq. At the World Bank in the 1970s, and later as minister of finance in his own country, Pakistan, Dr Haq argued that existing measures of human progress failed to account for the true purpose of development — to improve people's lives. In particular, he believed that the commonly used measure of Gross Domestic Product failed to adequately measure well-being. Working with Nobel Laureate Amartya Sen and other gifted economists, in 1990 Dr Haq published the first Human Development Report, which was commissioned by the Programme.

Millions in developing and industrial countries lack the very basic requirements of a decent and satisfying life, charecterised by food, safe water, education, health care adequate shelter and a clean environment. Above all, a low income frustrates people's development, for they simply do not have the means to acquire the basic goods they need. Nor in many case do their governments offer a much support through health, education or

other services as they should. Most of what people need comes from individual or family efforts-from what they earn or from what they grow or make for themselves. This is their primary income (as distinct from secondary income received in kind from government). The size of the primary income determines what food or other essential items any household can afford. The best strategy for human development to increase the primary income in a society by unleashing the creative energies of its people, its resources and its capacities, and by ensuring that these incomes benefit the majority of the population.

Strong policy action is needed for the generation and better distribution of primary income. Sustained and more equitable economic growth puts households in a much better position to meet their needs as the experience of the newly industrializing East Asian economies shows. But if those in power maintain unjust pattern of land distribution, or neglect to promote employment opportunities, they will keep people poor and impede the country's entire development effort. Governments do, of course, withdraw some of this primary income in taxes. In return, they are expected to ensure personal and national security, and provide physical infrastructure (like roads and electricity) as well as social infrastructure and services (like health clinics, schools and food subsidies). For the poorer people, government services can help make up for the inadequacy of their primary incomes. But there can be striking differences between one country and another in the amounts of money raised in taxation-and in the ways it is spent. This study explores the opportunities for public financing of human development. It look closely at the proportion of each country' income spent through the government budget on social priority areas. Before analysing the patterns and efficiency of public social spending in developing countries, however, the role of the state should be placed in a broader perspective. First among the state several functions that bear on human development is the responsibility for encouraging the creation of productive, remunerative, satisfying employment-including self-employment. Jobs do more than provide income and produce goods and service. They also engage people in the activities of the community, making them agents of change. Sensible macroeconomic policies can help achieve this. The exchange rate, for example, should not be overvalued, and there should be no trade restrictions that handicap labour intensive exports. Inflation should be controlled, and interest rates should not lead to credit rationing that excludes small borrowers. Nor should the country's distribution of assets discriminate against small entrepreneurs and their workers stilling initiative and worsening poverty. But even the best macroeconomic policies may fail unless they are properly monitored.

Human development has recently been advanced as the ultimate objective of human activity in place of economic growth. Human development has been defined as enlarging people's choices in a way which enables then to lead longer, healthier and fuller lives. Empirical finding show that countries at similar level of per capita income can have significantly different human development indicators depending on how that income was used. According to Kuznets inverted 'U' shaped curve, as the economy develops the inequality increase in the initial stage. The inequality promotes poverty which creates obstacles in the path of human development. It is well known that economic growth is a necessary but

not a sufficient condition for eradication of poverty. The policy makers should, therefore not only need to understand the factors that affects growth of a particular economy, but also the factors that help redistribute the effects of growth more effectively. Traditionally, tax and expenditure on public goods have been used as the most important forms of redistribution instruments. In recent years, however, public expenditure on education and health have been used as prominent mechanism for effecting redistribution.

Since the role of a government is to enhance social welfare, therefore public spending is considered as a powerful instrument for achieving this goal. Public expenditure can overcome market failures that exacerbate poverty, such as the inability of the poor to borrow for education, their lack of information about preventive healthcare, or the externalities that exacerbate public health hazards to which the poor are most exposed. The importance of public expenditure in the process of human development is well recognised.

This paper examines the trend and pattern of public expenditure on human development in Rajasthan and attempts to explain these trends in view of overall changes in the fiscal situation of the State. The paper also presents a comparative analysis of the level of public spending on human development in Rajasthan with India. In context of it we set some objectives to come on correct conclusion.

Objectives of the Study

1. To examine, the trend and pattern of public expenditure on human development in Rajasthan
2. To explain, these trends in view of overall changes in the fiscal situation of the State.
3. To examine, the trends in Human development expenditure in Rajasthan since 1980s.
4. To examine, the trend and pattern of social sector expenditure on human development in Rajasthan
5. To examine the Rajasthan's performance in context of Human Development

Research Methodology

To examine, in detail the composition of public expenditure in sectors that are important for human development of Rajasthan and for detailed analysis of expenditure under different heads, collection of data mainly based on secondary sources, collected from the planning commission, Directorate of Economics and Statistics, Budget Study, Economic Review and various other reports and documents released by Government of Rajasthan.

The Analysis of Human Development Expenditure

The extent of human development expenditure has been measured in earlier studies in two ways. First, based on UNDP's Human Development Report 1991, studies have used four ratios to indicate the priority assigned by States to expenditure on human development. These are (i) Public expenditure ratio (PER), defined as the total budgetary expenditures

as a proportion of GDP (ii) Social Allocation Ratio (SAR), defined as the share of budgetary expenditure on the social sector in total budgetary expenditure (iii) Social Priority Ratio (SPR), defined as the proportion of social sector expenditure that is spent on human priority areas, and (iv) Human expenditure ratio (HER), which is a product of the first three ratios and measures the budgetary expenditures in human priority areas as a proportion of GDP.It is a powerful operational tool that allows policy makers who want to restructure their budgets to see existing imbalance and the available options.

In addition to these ratios, studies have also used trends in per capita expenditure on social and human priority sectors to measure public spending for human development. It is important to examine trends in per capita expenditure along with the UNDP ratios as the UNDP ratios measure the human development expenditure in relation to income and do not indicate the absolute level of expenditure on human development in any State. So in this analysis apart from the ratios proposed by UNDP, per capita expenditure on Social and human priority and the change in its composition over the period has also been analysed.

Several important policy conclusions emerge from the UNDP's analysis of public expenditure on human development.

- The human development expenditure ratio may need to be around 5 percent if a country wishes to do well in human development.
- A preferred option is to keep the public expenditure ratio moderate (around 25 per cent), allocate much of this to the social priority area (giving those more than 50 per cent).
- High government spending with low social priorities is the worst case. If 25 percent or more of national income is channelled through the government budget, and yet less than 1 per cent of GNP goes into human priority concerns, this is the worst of all possible worlds. The public sector is huge yet the majority of the population does not benefit from public social expenditure.
- If public expenditure is already high (as in many developing countries) but the social allocation ratio is low, the budget will need to be reassessed to see which areas of expenditure could be reduced.
- If the first two ratios are high, but the ultimate human development impact, as reflected in human development indicators is low, the social priority ratio must be increased.

Overall Pattern of Human Development Expenditure in Rajasthan Since 1980

The paper, analyse trends in both the UNDP ratios and the per capita expenditures. The first step towards such an analysis is to define what constitutes social sector and the human priority areas. In this paper, social sector is defined to comprise expenditure on broad budgetary heads called Social Services and Rural Development. Social Services include following subheads:

(i) Education, Sports, Art and culture; (ii) Medical and Public Health; (iii) Family Welfare;

(iv) Water Supply and Sanitation; (v) Housing; (vi) Urban Development; (vii) Welfare of Scheduled Castes, Scheduled Tribes and Other Backward Castes; (viii) Labour and Labour Welfare; (viii) Social Security and Welfare; (ix) Nutrition; (x) Relief on Account of Natural Calamities; (x) Other Social Services.

Within the social sector, social priority areas are defined to comprise elementary education, health and family welfare (excluding medical education, training and research), nutrition, water supply and sanitation and rural development. These are sectors that are particularly important for human development.

The overall human development expenditure in Rajasthan as reflected in all four ratio namely PER, SAR, SPR, and HER estimates in presented Table-1.

Table-1: Indicators of Expenditure on Human Development in Rajasthan Since 1980

YEAR	PER	SAR	SPR	HER
1980-81	3.78	32.49	81.89	1.01
1981-82	4.32	34.78	75.35	1.13
1982-83	4.59	37.52	82.32	1.42
1983-84	4.35	36.36	84.44	1.33
1984-85	5.10	37.08	91.20	1.73
1985-86	5.90	36.26	90.07	1.93
1986-87	6.42	34.18	89.99	1.97
1987-88	9.15	34.14	83.80	2.62
1988-89	6.82	36.34	88.03	2.18
1989-90	7.30	38.51	92.17	2.59
1990-91	8.14	38.24	85.56	2.66
1991-92	11.42	32.38	86.70	3.21
1992-93	11.04	34.38	87.11	3.31
1993-94	13.66	34.12	88.38	4.12
1994-95	13.41	35.23	89.73	4.24
1995-96	16.70	33.55	88.20	4.94
1996-97	14.63	37.59	89.06	4.90
1997-98	15.07	36.40	90.28	4.95
1998-99	16.83	41.80	88.14	6.20
1999-2000	18.46	38.92	90.84	6.53
2000-01	20.77	39.97	86.15	7.15
2001-02	20.00	39.35	87.75	6.91
2002-03	23.86	38.04	85.64	7.77
2003-04	22.03	37.04	81.11	6.62
2004-05	16.89	40.35	86.34	5.88
2005-06	17.32	41.27	87.45	6.25
2006-07	17.66	42.15	83.81	6.24

YEAR	PER	SAR	SPR	HER
2007-08	22.48	36.18	86.38	7.03
2008-09	23.22	42.32	86.92	8.54
2009-10	24.59	41.53	86.95	8.88
2010-11	23.47	39.51	86.12	7.99
2011-12	27.16	38.75	82.79	8.71
2012-13	34.10	37.78	83.00	10.69

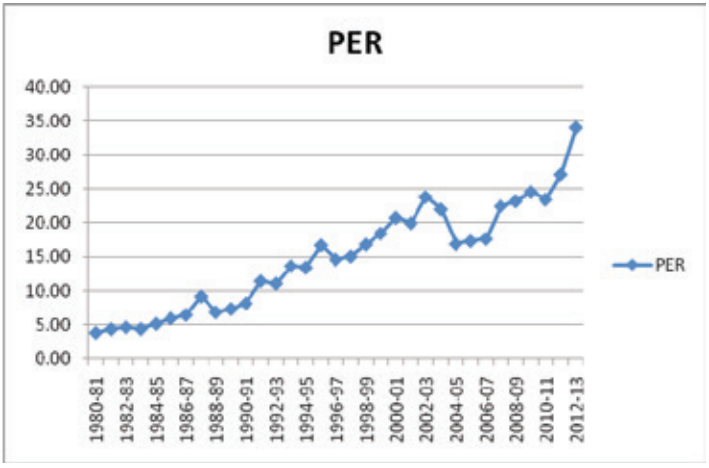
Notes

PER= Public Expenditure/GSDP; SAR= Expenditure in the social sector/GSDP; SPR= Expenditure in Human Priority Areas/Expenditure in the Social sector Expenditure under different heads has been estimated as the sum of revenue expenditure and capital expenditure (including loans and advances net of repayments)

Source: Estimated on the basis of data from Planning Commission, Government of India and Directorate of Economics & Statistics, GoR

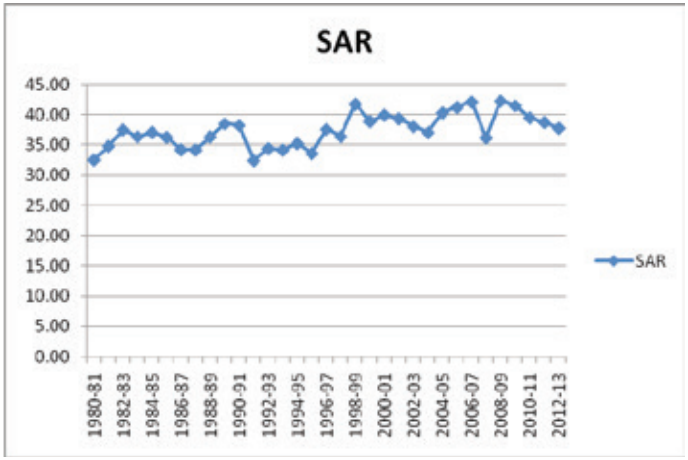
If we look at the period 1980-81 to 2012-13, average public expenditure ratio has been around 14.87 percent. Over the period, this period the public expenditure ratio declined with respect to the GSDP growth rate which was about to 6.5 percent per annum at constant prices. It was increased during 1998-99 to 2003-04. This increase after 1998-99 was primarily due to an increase in salary expenditure brought about by the recommendation of fifth pay commission, decrease the retirement age and grin situation of two consecutive droughts in Rajasthan. Despite this the level of PER in 2012-13 was 34.10 percent (Figure-1).

Figure-1: Public Expenditure Ratio in Rajasthan since 1980



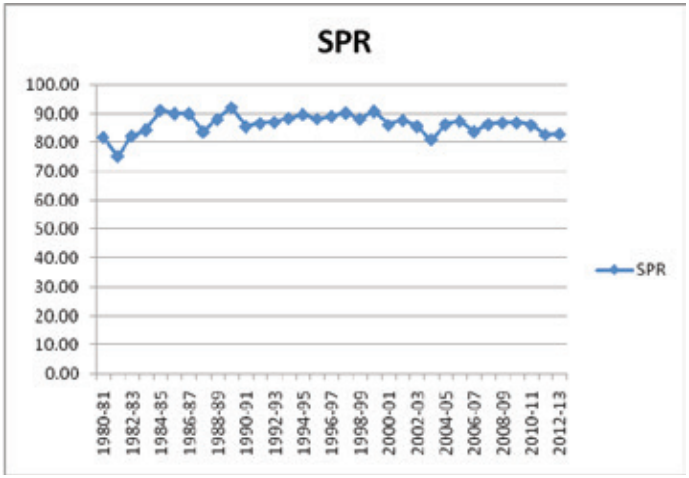
In terms of allocation to social services the average growth rate of SAR during the 1980-2013 is 39.55 per cent which is about 40 per cent as suggested by UNDP's report. It was maximum in 2008-09 with 42.53 percent and minimum in 1991-92 with 32.38 percent. Trends in SAR presented in Figure-2.

Figure-2: Social Allocation Ratio in Rajasthan since 1980



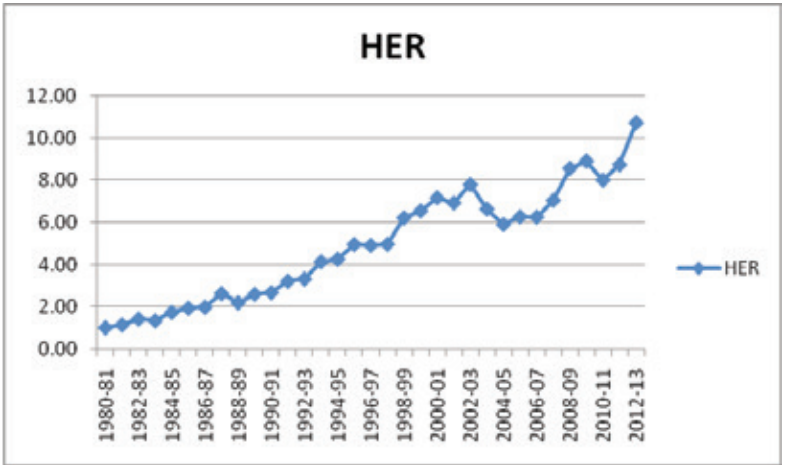
It is seen that many states of India have very low standards of public health, education and water. For them the priority must be basic education, primary healthcare and extension of basic water system to poor areas of both rural and urban. In context of it we calculate allocation of expenditure on social priority sector comprising education, art & culture, health and family welfare, nutrition, water supply & sanitation and rural development in Rajasthan since 1980. The average growth rate of SPR during this period is 85.35 per cent which is higher that the UNDP norm (50 percent). It was maximum in 1989-90 with 92.17 per cent and lowest in 1981-82 with 75.35 per cent. Trends in SPR are presented in Figure-3. This analysis shows that although the social sector spending is low in Rajasthan but whatever is spent in the name of social sector, its major share goes to the priority sector.

Figure-3: Social Priority Ration in Rajasthan since 1980



In analysis of HER, UNDP support if a country / state wishes to do well in human development the HER may need to be around 5 per cent. This also indicates a good political commitment from the government to Human priority or social priority concerns. In Rajasthan HER since 1980, on an average has been around 4.9 per cent (Figure-4).

Figure-4: Human Expenditure Ration in Rajasthan since 1980



However, HER itself cannot reveal the true picture of human development, unless human development spending per person in absolute terms is taken into account. Therefore the per capita public expenditure, per capita social sector expenditure and per capita social priority expenditure are presented in Table-2.

Table-2: Trends in Per Capita Real Expenditure on Human Development in Rajasthan Since 1980

(in Rupees)

Year	Per Capita Public Expenditure	Per Capita Social Sector Expenditure	Per Capita Social Priority Sector Expenditure
1980-81	982.7	319.24	261.42
1981-82	1209.76	420.74	317.04
1982-83	1315.36	493.52	406.28
1983-84	1481.55	538.69	454.9
1984-85	1653.72	613.25	559.26
1985-86	1928.22	699.22	629.77
1986-87	2310.47	789.74	710.71
1987-88	3130.16	1068.76	895.66
1988-89	3134.55	1139.22	1002.84
1989-90	3304.8	1272.72	1173.08

Year	Per Capita Public Expenditure	Per Capita Social Sector Expenditure	Per Capita Social Priority Sector Expenditure
1990-91	4245.48	1623.65	1389.25
1991-92	5620.09	1819.82	1577.81
1992-93	6141.75	2111.6	1839.39
1993-94	7174.55	2447.88	2163.48
1994-95	8212.86	2893.53	2596.31
1995-96	10606.26	3558.81	3138.72
1996-97	10381.33	3902.37	3475.64
1997-98	11844.1	4310.95	3891.88
1998-99	13810.62	5772.24	5087.79
1999-2000	15270.88	5943.4	5399.18
2000-01	16838.78	6729.76	5797.7
2001-02	17970.89	7072.3	6206.18
2002-03	19321.12	7349	6293.95
2003-04	22954.63	8502.47	6896.05
2004-05	21572.04	8704.12	7515.42
2005-06	23604.9	9742.02	8519.6
2006-07	26869.62	11325.21	9491.85
2007-08	35970.88	13014.33	11241.33
2008-09	40535.61	17153.74	14910.53
2009-10	45804.74	19022.84	16540.23
2010-11	50386.08	19909.77	17146.06
2011-12	61881.66	23977.53	19851.28
2012-13	81805.51	30908.07	25653.98

Notes:

Expenditure under different heads has been estimated as the sum of revenue expenditure and capital expenditure (including loans and advances net of repayments)

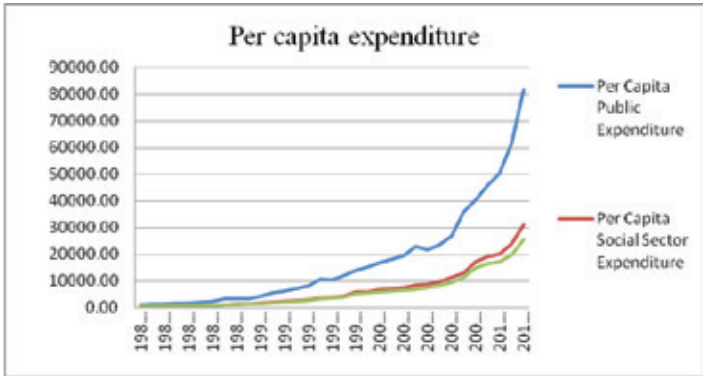
Source: Estimated on the basis of data from Planning Commission, Government of India and Directorate of Economics & Statistics, GoR

Figure-5 shows the trends in real per capita expenditure on social sector and social priority areas in Rajasthan since 1980. The figure shows that there was a significant increase in per capita expenditure over this period. The per capita public expenditure has increased from Rs. 982.70 in 1980-81 to Rs. 81805.51 in 2012-13. The per capita social sector expenditure has increased from Rs. 319.24 in 1980-81 to 30908.07 in 2012-13. The per capita social priority sector expenditure increased from Rs. 261.42 in 1980-81 to Rs. 25653.98 in 2012-13.

The rate of growth of per capita expenditure is far greater than the rate of growth of per capita social sector and social priority sector. Therefore from this analysis a very interesting facts comes out. This increase in per capita expenditure heads over this period is mainly on the non-development expenditure heads which primarily consists of interest payment, wage and salaries etc. There were some reasons, first, a rule was implemented for government employee in 1976 that employee earned leave is 30 days in a year.

Government decided to give cash payment for one month's salary in two years. Despite this, the step has brought an annual burden of about Rs. 100 Crores. Second, in 1992, the government initiated the scheme of giving three promotions to all employees after 9, 18 and 27 years of services. This increased the pension burden from 236 Crore in 1992-98 and Rs. 1693 Crore in 1998 to 2028 Crore in mid of 1998-2003. Third, in 1997, central government revised the pay scale of employees it increased the salaries and pension around 40 percent. Since, then the expenditure on this account has been rising with annual growth rate of 7 percent. The payment under pension and miscellanious general services also increased with 43 percent in 1998-03. Fourth, the reduction in retirement age from 60 years to 58 years put extra pressure of Rs. 750 Crore on an account of payment of pension, provident fund and gratuity etc.

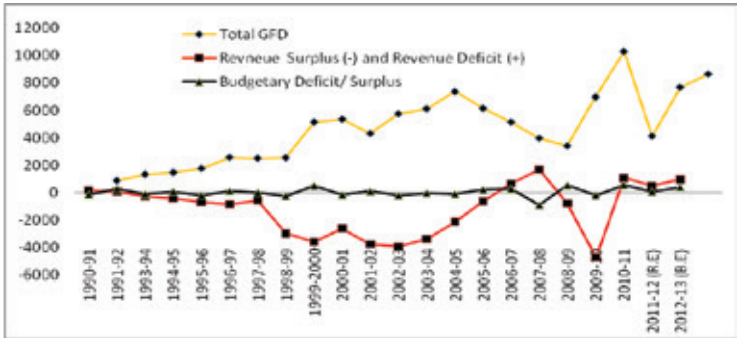
Figure-5: Trends in Per Capita Real Expenditure on Human Development in Rajasthan Since 1980



Human Development Expenditure and Fiscal Situation in Rajasthan

The increment in human expenditure ratio in Rajasthan has to be analysed in the light of changes in the fiscal situation in Rajasthan. The fiscal situation in the state affects the expenditure on the human development. Figure-6 shows the trends in fiscal and revenue deficits in the state.

Figure-6: Trends of Fiscal and Revenue Deficits in Rajasthan



The financial position of Rajasthan, like that of several states of India, has deteriorated greatly in the late 1990s. While the deficits of all states increased in the late 1990s due to the increase in salaries by the Fifth Pay Commission, Rajasthan faced a double crisis: that of *wage increases* and *repeated drought*. Real wages increased by about 30 percent, with salary and wages accounting for nearly 8 percent of GSDP in 2000-01. Indexed to real wages, pensions doubled in the five years following the wage increase. At the same time, Rajasthan had to endure three droughts in 2000-01, 2002-03 and 2004-05. The combined impact of these supply shocks, coupled with increased interest payments on a rising debt stock, raised deficits by more than 3 percent of GSDP between 1997-98 and 2002-03, despite improvement in own tax revenue performance. Capital expenditures bore the brunt of the adjustment—falling by half between 1997-98 and 2000-01, to less than 2 percent of GSDP. Indicating the deep fiscal stress, the GoR was in overdraft situation during one of every three days in the five years ending in 2002-03. This fiscal imbalance is reflected in rising revenue and fiscal deficits, interest liabilities, outstanding debt etc., both in absolute term and as percentage of GSDP. Increase in gross fiscal deficit, interest payment liability and outstanding debt is a cause of serious concern for state economy.

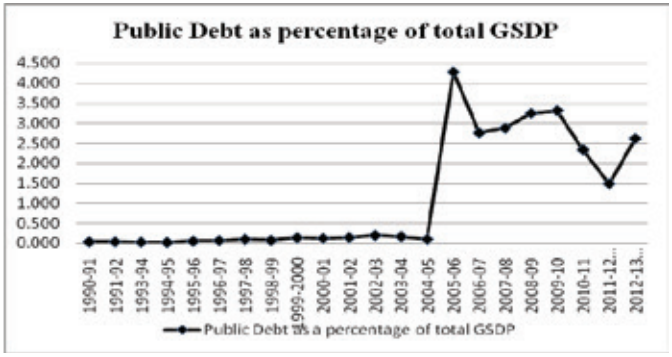
After several years of acute fiscal stress, a fiscal adjustment trend had emerged in Rajasthan in FRBM Act, 2005 which aimed to reduce the fiscal deficit by 3 percent ahead of two years before the target date fixed by FRBM Act, 2005. Sustaining this trend will be essential, since only good fiscal performance can create the fiscal space for developmental expenditure in a sustainable manner.

During 1993-98 the GFD as ratio of current GSDP was 4.48 percent average spread over the five year period. In 1998-2002 it was 6.9 percent which was highest. For strengthening the fiscal situation at State as well as the District level, the Twelfth Finance Commission (TFC) had recommended the implementation of FRBM Act, 2005. The FRBM Act fixed the target to keep GFD at three per cent. The State was able to keep it under 3 percent. After the implementation of FRBM Act, in 2006-07 it was 2.6 percent and in 2007-08 it was 1.9 percent. The State Government has returned to Fiscal Consolidation path and as a result, the Fiscal Deficit was reduced to 0.9 per cent of GSDP in the year 2011-12.

In the recent past the service sector has been continuously developing in the State and contributing a large part in the GSDP. Its contribution is about 47 percent (2007-08 to 2011-12) in State GSDP at constant (2004-05) prices. In 11th Five Year Plan, the State Government has taken up a number of initiatives in order to improve the growth momentum of this sector.

The State has shown a healthy growth path during the last 11th five year plan where its average growth rate of 8.46 percent was higher than the National average of 8.03 percent. Both educational and health indicators in the State have shown a substantial improvement in recent years. Public debt as ratio of GSDP also increased sharply in 2005-06 with growth rate of 4.27 percent (Figure-7).

Figure-7: Public Debts in Rajasthan Since 1980



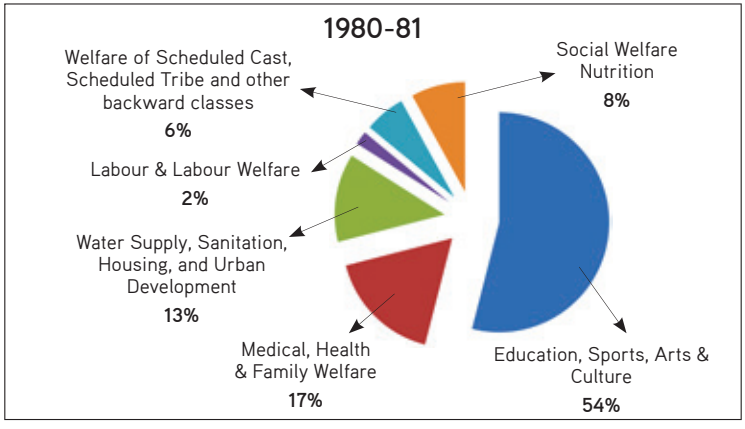
Composition of Social Sector Expenditure

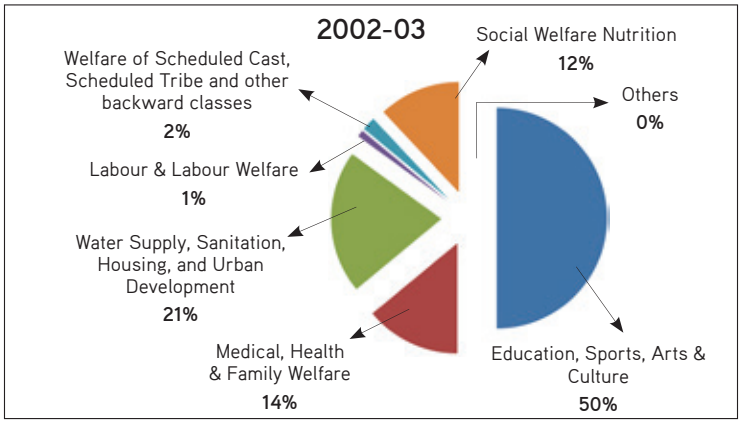
Education

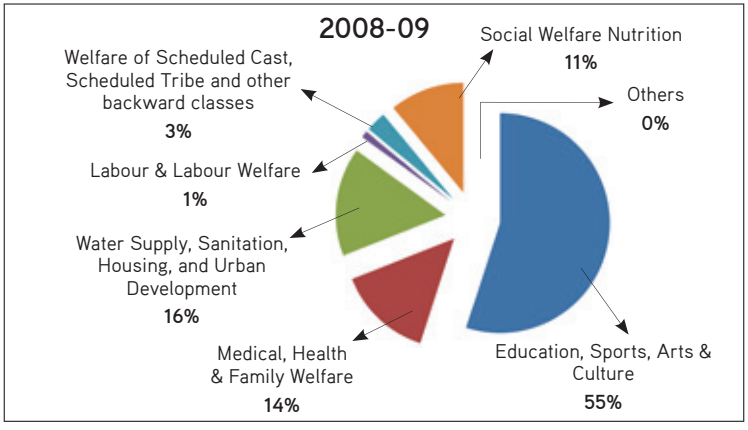
The significant contribution of education and health on economic growth and development calls for a significant role of the government in the provision and delivery of these social services. The nature and scope of the interventions vary, depending on the stage of development and the characteristics of that society. Therefore, it is argued that in the initial stage of development the expenditure in the area of education is universally accepted.

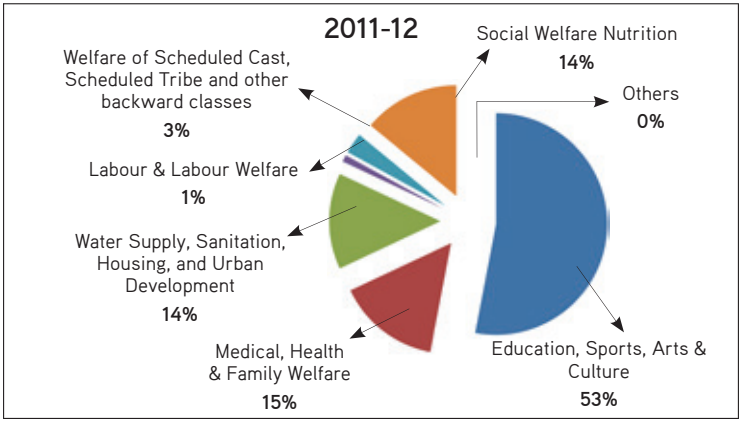
Expenditure on education has been the largest component in Rajasthan since 1980. In 1980 expenditure on general education accounted for 54 percent of the total expenditure on social sector. This journey of thirty five year's expenditure in the area of education has been on an average half of the total expenditure (Figure-8).

Figure-8: Composition of Social Sector Spending in Rajasthan in 1980-81, 2002-03, 2008-09 & 2011-12









An examination of the trends of real expenditure in elementary and secondary education in the State shows that between 1980 and 2012-13 there has been a rise in expenditure on the elementary as well as secondary education (Figure-9, 10).

Figure-9: Composition of Education Expenditure in Rajasthan in 1980-81

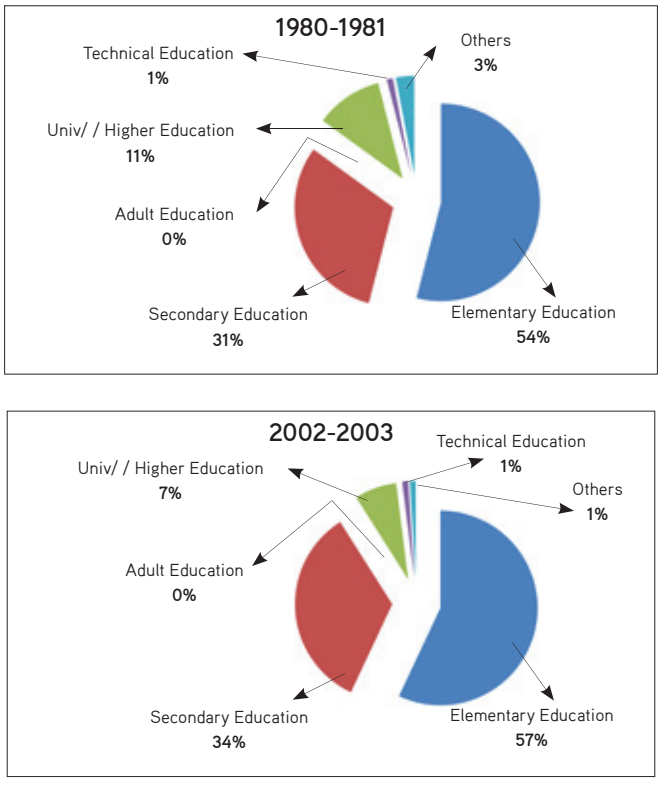
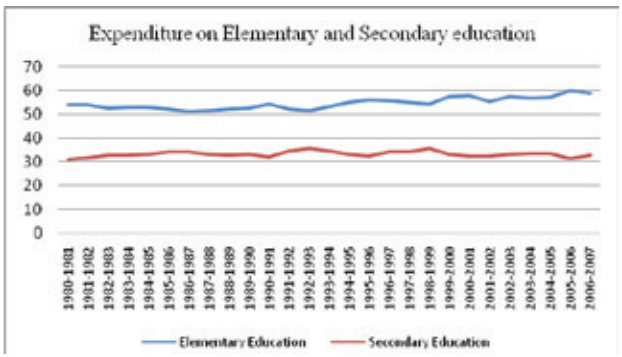


Figure-10: Trends of Expenditure on Elementary and Secondary Education Since 1980



There was acceleration in the growth of expenditure in elementary and stagnation in secondary education after 1998-99. This rise can be attributed to the increase in salaries and wages following the recommendations of the fifth pay commission.

Health and Family Welfare

In contrast with the levels of expenditure on education, the level of public expenditure on health and family welfare is low in Rajasthan. In 1980-81 it was 15 percent of the total expenditure of social sector. Over this period of thirty five years on an average it was about 15 percent.

Expenditure on the Other Human Development Related Areas

Expenditure on water supply, sanitation, housing and Urban Development accounted for about an average of 15 percent over the period of the study. There has been some decline in the expenditure on welfare of scheduled castes, scheduled tribes and backward castes as the percentage of total social expenditure. In 1980-81 the expenditure under this head was 6 percent; by 2002-03, this head declined to about 2 per cent and in 2011-12 it was increased by 3 percent.

Expenditure on social welfare nutrition was 8 percent of total social expenditure. It increase by 12 percent in 2002-03 and 14 percent in 2011-12.

Expenditure on Labour & labour welfare has minor decrease ranging from 0.7 to 1 percent.

Conclusion

In this paper, we examined the trends in Human development expenditure in Rajasthan since 1980s. In this analysis we have included social sector expenditure to evaluate the Rajasthan's health in terms of Human development. It also tried to evaluate, why Rajasthan has not been a good performer in context of Human Development? What was the reason behind his performance? And last but not the least, how can we overcome this situation at this stage?

In light of these questions and its findings, we conclude below;

- It is concluded from the study that social spending is low in Rajasthan but whatever is spent under social sector, its major share goes to the social priority sector.
- The per capita expenditure in the state has followed an increasing trend but in reality this increase is mainly on the non-development expenditure like salaries & pension and interest payment etc. The growth in per capita social sector and social priority sector are nevertheless quite impressive.
- The government expenditure on education in Rajasthan is more satisfactory than that has been spent on health. So government needs to concentrate on health sector.
- The slow growth in expenditure on human development relative to GSDP is closely related to the fiscal deterioration in the state because of rise in debt stock and rising expenditure on account of salaries, wages and pension from 1998-99 onwards.
- The major constraint on public spending on human development is the dependence of the State on Centre for its revenues. Fluctuations in Central transfers are an important determinant of the fiscal situation in the State which in turn affects the capability of the State to invest in human development.

- It's not important to make just higher allocation for the social sectors for the improvement in the Human Development. But to ensure these allocated amounts are spend judiciously through proper policy formulations and government should be very careful in the proper implementation of such policies.

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Empirical Study on the Determinants of Human Development in the Indian States

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ABSTRACT

Despite having high economic growth and foreign capital inflows from all over the world, the position of India in the global Human Development Index (HDI) is very disgusting (ranked at 131 out of 188 nations). Therefore, the present study has made an attempt to empirically investigate the relationship between Human Development and its determinants both at country level and state-level. Those states GDP is growing faster than other states, their social sector expenditure is lesser. Kerala is the number one state in human development in India despite it having less growth compared to Maharastra, Haryana, etc. The study finds that human development is positively related to GDP and negatively with GFD. The social sector expenditure is positive but not significant which means social expenditure is not enough in India to increase the human development. There is causality from GSDP and SSE to HDI in Indian states but bidirectional causality exists between GFD and HDI in Indian states.

Keywords

Human Development, Health, Education, Fiscal Deficit and GDP

Introduction

An emerging country like India is trying for its rapid economic growth and this will be consistent if there is a proper utilization of natural and human resources with modern technology (Taneja and Myer, 2014). The central government as well as the Central Bank of India have adopted several policies to make welfare state. The economic growth can be welfare if each section of the people will realize it and eliminate poverty as a whole. But

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poverty intensity varies from nation to nation and therefore it has to be measured on the basis of the poverty line (GOI, 2014-15). Human development is the consequence of social sector development through rising public expenditure. Academic researchers have made several attempts both at the national and international level to address the issue of social sector expenditure and human development but are controversial and inconclusive.

In recent years, the Indian economy is an eye catching to other nations not only for its rapid economic growth, but because it has attracted a huge amount of foreign investment from all over the world. But, if we look at the position of India in the global Human Development Index (HDI), it lies down at 131 out of 188 nations (UNDP, 2017). This may be because of regional disparities in education, health parameters and living standards within the country (Boutayeb and Helmert, 2011). If we look at the different states position in India, Kerala is on the top position in Indian HDI despite relatively modest levels of income. The second category comprises the states of Panjab-Haryana with high levels of per-capita income because Kerala is rich on the social indicators. The third category of states such as Bihar, Madhya Pradesh, Orissa, Rajasthan and Uttar Pradesh, where neither economics nor social opportunities have been realized. The fourth category comprises the other states where the differences in their economic and social opportunities are not too large. There is no such empirical study available which has examined the relationship between Human Development and its determinants. Therefore, the present study has made an attempt to empirically investigate the relationship between Human Development and its determinants for both at country level and state-level. Hence, the rest of the paper is as follows. Section-2 analyses the concept of human development, its pillars and measurement. Section-3 gives the review of literature. Section-4 analyzes the data and methodology of the study. Section-5 analyse the estimated results and the last section-6 gives the conclusion of the study.

Human Development: Concept, Pillars and Measurement

The concept of Human Development throws light on total development of human- beings by considering the improvement of the following sectors: economic, social, cultural, educational, health and civic conditions of human beings residing in a definite territory (Mittal, 2016). In 1990, Prof Mehbub Al Haque and Prof Amartya Sen introduced the concept of Human Development. Since then, the United Nations Development Program (UNDP) calculates the Human Development Index (HDI) and publishes a report every year. This report includes 188 nations from all over the world and is reported under three categories such as high, medium and low. The report uses the Human Development Index (HDI) to rank countries on the basis of their human development attainment, which concentrates only on per capita income, educational attainment and life expectancy. The aim of human development is to improve the capabilities of the bottom 40 percent of population by raising their income direct rural employment program and public provision of education, health and nutrition (Human Development Report, 2014). If these components are absent, then it could result in the phenomenon of social exclusion.

Mahbub Ul Haq (1997) said that human development is a process of enlarging people's freedoms and opportunities and improving their well-being. Aristotle said that education plays an important role in economic development in a society and a state must support to ensure general welfare. Schultz (1961) said that state investment in human capital accounts for most of the impressive rise in real earnings per worker. Schultz (1988) distinguished between specialized human capital and general human capital and pointed out the importance of the latter one in rising returns in the economy.

Psacharopoulos (1993) said that in one additional year of education by a former is associated with an annual increase in output of 2 to 5 percent after controlling for farm size inputs, hours worked and other factors in Malaysia, Ghana and Peru. Lucas (1988) said that investment in human capital more directly linked to long term growth rate. Streeten (1994) identified six reasons in-favour of the human development. First, the ultimate purpose of the entire exercise of development is to improve the human conditions and to enlarge people's choice. Second, human development is a means to higher productivity. Third, it helps in reducing the rate of growth of population. Fourth, it is friendly to the physical environment with poverty declines. Five, the improved living conditions contribute to a healthy civil society and greater social stability. Sixth, it also helps in reducing civil disturbance in the society and in increasing political stability.

Though there are several benefits incurred with the concept of human development, but there are pillars for its success. The pillars of human development are mainly categorized into six types such as; equity, sustainability, productivity, empowerment, cooperation and security (Bhardwaj, *et al.,* 2012). Becker (1962) added another dimension of the job training to the formation of human capital and influenced the analysis of firm-specific investments in training labour relations and contracts.

Human development in any nation or region is measured by the Human Development Index (HDI), which includes life expectancy at birth, education level and per capita income (HDR, 2016). Although this index makes an effort to simplify human development, it is much more complex than any index or set of indicators. Gender- related development index (GDI) include; Female life expectancy, Female adult literacy and gross enrolment ratio and Female per capita income. The UNDP has calculated the HDI by using the following indices:

- The Life Expectancy Index (LEI) measures the relative achievement of a country in life expectancy at birth.

  LEI =Actual value – minimum value / maximum value – minimum value.
- The Education Index (IE) measured by two-thirds weight allotted to adult literacy rate and one-third weight to combine gross enrollment ratio.

  EI = 2 / 3 (Adult literacy) + 1/3 (Gross Enrollment Index)
- The Gross Domestic Product Index (GDPI) is calculated using adjusted GDP per capita. As per the HDI, income acts as a substitute for all the sides of human development which is not revealed through knowledge and long and healthy life. Income is taken

into account because it helps in achieving respectable heights of human development. The GDPI is calculated by taking the logarithmic value of income:

GDPI = log (Actual Value) – log (Lowest Value)/log (Maximum Value) – log (Minimum Value).

- HDI is a simple average of the three dimension indices:

  HDI = 1/3 (Life Expectancy Index) + 1/3 (Education Index) + 1/3 (GDP Index).

The main motivation to carry out the research on the present topic is despite India being an emerging country and with the largest workforce in the world, the position in human development is not at all good. The recent HDI data says that India has slipped to 138 rank among 188 countries and even some underdeveloped nations like Srilanka is in a good position HDR, 2016). This is the high time to think about why India is not good in Human Development. Even we look at states position, we can find out majority states in India are not in a good position. Therefore, this study has made an attempt to analyze the relationship between Human Development and its determinants in non-special category states in India by using the available secondary data. The study uses 15 major non-special category states such as Andhra Pradesh, Assam, Bihar, Gujurat Haryana, Karnataka, Kerala, Madhya Pradesh, Maharastra, Odisha, Punjab, Rajsthan, Tamil Nadu, Utter Pradesh and West Bengal. The selected variables are HDI, GDP, GSDP, social sector expenditure both at center and state and fiscal deficit both for India and for selected states. These variables have been collected from various sources like; Hand Book of Statistics, Reserve Bank of India, Ministry of Statistics and Programme, etc. The study uses trend analysis, multiple regression test and Causality test. The study variables are checked its stationarity by the Unit root tests such as ADF and PP test and finds that all variables are stationary at the first difference.

Review of Literature

Pal and Pant (1993) included poverty as an alternative measure other than the three. They said that the inclusion of poverty alleviation is an explicit social goal, considering the distribution of income in the measurement of human development. The relationship between human development and economic growth are examined by some economists. Kumar (1993) finds that human development has improved much faster than growth of income in all the states. Sarkar and Prabhu (1997) find a significant role of human development in economic growth. Amartya Sen (2000) suggested that society's standard of living should be judged not by the average level of income, but by people's capabilities to lead the lives they value. Therefore, expansion of human capabilities implies greater freedom of choice. Stewart, *et al.,* (2001) said that an increase in economic growth automatically leads to advances in human development. Hari (2003) finds a higher public expenditure on health and education lead to higher human development. Mehta (2003) said that human development helps economic growth and economic growth, in turn, facilitates human development. Sengupta (2003) said that Literacy Rate and Life Expectancy alone are insufficient to convey the achievement as far as human development is concerned. Ghosh (2006) said that developed regions always have a positive relationship between EG

and HD, while, the poor sates that have failed to catch up with the rich ones in terms of per capita income have to manage to catch up in terms of the human development.

Oommen (2007) finds that the Kerala economic model has witnessed high social sector development through more investment on education and health sector. Dougherty and Herd (2008) recommended institutional changes that may help to improve the performance of the educational system and so boost human capital formation in India. Islam (2010) finds that the economic growth enhances human capital. Singh and Keshari (2016) have measured the HDI on the basis of indicators available on Health, Education and Standard of living from the Annual Health Survey (AHS) at district level. Kaur, *et al.,* (2013) study the cyclical behavior of social sector expenditure, including that on education and health for the 17 non-special category states for the period 2001 to 2012-13. They find that while overall social spending is cyclical in India at the state level, education spending is pro-cyclical, with the pro-cyclicality being more pronounced during upturns than it is during downturns. Tripathy (2010) said that the Life Expectancy Index (LEI), Education Index (EI), Gross Domestic Product Index (GDPI) affects human development, but among them the GDPI affects the high human development districts of Orissa more. Mittal (2016) finds effect of social sector expenditure on HDI in Indian states. Khodabakhshi (2011) investigates the process and changes in the human development indices compared to India's GDP per capita over the period 2005-2010. Mukherjee, *et. al.,* (2014) have found a positive relationship between economic growth.

The above literature indicates that there are is not much work done on the present topic in both international context as well as in the Indian context. Some studies are there which mainly have discussed the impact of human development indicators on HDI. Very few international studies are there which have explained the impact of economic growth on HDI. There are no such studies available in India, which measures the relationship between Human Development and its determinants. Therefore, the present study has made an attempt to empirically examine such issue both at national level as well as state level.Data and Methodology

Data and Methodology

The analysis of the study mainly depends on the available secondary data. The study analyses both for India as well as for major non-special category states. In analysis, the study has used 15 major non-special category states in India. The study uses both time series as well as cross section data for the analysis of the above objectives. The selected variables are HDI, GDP, GSDP and social sector expenditure both at center and state and fiscal deficit both for India and different states. The selected variables have been collected from various sources like; Hand Book of Statistics, Reserve Bank of India, Ministry of Statistics and Programme, etc.

The above objectives are going to be examined by the trend analysis, time series techniques and cross section methods. Basically, the study is going to use the multiple regression test and Causality test. The study will use the Unit root tests to check stationarity of the selected variables.

Analysis of Results

The Global Human Development Index value (Table-1) indicates that India was ranked at 130 among 188 nations in 2014 and this rank has slightly changed compared to the year 2009-14. India's per capita GNI ($) was smaller than some Asian regions like Srilanka, China and others. In India, the Life expectancy at birth (LEB) was 68 years, whereas Srilanka and China had 74.9 and 75.8 years respectively. During this year, the LEB in Norway was highest (81.6 years) followed by Germany (80.9 years) but Pakistan had the least LEB (66.2 years). The expected years of schooling in India was 11.7 years, whereas, in Norway, it was 17.5 years, Germany had 16.5 years and USA 16.5 years. In the Asian region, the highest expected year of schooling was in Srilanka (13.7 years) followed by China (13.5 years) but Pakistan had the least expected years of schooling (7.8 years. In case of gender inequality, we find that Germany has the least gender inequality (0.041) whereas the gender inequality in India is more than that of Srilanka, China and Indonesia.

Table-1: India's Position in the Global MI 2014

Country	HDI 2014		Change in Rank	GNI per Capita ($)	LEB (Years)	Expected Year of Schooling (Years)	Mean Years of Schooling 9 Years)	Income Equality		Gender Inequality Index 2014	
								Quintile Income Ratio	Income Gini-Coefficient		
	Value	Rank	2009-14	2014	2014	2014a	2014a	2005-13		Value	Rank
Norway	0.944	1	0	64992	81.6	17.5	12.6	4	26.8	0.067	9
Germany	0.916	6	3	43919	80.9	16.5	13.1	4.7	30.6	0.041	3
USA	0.915	8	-3	52947	79.1	16.5	12.9	9.8	41.1	0.28	55
UK	0.907	14	-2	39267	80.7	16.2	13.1	7.6	38	0.177	39
Russian Fed	0.798	50	8	22352	70.1	14.7	12	7.3	39.7	0.276	54
Malaysia	0.779	62	1	22762	74.7	12.7	10	11.3	46.2	0.209	42
Sri Lanka	0.757	73	5	9779	74.9	13.7	10.8	5.8	36.4	0.37	72
Brazil	0.755	75	3	15175	74.5	15.2	7.7	16.9	52.7	0.457	97
China	0.727	90	13	12547	75.8	13.1	7.5	10.1	37	0.191	40
Egypt	0.69	108	-3	10512	71.1	13.5	6.6	4.4	30.8	0.573	131
Indonesia	0.684	110	3	9788	68.9	13	7.6	5.7	38.1	0.494	110
South Africa	0.666	116	4	12122	57.4	13.6	9.9	28.5	65	0.407	83
India	0.609	130	6	5497	68	11.7	5.4	5	33.6	0.563	130
Bangladesh	0.57	142	0	3191	71.6	10	5.1	4.7	32.1	0.503	111
Pakistan	0.538	147	0	4866	66.2	7.8	4.7	4.1	29.6	0.536	121
World	0.711			14301	71.5	12.2	7.9			0.449	

Source: HDR 2015

Notes: 'a' data refers to 2014 or the most recent year available; $: GNI per capita is based on 2011 dollar PPP.LEB is life expectancy at birth

Table-2 reports the trends of HDI for World and India from 1980 to 2013. It indicates that over the years, the HDI value both for the world and India is raising. In 1980, the world HDI

value was 0.559 and has gone up to 0.702, which means, the betterment of the people across the globe. The HDI value, which was 0.369 in the year 1980 has gone up to 0.586 in India. This indicates that over the years, there is development of Income Index (II), Health Index (HI) and Education Index (EI), which is a good symbol for the welfare of India. If we look at the II, HI and EI, we can see that there is improvement in the index values over the years.

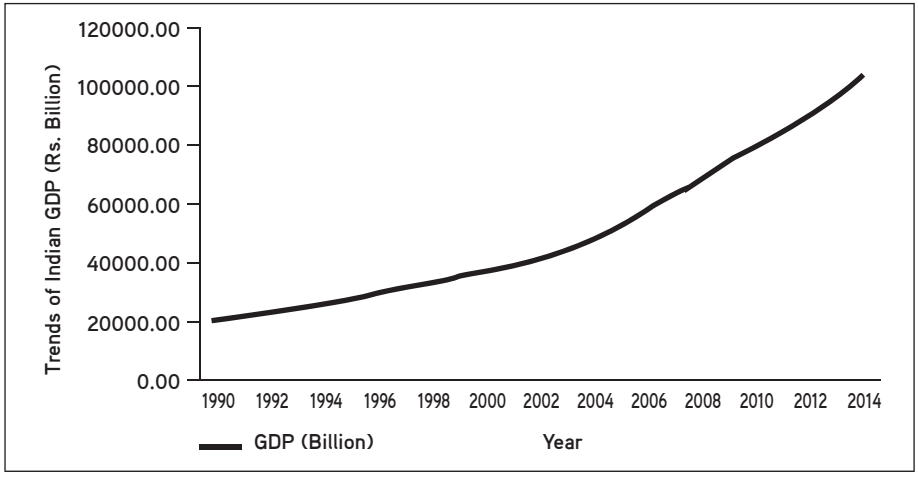
Table-2: Trends of HDI for World and India and Sub-Indices for India

Year	HDI India	HDI World	Income Index	Health Index	Education India
1980	0.369	0.559	0.384	0.544	0.356
1985	0.404	NA	0.408	0.571	0.406
1990	0.431	0.597	0.436	0.593	0.424
2000	0.483	0.639	0.491	0.648	0.472
2005	0.527	0.667	0.528	0.678	0.553
2006	0.537	NA	0.54	0.638	0.568
2007	0.547	NA	0.552	0.688	0.568
2008	0.554	0.685	0.556	0.693	0.6
2009	0.56	NA	0.578	0.702	0.617
2010	0.57	0.693	0.578	0.706	0.65
2011	0.581	0.698	0.586	0.706	0.65
2012	0.583	0.7	0.591	0.71	0.65
2013	0.586	0.702	0.6	0.714	0.65

Source: data.gov.in

The Figure-1 indicates the trends of India's GDP at factor cost at constant price. It indicates that, there has been increase in the GDP at and increasing rate over the years in India. The GDP_{FC} was at Rs. 20822.89 billion in 1990 and was increased at an increasing rate and became Rs. 104271.91 billion in 2015.

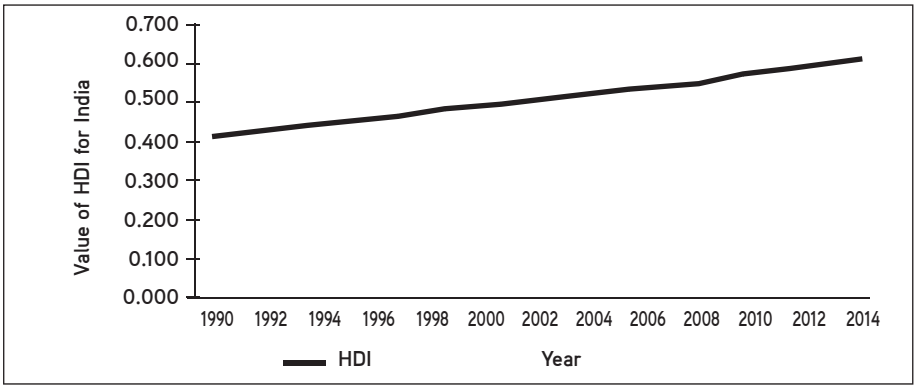
Figure-1: Trends of India's GDP at Factor, Constant Price (Rs. Billion)



Source: Authors estimation from the MOSP Data

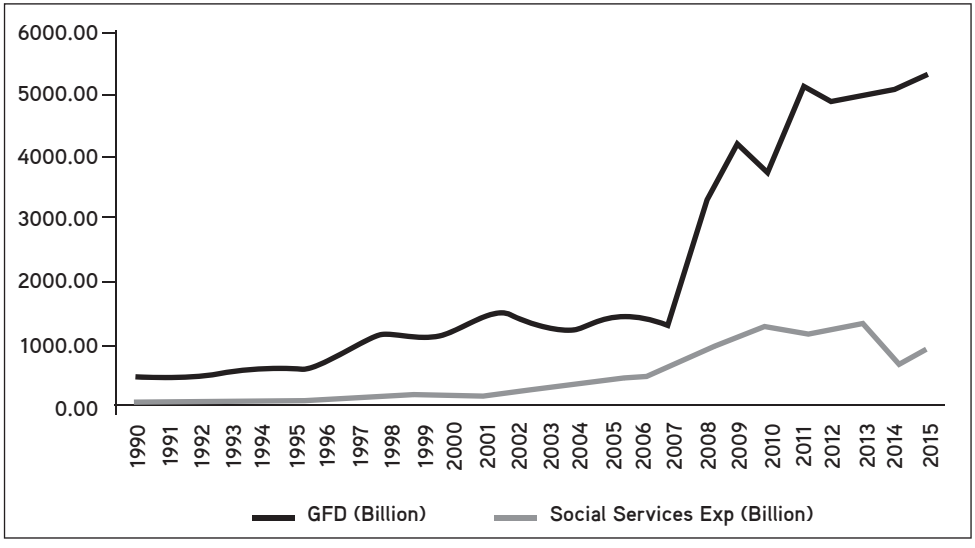
Figure-2 shows the HDI trend in India from 1990 to 2015. It indicates that the HDI value is consistently increasing over the years, but the trend is moving up at a slower rate. Therefore, government has to take necessary steps to increase HDI trend at a faster rate. Figure-3 represents the trend of Gross fiscal deficit (GFD) and social services expenditure (SSE) in India from 1990 to 2015. It indicates that, the trend line of GFD lies above than the SSE, which means GFD in India is bigger than the SSE. Both are moving up, but GFD trend fluctuates more than the SSE. That is might be the reasons of increasing more government expenditure on other sector than the SSE.

Figure-2: Human Development Index (HDI) Trend for India



Source: Authors estimation from UNDP Data

Figure-3: Trends of Gross Fiscal Deficit and Social Services Expenditure in India (Rs. Bln)



Source: RBI States Finance, Budget Report

Social sector development has been an essential prerequisite for sustained human and economic development of the states as it stimulates the economy by rising income & employment opportunities, productivity, technology advancement and finally enhances the quality of life in the state. India has made rapid developments in recent years in terms of several social sector indicators and development goals. The govt. of India is committed towards overall development of all sections of the society. Therefore, govt. of India incur expenditure on social services which includes expenditure on education, medical and public health, family welfare, food security, nutrition, safe drinking water supply, sanitation, sports, art and culture, housing, urban development, relief and natural calamity, etc.

Table-3 reports the composition of social sector expenditure in India during the period from 2011-12 to 2016-17. It indicates that the SSE is classified under two heads i.e. Revenue Expenditure and capital expenditure. Both Revenue and Capital Expenditure are again classified under two heads i.e. Social services and Economic Services. The SSE includes the expenditure on various factors such as Education, Sports, Art and Culture, Medical and Public Health, Family welfare, Water supply and Sanitation and Housing, Urban development, welfare of SCs, STs and OBCs. Labour and Labour welfare, Social security and welfare, Nutrition, expenditure on Natural calamities and others. The Economic services expenditure includes expenditure on rural development, food storage and warehousing. It can be seen that, both revenue expenditure and capital Expenditure have increasing trends. The revenue expenditure which was Rs. 4678.5 billion in 2011-12 has gone up to Rs. 10608 billion in 2016-17. In revenue expenditure, the social sector expenditure is Rs. 4256.40 billion in 2011-12. After five years, this expenditure has gone up to Rs. 8994.10 billion in 2016-17. In the social sector expenditure, the large amount of money expenditure was there on education, sports, arts and culture. The least amount of money was expended on other social sector. In revenue expenditure, both social services and economic services are in increasing trend (Rs. 4256.40 billion and Rs. 422.10 billion in 2011-12 to Rs. 8994.10 billion and Rs. 1613.90 billion in 2016-17 BE).

In capital expenditure, Social Service expenditure shows an increasing trend from Rs. 343.40 billion in 2011-12 to Rs. 1083.70 billion in 2016-17 BE. Economic Services has increased from Rs. 115.70 billion in 2011-12 to Rs. 131.70 billion in 2012-13 then it declined to Rs. 108.10 billion. Again it increases from Rs. 207.90 billion in 2014-15 to Rs. 333..30 billion in 2016-17 BE. Here, we observed that more than 60 per cent was allocated for spending on Education, Sports, Art and Culture and Medical & Public Health, which will have a positive impact on the economy as well as the HDI.

Figure-4 shows the share of Revenue and Capital Expenditure in total Social Sector Expenditure. It can be observed that expenditure on Social Sector from the Revenue Expenditure has been continuously declining from 2011-12 to 2016-17 BE. But the expenditure on social sector from the Capital Expenditure has gone up from the year 2011-12 to 2013-14 and then it declined in the next year and finally it increased from 2015-16 to 2016-17 BE.

Table-3: Composition of Social Sector Expenditure in India

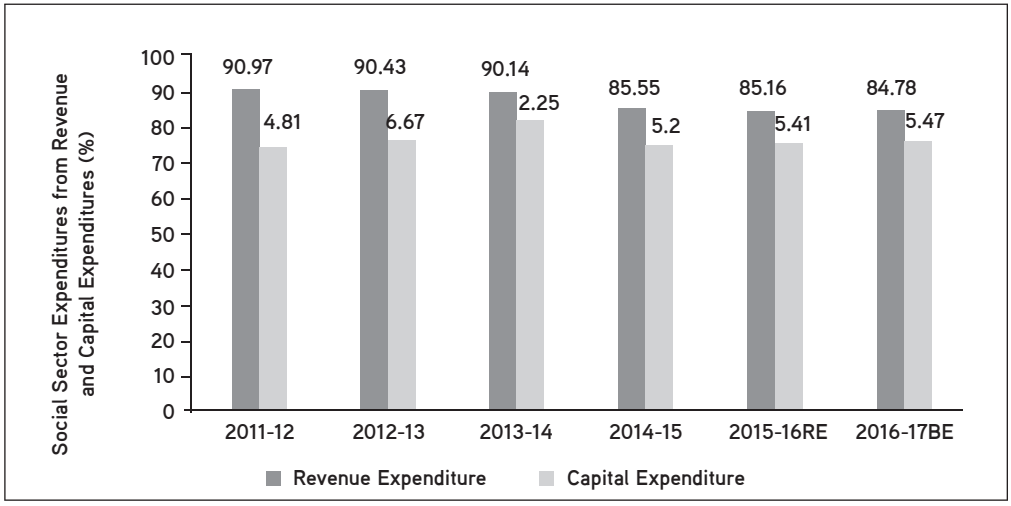
Items	2011.12	2012-13	2013-14	2014-15	2015-16 (RE)	2016-17 (BE)
1. Revenue Expenditure i+ii	**4678.50**	**5366.80**	**6102.90**	**7400.20**	**9535.90**	**10608.00**
i. Social services (a to l)	4256.40	4853.60	5501.20	6331.40	8121.00	8994.10
a. Education, Sports, Art and Culture	2160.70	2454.00	2735.30	3154.30	3773.90	4224.40
b. Medical and Public Health	439.50	506.40	563.90	706.00	895.60	1022.80
c. Family welfare	75.80	95.30	101.40	151.10	182.80	197.50
d. Water supply and sanitation	127.00	124.30	146.50	205.80	292.50	331.40
e. Housing	66.80	86.40	57.10	125.10	185.60	191.40
f. Urban Development	228.40	283.40	315.30	344.10	467.00	659.10
g. Welfare of SCs, STs and OBCs	309.00	380.40	426.90	424.90	609.70	703.40
h. Labour and Labour welfare	43.80	59.20	69.50	75.10	93.90	98.40
i. Social security and Welfare	485.10	555.60	655.40	722.80	938.80	1000.10
j. Nutrition	156.90	169.60	195.70	203.90	237.60	249.60
k. Expenditure on Natural Calamities	136.90	109.80	169.40	183.40	398.00	263.00
l. Others	26.60	29.30	34.70	35.10	45.70	53.40
ii. Economic Services (a+b)	422.10	513.10	601.70	1068.80	1414.90	1613.90
a. Rural Development	372.20	443.70	487.70	952.20	1256.90	1483.90
b. Food Storage and Warehousing	49.90	69.40	114.00	116.60	157.90	130.00
Capital Expenditure (i+ii)	**459.00**	**564.60**	**609.20**	**838.60**	**1175.30**	**1417.00**
i. Social Services(a-i)	343.40	432.90	501.10	630.70	886.40	1083.70
a. Education Sports Art And Culture	45.80	57.70	73.30	87.60	149.10	174.00
b. Medical and Public health	50.10	60.70	76.20	105.20	140.90	156.90
c. Family Welfare	0.70	0.60	2.50	3.10	3.80	3.40
d. Water Supply and Sanitation	89.30	114.50	135.80	187.40	232.50	250.30
e. Housing	31.70	46.60	50.30	75.10	80.50	96.60
f. Urban Development	74.00	90.70	75.20	71.10	117.00	176.90
g. Welfare of SCs, STs and OBCs	31.70	32.60	41.40	53.90	81.30	109.60
h. Social Security and welfare	10.20	15.20	23.60	24.20	54.80	56.80
i. Others	10.00	17.30	22.80	23.00	26.60	59.20
ii. Economic Services (a-b)	115.70	131.70	108.10	207.90	288.90	333.30
a. Rural Development	99.70	99.50	100.10	183.70	263.00	301.20
b. Food Storage and Warehousing	66.60	1.00	15.90	32.10	8.10	24.30

Source: RBI State Finances, A study of budgets.

Figure-5 indicates the trend of Social Sector Expenditure as the percentage of GDP from the year 2011-12 to 2016-17BE. It indicates that there has been a continuous increasing

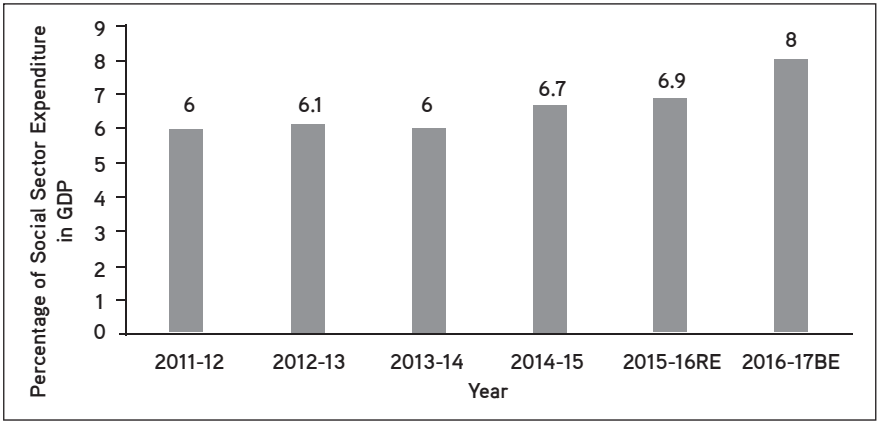
in the trend of social sector expenditure as percentage of GDP. It has increased from 6.1 percent in 2012-13 to 6.9 percent in 2015-16RE and it became 8.0 percent in 2016-17BE.

Figure-4: Share of Revenue and Capital Expenditure in Total Social Sector Expenditure (%)



Source: Authors estimation from the RBI State Finance Data

Figure-5: Percentage of Social Sector Expenditure in GDP



Source: Authors estimation from the RBI State Finance Data

Table-4 reports the state-wise GDP at current price from 1981-82 to 2014-15. It indicates that in the year 1981-82, the Maharashtra has the highest GDP (Rs. 21602.99 crore), followed by Uttar Pradesh (UP) (Rs. 18918.10 crore) and West Bengal (Rs. 12591.12 crore). In this year, Assam has the least GDP (Rs. 4074.30 crore) because this state is smaller than other states. It was followed by Odisha (Rs. 5800.62 crore). The national income in

each state has gone up in the year 2014-15. In this year, Maharashtra had the highest GDP (16,86,695 crore), followed by UP and Tamil Nadu. In this year, Assam has also the least GDP (Rs. 1,83,798 crore).

Table-4: State-wise GDP at Current Price (Rs. Crore)

State \ Year	1981-82	1991-92	2001-02	2011-12	2012-13	2013-14	2014-15
Andhra Pradesh	7094.35	38497.16	100776.38	362245	410068	464184	520030
Assam	4074.39	18575.83	42133.27	125903	138401	159460	183798
Bihar	7199.88	31049.79	64094.97	243269	293616	343663	402283
Gujarat	11426.40	55723.01	137653.74	598786	658540	765638	NA
Haryana	4868.35	25541.72	69894.35	298688	341351	388917	435310
Karnataka	8646.08	46120.08	121770.97	455212	522673	614607	702131
Kerala	6394.46	31231.60	85893.43	312677	347841	396282	NA
Madhya Pradesh	7981.88	41607.57	92799.86	305158	361270	434730	508006
Maharashtra	21602.99	126606.56	298078.45	1170121	1322222	1510132	1686695
Odisha	5800.62	24286.79	55066.83	220589	251220	272980	310810
Punjab	6358.47	33153.97	77729.00	256374	285119	317556	349826
Rajasthan	7297.86	38134.34	101873.17	414179	470178	517615	574549
Tamil Nadu	12493.97	66712.56	166413.35	667202	744859	854238	976703
Uttar Pradesh	18918.10	89040.64	200661.57	685496	780399	862746	976297
West Bengal	12591.12	53882.37	155185.13	528316	603311	706561	800868

Source: Directorate of Economics & Statistics of respective State Governments CSO.

Table-5 reports the state-wise HDI in India for the period from 1981 to 2011. It indicates that the state of Maharashtra, which had the highest GDP throughout the years, is not good in human development. The HDI value shows that in the year 1981, the Kerala had the highest HDI value (0.5), followed by Punjab (0.411), Maharashtra (0.363) and Tamil Nadu (0.343). During this year, the least HDI is in the state of Bihar (0.237) followed by M.P and U.P. In the year 2011, Kerala has also highest HDI value (0.911), followed by Tamil Nadu (0.6330) and Maharashtra (0.629). This year, UP has the least HDI value (0.122), followed by Assam (0.138) and Bihar (0.158). This table clearly indicates that in the whole years, Kerala stands in number one in the HDI value. That means the government of Kerala is giving more importance to the development of social sector.

Table-5: State-wise Human Development Index in India

States	1981	1991	1999-00	2001	2004	2007-08	2011
Andhra Pradesh	0.298	0.377	0.368	0.416	0.298	0.473	0.309
Assam	0.272	0.348	0.336	0.386	0.234	0.444	0.138
Bihar	0.237	0.308	0.292	0.367	0.05	0.367	0.158
Gujarat	0.36	0.431	0.466	0.479	0.429	0.527	0.477
Haryana	0.36	0.443	0.501	0.509	0.544	0.552	0.493
Karnataka	0.346	0.412	0.432	0.478	0.436	0.519	0.42

States	1981	1991	1999-00	2001	2004	2007-08	2011
Kerala	0.5	0.591	0.677	0.638	1	0.790	0.911
Madhya Pradesh	0.245	0.328	0.285	0.394	0.182	0.375	0.186
Maharashtra	0.363	0.452	0.501	0.523	0.583	0.572	0.629
Odisha	0.267	0.345	0.275	0.404	0.174	0.362	0.261
Punjab	0.411	0.475	0.543	0.537	0.64	0.605	0.538
Rajasthan	0.256	0.347	0.387	0.424	0.278	0.434	0.324
Tamil Nadu	0.343	0.466	0.48	0.531	0.587	0.570	0.633
Uttar Pradesh	0.255	0.314	0.316	0.388	0.167	0.380	0.122
West Bengal	0.305	0.404	0.422	0.472	0.462	0.492	0.483

Source : Lok Sabha Unstarred Question No. 2805, dated on 12.12.2011. & Lok Sabha Unstarred Question No. 1708, dated on 9.12.2015.

Table-6 shows the state-wise Social Sector Expenditure in India for the period from 1981-82 to 2015-16. It is seen that in year 1981, Maharashtra was spending the highest money on SSE (Rs. 847 crore), followed by UP (Rs. 824 crore) and West Bengal (Rs. 691 crore). In this year, Haryana was the least expenditure state on SS (Rs. 173 crore) followed by Bihar (Rs. 176 crore). Over the years, this expenditure has gone up in each state. In the year 2001-02, Maharashtra was spending the highest money on SS compared to other states and then followed by UP and AP. This year, Assam was spending the least amount on SS followed by Haryana and Punjab. In the year 2015-16, it is found that Maharashtra was spending the highest amount on SS compared to other states. It is followed by UP, Tamil Nadu and Rajasthan. That year, Punjab spends the least amount on SS, followed by Assam and Haryana. It is seen that some states are in very good position in their GDP, but they are spending very less amount on SS, which might be the reason for low HDI in these states.

Table-6: State-wise Social Sector Expenditures in India (Rs. Crore)

States	1981-82	1991-92	2001-02	2011-12	2015-16 (RE)
Andhra Pradesh	613	3,121	10,876	45,400	52,450
Assam	176	1,113	3,035	11,190	27,810
Bihar	598	3,073	5,783	24,050	56,140
Gujarat	472	2,344	9,029	30,350	57,900
Haryana	173	781	3,675	16,270	30,790
Karnataka	400	2,299	7,642	32,370	57,450
Kerala	424	1,594	4,932	18,740	36,570
Madhya Pradesh	456	2,664	6,007	27,130	59,290
Maharashtra	847	4,601	15,452	61,130	110,020

States	1981-82	1991-92	2001-02	2011-12	2015-16 (RE)
Odisha	258	1,310	4,122	18,050	37,440
Punjab	280	1,099	3,730	9,970	18,510
Rajasthan	425	2,036	7,730	27,850	67,370
Tamil Nadu	605	3,433	9,190	41,900	70,980
Uttar Pradesh	824	4,443	12,279	59,720	116,170
West Bengal	691	2,716	9,581	35,610	62,630

Source: RBI Handbook of Statistics on State Govt. Finances and State Finances

*Notes:*Social Sector Expenditure includes expenditure on social services, rural development, food storage and warehousing under revenue expenditure, capital outlay and loans and advance by the State Govts.*

Table-7 reports the state-wise Gross Fiscal Deficit (GFD) in India from 1991-92 to 2016-17. It indicates that the GFD is fluctuating in all states. Among these states, GFD in Odessa was increased from Rs. 9.1 billion in 1991-92 to Rs. 39.6 billion in 2001-02 then it slightly has come down in 2011-12 and again it was continuously rising over the years. In the year 1991-92, UP had the highest GFD (Rs. 28.40 billion), followed by the Gujarat (Rs. 18.8 billion) and Bihar (Rs. 16.2 billion). Andhra Pradesh had Rs. 11.3 billion FD in this year. The least GFD state is Haryana (Rs. 3.8 billion) followed by Rajasthan (Rs. 7.9 billion). In the year 2001-02, the West Bengal had the highest GFD (Rs. 118 crore), followed by Maharashtra (Rs. 109 crore) and UP (Rs. 99 crore). The least GFD state is Haryana (Rs. 27.4 crore), followed by Kerala (Rs. 32.7 crore) and Odisha (Rs. 39.6 crore). In 2016-17, Punjab is the least GFD state (Rs. 130.9 crore), followed by Odisha (Rs. 145.3 crore). In this year, UP has the highest GFD (Rs. 499.6 crore), followed by Rajasthan (Rs. 431.5 crore).

Table-7: State-wise Gross Fiscal Deficit in India (Billion)

States	1991-92	1999-00	2001-02	2004-05	2007-08	2011-12	2014-15	2015-16	2016-17
Andhra Pradesh	11.3	49.8	67.2	81.9	87.9	154.0	317.5	170.0	205.0
Bihar	16.2	61.1	40.1	12.4	17.1	59.1	111.8	285.1	160.1
Gujarat	18.8	67.9	65.1	87.0	47.7	110.3	183.2	221.7	246.1
Haryana	3.8	21.3	27.4	12.1	12.6	71.5	125.9	304.0	251.2
Karnataka	9.2	42.8	58.7	36.0	53.3	123.0	195.8	205.6	256.6
Kerala	8.0	45.4	32.7	44.5	61.0	128.1	186.4	177.2	231.4

States	1991-92	1999-00	2001-02	2004-05	2007-08	2011-12	2014-15	2015-16	2016-17
Madhya Pradesh	9.8	39.1	36.5	64.9	27.8	57.6	113.5	211.7	249.1
Maharashtra	16.6	117.1	109.0	186.2	-28.2	199.7	318.3	379.5	350.3
Odisha	9.1	37.5	39.6	13.7	-13.2	-6.2	54.8	99.3	145.3
Punjab	11.5	31.9	49.6	40.4	46.0	84.9	108.4	122.3	130.9
Rajasthan	7.9	53.6	57.5	61.5	34.1	36.3	190.0	673.5	431.5
Tamil Nadu	13.0	53.8	47.4	55.7	36.9	172.7	271.6	323.6	405.3
Uttar Pradesh	28.4	111.0	99.0	130.0	137.9	154.3	325.1	643.2	499.6
West Bengal	11.4	116.7	118.0	106.5	114.0	177.0	273.5	251.8	193.6

Source: RBI Handbook of Statistics on State Govt. Finances and State Finances

Table-8 shows the trends of SSE by both the central and state governments. from 2008-09 to 2015-16. It reports the trends of SS components expenditure with respect to percentage of GDP, percentage of total expenditure and percentages of social services in both center and states. The total expenditure rising from 28.4 per cent in 2008-09 to 28.6 per cent in 2009-10. Thereafter, it falls in the year 2013-14 and again starts rising to 28.1 per cent in 2014-15RE and became 27 percent in 2015-16. At the same time the expenditure on social services (such as Education, Health and Others) was fluctuating between 2009-10 to and 2010-11. And it was stagnant at 6.6% from 2011-12 to 2012-13. Afterwards it was again fluctuating between 2013-14 to and 2015-16.

In expenditure on social services, the percentage of education expenditure gone up from 2008-09 to 2012-13 and then fluctuated from 3% in 2013-14 and 2015-16. In the case of Health, this percentage is consistently rising till 2015-16. The percentage of the total expenditure: on social services such as (Education, Health and others) increased from 2008-09 to 201-11 and then it declined by 24 per cent in 2011-12. It further rose to 24.9% in 2015-16. Expenditure on social services, the percentage of education was increased from 10% in 2008-09 to 11.6% in 2012-13, then it decreased by 10.9% in 2014-15 and became 11.2% in 2015-16. In the case of Health, the percentage was fluctuating between 4.6% in 2008-09 to 2015-16. The percentage of expenditure on others was decreased from 9% in 2008-09 to 8% in 2011-12. Then it was increased from 8.2% in 2012-13 to 9.1% in 2014-15 and finally it reached at 8.9% in 2015-16.

In percentage of social services: the percentage of education was increased from 42.6% in 2008-09 to 47.7% in 2011-12. Then it became 44.9% in 2015-16. In case of Health, it is seen that there is continuous fall from 2008-09 to 2013-14. Then it has increased from

19.3% in 2014-15 to 19.5% in 2015-16. The percentage of other decreased from 37.9% in 2008-09 to 33.4% in 2012-13. Then it rose from 34.7% in 2013-14 to 36.7% in 2014-15 and finally it reached to 35.6% in 2015-16.

Table-8: Trends in Social Services Expenditure by Government (Centre and States)

Item / Year	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15RE	2015-16BE
As Percentage to GDP								
Total Expenditure	28.4	28.6	27.6	27.4	27	26.2	28.1	27
Expenditure on social Services of which:	6.8	6.9	6.8	6.6	6.6	6.5	7	6.7
i) Education	2.9	3	3.1	3.1	3.1	3	3.1	3
ii) Health	1.3	1.4	1.3	1.2	1.3	1.2	1.3	1.3
iii) Others	2.6	2.5	2.4	2.2	2.2	2.3	2.6	2.4
As Percentage to Total Expenditure								
Expenditure on social Services of which:	23.8	24.1	24.7	24	24.4	24.8	24.9	24.9
i) Education	10.1	10.6	11.4	11.4	11.6	11.6	10.9	11.2
ii) Health	4.6	4.8	4.7	4.6	4.7	4.6	4.8	4.9
iii) Others	9	8.7	8.6	8	8.2	8.6	9.1	8.9
As Percentage to Social Services								
i) Education	42.6	44.1	46.1	47.7	47.5	46.7	44	44.9
ii) Health	19.5	19.7	19	19	19.1	18.6	19.3	19.5
iii) Others	37.9	36.1	34.9	33.3	33.4	34.7	36.7	35.6

Source: Budget Documents of Union and State Governments.

Notes: 1. Social services includes, education, sports, art and culture; medical and public health, family welfare; water supply and sanitation; housing; urban development; welfare of Scheduled Castes (SC) and welfare, nutrition, relief on account of natural calamities.

2. Expenditure on 'Education' pertains to expenditure on 'Education, Sports, Arts and Culture'.

3. Expenditure on 'Health' includes expenditure on 'Medical and Public Health', 'Family Welfare' and 'Water Supply and Sanitation'.

4. Data for states from 2013-14 onwards is provisional and pertain to budgets of 25 state governments.

5. GDP data from 2011-12 is based on new base year 2011-12.

The relationship between HDI and other selected macro variables is examined by the multiple regression model and the results are reported in the Table-9. All variables are checked for unit root with the Augmented Dickey Fuller Test (ADF) and Phillips Perron Test (PP). These tests say that all variables are non-stationary at their level values and become stationary after the first difference. Therefore, all variables are I(1). Except HDI, the other variables like GDP, GFD and SSE data are transferred to its natural logarithmic values and these values are used for the model estimation. Table-9 indicates that if other variables are constant, automatically the HDI is rising by 0.003 during the study period. It indicates that national income, i.e. GDP is positively influencing the HDI. The GDP

coefficient value of 0.81 indicates that if GDP rises by one per cent, the HDI value rises by 0.081 per cent in India. The GFD coefficient value is -0.0022 significant at 10 levels. That means if the GFD raises by 1 per cent, on an average the HDI value declined by 0.002. The social sector expenditure coefficient is 0.0001, which is positive but not significant. That means if the social sector expenditure rises by 1 percent, the HDI value rises by 0.0001 but it is not significant. That means in India, the social sector expenditure is not good enough for the human development.

Table-9: Relationship between HDI and Economic Variables in India

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.0029	0.001	2.631	0.016
D(LNGDP)	0.0806	0.016	4.987	0.000
D(LNGFD)	-0.0022	0.001	-1.777	0.090
D(LNSSE)	0.0001	0.001	0.041	0.968
R-squared	0.582			
Durbin-Watson stat	1.816			

Source: Authors Estimation

In Table-10, we have reported the Granger causality test results between the HDI and other macro variables like GDP, SSE and GFD. It is seen that in every case, there are two null hypotheses and two alternative hypotheses respectively. The causality between HDI and GFD indicates that the estimated F-statistics values (13.19 and 2.76) are significant at 1 per cent and 10 per cent significance level. Therefore, we reject both null hypothesis and accept the alternative hypothesis that there is a bidirectional causality between HDI and GFD. In case of HDI and GSDP, it can be seen that the null-hypothesis of LNGSDP does not Granger cause HDI F-statistics value (20.15) is significant at 1 percent, whereas the other null hypothesis i.e. HDI does not cause LNGSDP F-statistic value (2.27) is not significant. Therefore, here we can say that there is one way of causality from GSDP to HDI but not the reverse. Now if we look at the F-Statistics for the causality between SSE and HDI, we can see that the null-hypothesis of LNSSE does not cause to HDI is rejected as at 1 percent its F-statistic value is 36.59, whereas the other one can't reject. Therefore, here we can say that there only one way of causality i.e. from SSE to HDI. Therefore, here we can conclude that there is significantly causality from the selected macro variables to HDI in Indian states.

Table-10: Pairwise Pannel Granger Causality Tests

Null Hypothesis:	F-Statistic	Prob.	Inference
LNGFD does not Granger Cause HDI	13.1899	0.00	Reject NH
HDI does not Granger Cause LNGFD	2.75949	0.07	Reject NH
LNGSDP does not Granger Cause HDI	20.1467	0.00	Reject NH
HDI does not Granger Cause LNGSDP	2.27239	0.11	Can't Reject NH

Null Hypothesis:	F-Statistic	Prob.	Inference
LNSSE does not Granger Cause HDI	22.5618	0.00	Reject NH
HDI does not Granger Cause LNSSE	0.83657	0.44	Can't Reject NH
LNGSDP does not Granger Cause LNGFD	36.589	0.00	Reject NH
LNGFD does not Granger Cause LNGSDP	37.0674	0.00	Reject NH
LNSSE does not Granger Cause LNGFD	16.7634	0.00	Reject NH
LNGFD does not Granger Cause LNSSE	15.3813	0.00	Reject NH
LNSSE does not Granger Cause LNGSDP	10.857	0.00	Reject NH
LNGSDP does not Granger Cause LNSSE	26.4535	0.00	Reject NH

Source: Authors Estimation

Conclusion

The study finds that GDP in India is growing up over the years, but India is far behind too other nations in Human Development. The study also finds that those states GDP is growing faster than other states, their social sector expenditure is lesser than others. Kerala is the number one state in human development in India despite it having less growth compared to Maharastra, Haryana, etc. Some poor states like Odisha, Bihar, Assam, etc. whose national income is not large but their GFD is less but they have good position in human development. The study finds that human development is positively related to GDP and negatively with GFD. The social sector expenditure is positively related to the human development, but not significant which means social expenditure is not enough in India to increase the human development. There is bidirectional causality between GFD and HDI in Indian states and also there is one way of causality from GSDP and SSE to HDI in Indian states. Therefore, the central government and the respective state governments must seriously think about it and adopt some immediate policy measures for higher HDI value. The HDI value can increase if the governments (central and state) will allocate enough amount of money to the social sector. Secondly, they have to adopt some policy to stop dropout ratio from educational institutions. The quality of education is also more important than the numbers. Hence, both governments must give importance to quality of teaching by increasing the number of qualified teachers and good educational environment, etc.

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List of Training Programmes for the Year 2018-19

S No	Title of Programme	Programme Dates	Programme Director(s)
1	Valuation of PSUs	May 10-11, 2018	Dr A Pawan Kumar
2	Ethical Hacking and Cyber Security	May 23-25, 2018	Mr A Rakesh Phanindra
3	Board Orientation Program for Directors	May 30-31, 2018	Prof RK Mishra & Ms J Kiranmai
4	Cyber Security for Women & Safety Measures	June 6-7, 2018	Mr AS Kalyana Kumar
5	Conclave of HR Executives	June 14-15, 2018	Dr Narendranath Menon, Dr A Sridhar Raj & Dr S Vivek
6	Legal Aspects of People Management	June 21-22, 2018	Dr Deepti Chandra
7	Financial Derivatives for Performance Enhancement	June 25-26, 2018	Dr Jyoti Kumari & Dr Shweta Mehrotra
8	Corporate Reforms and Changing Corporate Strategy	June 28-29, 2018	Dr K Trivikram & Dr Shaheen
9	Operations and Supply Chain Analytics for Competitive Advantage	July 2-4, 2018	Dr CV Sunil Kumar & Mr S Satish Kumar
10	Finance for Non-Finance Executives	July 4-5, 2018	Dr KV Ramesh & Mr M Chandrasekhar
11	Managing Corporate Social Responsibility for High Impact	July 19-20, 2018	Dr Shulagna Sarkar& Ms Pragnya Acharya
12	Board Orientation Program for Directors	July 26-27, 2018	Prof RK Mishra & Ms J Kiranmai
13	Ethical Hacking and Cyber Security	Aug 2-4, 2018	Mr A Rakesh Phanindra
14	Regulatory Issues in Infrastructure Management	Aug 9-10, 2018	Dr Rajesh G
15	Enhancing Rural Marketing Effectiveness for Sustained Growth	Aug 16-17, 2018	Mr V Anji Raju & Dr MLN Rao
16	Recent Advances in Retail Marketing	Aug 22-23, 2018	Dr V Srikanth & Mr P Mahesh
17	Enterprise Risk Management	Aug 29-31, 2018	Mr S Satish Kumar
18	Understanding Global Sourcing Strategies	Sept 3-4, 2018	Dr M Karthik
19	Enhancing Effectiveness at Workplace	Sept 5-6, 2018	Dr A Sridhar Raj
20	Business Decision Making Using Software Tools (MS Excel, R & Tableau)	Sept 6-7, 2018	Dr Shaheen & Dr CV Sunil Kumar
21	Capacity Building to Enhance the Competitiveness of the Indian Agriculture and Manufacturing Sectors	Sept 19-20, 2018	Dr Usha Nori
22	Workshop on "Cyber Law"	Sept 24, 2018	Mr A Rakesh Phanindra
23	Rudiments of Business Analytics for Modern-day Decision Making – A Software Based Approach	Sept 25-26, 2018	Dr KV Anantha Kumar
24	Emerging Trends in Industrial and Labour Laws	Sept 27-28, 2018	Dr Deepti Chandra & Dr Shulagna Sarkar
25	Advanced Leadership Programme for Women Executives	Oct 3-4, 2018	Dr Narendranath Menon, Dr PS Janaki Krishna & Dr P Geeta
26	Cyber Attacks & Network Security	Oct 11-12, 2018	Mr AS Kalyana Kumar
27	Strategic Marketing for PSUs	Oct 24-25, 2018	Dr MM Karuna & Dr MLN Rao
28	International Conference on "Operations and Supply Chain Excellence	Oct 24-25, 2018	Dr CV Sunil Kumar Mr S Satish Kumar & Mr SN Mantha
29	Financial Models for Sustainable Excellence	Oct 29-30, 2018	Mr M Chandrashekar
30	Effective Project Management for Competitive Advantage	Nov 1-3, 2018	Mr S Satish Kumar& Mr SN Mantha

S No	Title of Programme	Programme Dates	Programme Director(s)
31	Goods and Services Tax (GST)	Nov 2-3, 2018	Dr KV Ramesh
32	Creativity & Problem Solving	Nov 5-6, 2018	Dr NG Satish & Dr Anand Akundy
33	2nd HR Conclave on "Sustainable HRM in a Digitalized Economy"	Nov 5-6, 2018	Dr Shulagna Sarkar & Dr Samarendra Mohanty
34	GST – Policies, Perspectives and Practices (An Industry-Oriented Programme)	Nov 15-16, 2018	Dr K Trivikram, Dr Usha Nori & Dr Sandeep Kumar
35	e-Procurement System for Vigilant and Transparency	Nov 19-20, 2018	Mr AS Kalyana Kumar
36	Enhancing Sales Performance	Nov 26-27, 2018	Dr V Srikanth & Mr P Mahesh
37	Understanding Foreign Currencies Risk and Global Finance	Nov 29-30, 2018	Dr Rajesh G & Dr M Karthik
38	Ethical Hacking and Cyber Security	Dec 3-5, 2018	Mr A Rakesh Phanindra
39	Leadership and Change Management	Dec 6-7, 2018	Mr V Anji Raju
40	Contract Management	Dec 10-11, 2018	Dr KV Ramesh
41	Effective Logistics & Supply Chain Management for Operational Excellence	Dec 17-19, 2018	Mr S Satish Kumar & Dr CV Sunil Kumar
42	6th National Conference on "Diversity in Management – Development of Women Executives"	Dec 20-21, 2018	Dr Narendranath K Menon, Dr Anupama Dubey & Dr Prarthana Kumar
43	Essentials of Corporate Finance	Dec 27-28, 2018	Dr A Pawan Kumar & Dr Harishankar Vidyarti
44	International Conference on "Trade and Exchange Rate Policies in the Context of WTO and PTAs : Challenges Before Emerging Economies	Dec 30-31, 2018	Dr Usha Nori & Dr Sandeep Kumar Kujur
45	Sustainable Lean Management Practices for Improved Business Performance	Jan 3-5, 2019	Mr S Satish Kumar & Dr CV Sunil Kumar
46	Emotional Intelligence	Jan 9-10, 2019	Dr A Sridhar Raj
47	International Conference on Sustainable Development Goals	Jan 9-11, 2019	Dr PS Janaki Krishna & Dr Ch Lakshmi Kumari
48	Digital Marketing	Jan 17-18, 2019	Dr V Srikanth& Dr Prarthana Kumar
49	Strategic Management in PSUs for Success	Jan 23-24, 2019	Mr SN Mantha, Dr MLN Rao & Dr Santosh Kumar Tiwari
50	Risk Management in Banking & Other Lending Institutions	Jan 28-29, 2019	Dr Jyoti Kumari & Dr Shweta Mehrotra
51	6th International Conference on "Corporate Social Responsibility"	Feb 4-5, 2019	Dr Shulagna Sarkar & Ms Pragnya Acharya
52	Communication for Managerial Effectiveness	Feb 6-8, 20-19	Dr Anand Akundy & Dr NG Satish
53	National Conference on "Data Science, Machine Learning, AI, IoT and Analytics"	Feb 7-8, 2019	Dr Shaheen
54	2nd National Conference on "Marketing in Digital India: Trends, Opportunities & Challenges"	Feb 18-19, 2019	Mr MJ Ramakrishna & Mr A Rakesh Phanindra
55	10th International Conference on Corporate Governance : Governance & Integrity	Feb 21-22, 2019	Ms J Kiranmai, Ms Swetha Mehrotra and Accounting Research Institute, UTiM
56	National Conference on "Cyber Security"	Mar 6-7, 2019	Mr AS Kalyana Kumar & Mr A Rakesh Phanindra

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