

**SOCIAL SECTOR DEVELOPMENT AND ECONOMIC GROWTH
IN INDIA, 1990-1991 to 2017-2018**

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This paper studies the impact of the development of social sector on the long-run economic growth in the Indian states during 1990-1991 to 2017-2018. It is observed that different States in India are not only spending unequally on social sector activities, but also are giving unequal importance to different components constituting the social sector. This has widened a disparity in the level of social sector development which might have led to an inequality in the human resource development and consequential disproportionate economic growth across the Indian States. The findings of this study have predicted a convergence in the social sector development across the Indian States. In this perspective, the findings of long-run analysis support the existence of an equilibrium relationship between social sector development and economic growth in the country. In addition, public expenditure on the sub-sectors such as family welfare and medical and public health, housing and urban development, water supply and sanitation, and social security and welfare have been found to exert a positive impact on the economic growth of Indian states in the long-run. The findings are critical for the policy circle designing programmes and schemes for the development of social sector to ensure inclusive growth.

Keywords: Public Spending, Social Sector, Economic Growth, India

JEL Classification: C33, O11, O15, O47

1. INTRODUCTION

In recent days, the policy-makers and other stakeholders have been emphasizing investments in the social sector as a priority sector to achieve social equity, environmental sustainability and shared prosperity in particular and Sustainable Development Goals (SDGs) in general. It has been observed that the development strategies followed since 1980s have not been successful in providing social opportunities to the vulnerable groups of society. As a result, vulnerable groups of the

society have been disproportionately affected. Such inequality has been denting the process of inclusive and equitable growth which ultimately undermines social cohesion and integration and generates unsustainable production and consumption patterns in less developed countries (ESCAP/SDD, 2015). Thus, governments at Centre and State levels, by recognising development of social sector as an important element of economic growth, laid emphasis on investments in social sector in order to enhance labour productivity, reduce poverty and inequality, and bring social stability (Grossman and Helpman, 1991; Lucas, 1988; Quah and Rauch, 1990; Rivera-Batiz and Romer, 1991; Romer, 1986, 1989, 1990). The social sector comprising sub-sectors like education, health and medical care, family welfare, housing, urban development, sanitation, water supply, labour and employment, the welfare of backward castes and others has been considered very essential for the economic development of a nation (Mohapatra, 2013). And, the case of India is no exception.

In the Indian context, the development initiatives undertaken by planners reflect the increasing importance assigned to the provisioning of social services by the Central and State Governments since the inception of the plan era in 1951 (Kaur et al., 2013). However, certain observations are noteworthy in Indian context: first, although the share of expenditure in social sector to total plan expenditure increases steadily over plan periods, remains low when compared with international standards (Mooij and Dev, 2002; Basu, 1995; Panchamukhi, 2000; Sekhar, 2005; WDR, 2013; Mishra and Mishra, 2015); second, there persist significant disparities across States in terms of spending in social sector by State governments (Ravallion and Subbarao, 1992; Dreze and Sen, 1995); third, there was a mid-way budget cut in social sector in the FY 2014-2015 by Government of India; fourth, there is a drastic cut in expenditure allocation to social sector in the Union budget for the FY 2015-2016 with the assumption that increased allocations for the social sector would be made by the State Governments in line with the recommendations of the 14th Finance Commission; fifth, the RBI annual study of State budgets shows that States have cut back on social sector spending in 2015-2016; sixth, even though Union Budget 2016-2017 assigned a significant focus on the development of social sector, less developed States are not able to catch up the better-performing States through increased allocation of resources for social sector; and seventh, policy makers do understand that investment on social sector brings stability to people's lives.

It is with this backdrop, this paper is an attempt to examine the overall impact of social sector expenditure made by the State Governments on their economic growth. This study specifically examines the pattern of social sector development in the Indian States besides exploring the existence of disparities and its convergence possibility in social sector developments across the Indian States and investigating the impact of the changing pattern of social sector spending on the economic growth of Indian States. The findings of this paper contribute to the literature in two respects: first, we found the empirical evidence of the presence of disparities in the development of social sector across Indian states while predicting a convergence possibility; and second, government

expenditure on family welfare, medical and public health, housing and urban development, water supply and sanitation, and social security and welfare is significant in fostering the economic growth of Indian states. The remainder of the paper is organised as follows: Section 2 reviews the relevant literature and puts forth the rationale of the study; Section 3 highlights the features of social sector development across the Indian states; Section 4 studies the disparities in the development of social sector across the Indian states; Section 5 examines the impact of social sector development on economic growth in India in a panel framework; and Section 6 concludes.

2. LITERATURE REVIEW

The emphasis on social sector development for the overall development of a nation is nothing new; it has its existence in economics literature since the days of Adam Smith. However, the focus took an empirical research mode with the seminal work of Rostow (1960). Then many people considered social sector development as an important element of economic growth and development (e.g., Grant, 1973; Streeten, 1977; Srinivasan, 1977; Hagen, 1980; Ram, 1986; London and Williams, 1988; Newman and Thomson, 1989; Colombatto, 1991; Dreze and Sen, 1995; Temple and Johnson, 1998; Jamal, 1998; Ravallion and Datt, 2002; Iqbal and Nadeem, 2006; Pagliari et al., 2011; Mohapatra, 2013; Mishra and Mishra, 2015; Kaur, 2016; Pattayat and Rani, 2017).

In spite of the fact that India is having a large and vibrant democracy which constitutes a robust pillar of the world economy, there prevail widespread disparities across different States in the levels of socio-economic development (Mishra, 2017, 2018, 2019). Dreze and Sen (1995) aptly observed the unsatisfactory performance of the social sector and a remarkable divergence in economic and social development across States in India. Larger States with the endowment of vast natural and human resources are even unable to accomplish high growth rates (Saikia, 2012). Even though the expenditure made by State Governments on the social sector is very high (about 80 per cent of total social sector expenditure in India) in comparison to the expenditure made by Central Government, (only 20 per cent of the total expenditure) the social sector development is not homogenous across the States (Mooij and Dev, 2002). Also, Sekhar (2005) observed that the State intervention in the social sector is insufficient and inefficient, leading to the prevalence of widespread poverty and deprivation in India. Furthermore, studies like Prabhu and Sarkar (2001) observed that the declining trend of real per capita social sector expenditures in the Indian States has been started even before economic reforms began in 1991, and other studies including Shariff et al. (2002) and Dev and Mooij (2002) concluded that this declining trend was also there during the 1990s. In a recent study, Kaur et al. (2013) made a State-wise comparison of expenditures on the social sector which reveals considerable variations across States during 1990-1991 and 2012-2013.

However, the extant literature has considered the development of social sector as a pre-condition for human development and economic growth in the long-run (Sen, 1989) because improvements in human capabilities supplement to rising living standards of people and to their quality of life (Sen, 2000). The development of social sector in an economy creates a solid foundation for the growth of employment, income and productivity, and also sets the platform for the advancement of technology (Vanin, 2002). The social sector enhances other sectors of the economy like agriculture, industry, and service sectors. Social sector promotes the development of human capital and therefore, contributes significantly and effectively to economic growth by providing a healthy, educated and skilled workforce. Also, expenditure on social sector creates social capital which is the bond that links societies together and without it there exists a little opportunity for economic growth and/or individual well-being (Rosenstein-Rodan, 1943; Hirschman, 1958; Rostow, 1960; Coleman, 1988, 1990). Adelman and Robinson (1989) pointed out the redistributive aspects of social infrastructure such as education, health and nutrition. Chenery (1969) went a step ahead and argued that the redistribution should precede growth. Such approaches towards social sector ensure that the overall development strategy, as well as sectoral strategies, should be oriented towards improving capabilities of the masses which in turn has a favourable impact on growth.

The magnitude of public expenditure in the social sector and its impact on economic growth has emerged as a major public choice issue, facing economies in transition (Devarajan et al., 1996). The policy-makers often argue that expenditure made in social sector promotes law and order, harmonises conflicts between private and social interests, helps in increasing labour productivity, supports export industries and provides the economic infrastructure which ultimately influences the economic development of a country (Khalifa, 2001). Thus, it has been predicted that the social sector development precedes economic growth (Streeten, 1981; Temple and Johnson, 1998). Another group of people including Okun and Richardson (1962), Iqbal and Nadeem (2006), and Hosseini and Kaneko (2012) predicted that economic growth precedes social sector development.

Carr (1989) aptly remarked that the theory is unable to settle the debate concerning the precise role of the social sector in the economic growth process. Mazumdar (1996) argued that economic growth and development of the social sector are two unrelated events. Consequently, the issue involved has been increasingly viewed as purely empirical. One school of thought concludes the positive impact of social sector development on the economic growth (Hicks, 1979; Streeten, 1981; Goldstein, 1985; Ram, 1985, 1986; Aschauer, 1989; Strauss and Thomas, 1995; Schultz, 2000; Duflo, 2001; Haddad et al., 2003; Culter et al., 2005; Baldacci, 2008; Alam et al., 2010; Reza et al., 2014; and Jaman, 2016). Another school of thought concludes a negative relationship between the social sector expenditure and economic growth (e.g. Landau, 1983, 1986; Barro, 1989, 1991; Grier and Tullock, 1989; Folster and Henrekson, 2001). The no relationship between social sector expenditure and economic growth has also been reported in the literature (Kormendi and Meguire, 1985).

Few studies are there in Indian context such as Sen (2000), Bhat and Jain (2004), Haldar et al. (2006), Hooda (2013), Gangal and Gupta (2013), Mohapatra (2013), Mishra and Mishra (2015), Jaman (2016), Chadha and Chadda (2020a, b) which also provide an inconclusive evidence on this issue thereby leaving the moot point unsettled. India being at the frontier of the developing world, it is very essential that the said dynamics between social sector expenditure and economic growth be investigated to enable in formulating a holistic policy approach to the problems of economic development of the country.

3. SOCIAL SECTOR DEVELOPMENT IN INDIAN STATES

In this context, it is quite pertinent to examine the pattern of growth in the social sector across the Indian States. For this purpose we have taken a sample of 23 Indian States, viz., Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Goa, Gujarat, Haryana, Himachal Pradesh, Jammu and Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Nagaland, Odisha, Punjab, Rajasthan, Tamil Nadu, Tripura, Uttar Pradesh, and West Bengal. The selection of these States have been deliberately made so as to (i) include States from East, West, North and South regions of India; (ii) include less developed to high developed States; and (iii) prepare a balanced panel data set on the basis of availability of continuous and comparable data.

The growth pattern of the social sector across these selected States has been observed over the period spanning from 1990-1991 to 2017-2018. The choice of the time period has been made to examine the performance of social sector across selected States only in the post-reform period. However, the data for FY 2018-2019 could not be included in the study because the information is not available for all selected States. The data on actual estimates of government expenditure on the social sector at current prices and GSDP at constant prices (2004-2005) for the 23 selected States have been collected from the CMIE and EPWRF database on States of India and published Budget documents of respective States for the period under study. The social sector expenditure by the government includes both revenue and capital expenditure, and also takes into account planned as well as non-planned spending. The data relating to public expenditure on the social sector at current prices were suitably converted to constant prices with the base year 2004-2005 using GSDP deflator to make the comparative analysis across time and space more meaningful. Then the decadal growth rates of total public expenditure on the social sector of each selected State were calculated by taking the 10-year average of annual growth rates (%), and are presented in Table 1.

The comparison of public spending on the social sector during the 1990s, 2000s, and 2010s reveals the persistence of considerable variations in such spending across the Indian States. During 2000-2010, a majority of the States exhibited a decline in social sector spending when compared with the 1990s, but exhibited an increase in such spending when compared with 2000s. Thus, the results indicate that at the State level,

the average annual growth rate of social sector expenditure exhibited both way movements during 1990-1991 to 2017-2018. Further, the coefficient of variation gives a clear indication of the presence of disparities in social sector expenditure across the Indian States.

Table 1. Average Growth Rate of Public Spending on Social Sector
(10-Year Average of Annual Growth Rates)

States of India	Decadal Growth Rate of Public Expenditure on Social Sector (%)		
	1990s	2000s	2010s*
Andhra Pradesh	14.64	13.77	16.24
Arunachal Pradesh	12.00	17.53	30.60
Assam	13.60	13.81	28.26
Bihar	15.22	11.79	28.82
Goa	10.16	14.36	20.74
Gujarat	16.62	12.87	19.40
Haryana	15.29	16.70	22.06
Himachal Pradesh	16.76	11.37	21.41
Jammu and Kashmir	13.80	14.09	22.10
Karnataka	15.68	14.33	21.43
Kerala	14.62	10.36	24.46
Madhya Pradesh	14.86	9.21	28.69
Maharashtra	14.60	14.49	19.14
Manipur	15.83	10.89	22.56
Meghalaya	13.48	11.96	22.77
Nagaland	11.98	10.46	23.24
Odisha	17.79	10.80	23.41
Punjab	12.35	10.02	20.87
Rajasthan	16.92	12.61	24.39
Tamil Nadu	14.37	12.68	19.30
Tripura	13.09	11.84	21.51
Uttar Pradesh	11.92	15.63	21.45
West Bengal	17.72	12.32	21.82
Mean	14.49	12.78	22.81
Standard Deviation	2.00	2.15	3.47
Coeff. of Variation	0.14	0.17	0.15

Note: * Period from 2010-2011 to 2017-2018 is considered.

Source: Authors' Calculation

The growth pattern of public expenditure on social sector is also analysed taking the share of social sector expenditure as a percentage of GSDP. We have calculated the public expenditure on social sector as a percentage of GSDP for all the States over the sample period, and then taken the 10-year average. The results are presented in Table 2 which indicates that at the State level, social sector expenditure made by State governments as a percentage of GSDP exhibited a rising trend during 1990-1991 to

2017-2018. It is also observed that disparities in social sector expenditure as percentage to GSDP increases during the decade 2010 after remaining constant during previous two decades, i.e., 1990 and 2000. Although the social sector expenditure as percentage to GSDP indicates an increasing trend over the decades, the State Governments need to provide increasing budgetary resources to these sectors, keeping in view the decreasing allocation of resources by the Central Government. This is crucial from the policy makers' point of view because both the high and low public spending on social sector have been considered detrimental to productivity and growth in less developed countries (Devarajan et al., 1996; Jaman, 2016).

Table 2. Growth of Share of Public Spending on Social Sector in GSDP
(As Percentage of GSDP at 2004-05 prices)

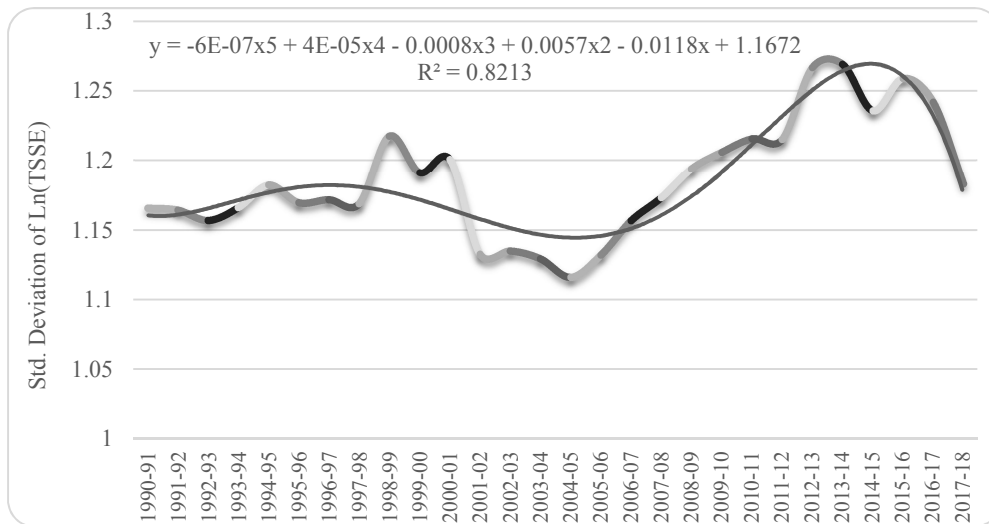
States of India	Public Expenditure on Social Sector as % of GSDP		
	1990s	2000s	2010s*
Andhra Pradesh	5.43	9.76	17.56
Arunachal Pradesh	9.87	18.12	40.97
Assam	3.67	7.85	18.34
Bihar	6.34	8.51	19.15
Goa	3.66	6.37	10.71
Gujarat	2.99	5.17	8.19
Haryana	2.65	4.62	9.27
Himachal Pradesh	5.99	10.46	15.58
Jammu and Kashmir	6.14	11.64	23.10
Karnataka	3.23	5.82	11.84
Kerala	3.41	5.04	10.28
Madhya Pradesh	4.62	6.28	14.55
Maharashtra	2.55	4.69	8.13
Manipur	8.48	15.59	27.46
Meghalaya	6.44	10.13	20.58
Nagaland	8.09	11.33	18.65
Odisha	3.90	6.42	14.43
Punjab	2.46	4.02	7.41
Rajasthan	4.08	7.62	14.30
Tamil Nadu	3.40	5.40	9.95
Tripura	8.51	11.88	17.93
Uttar Pradesh	3.15	6.27	15.38
West Bengal	3.12	5.26	12.06
Mean	4.88	8.18	15.91
Standard Deviation	2.20	3.68	7.49
Coeff. of Variation	0.45	0.45	0.47

Note: * Period from 2010-2011 to 2017-2018 is considered.

Source: Authors' Calculation

4. DISPARITY IN SOCIAL SECTOR DEVELOPMENT IN INDIA

It is argued that the mounting disparities in social sector development across the Indian States create rural-urban divides, and inter-regional as well as intra-regional distortions. In the long-run, the persistence of such disparities would be a challenge to the economy's capacity to lead a higher economic growth while ensuring social cohesion. Thus, it is quintessential to examine in which direction our social sector development is moving, whether lagging States would be catching up the leading States, the well-known convergence issue. This has been examined using absolute sigma-convergence concept.



Source: Authors' Own Plot

Figure 1. Non-Linear Sigma-Convergence, 1990-1991 to 2017-2018

The sigma-convergence takes place when the measure of the dispersion of the social sector expenditure across States falls over time. In other words, if the standard deviations of the logarithm of social sector expenditures across 23 States decline over time, then sigma-convergence can be said to exist. For this purpose, a non-linear model is fitted, and the results are plotted in Figure 1. The social sector development exemplified by the government spending on the social sector in the Indian States exhibits a cyclical pattern of variation when the standard deviations of the natural logarithm of the total social sector expenditure over 1990-1991 and 2017-2018 are plotted. This fit is noteworthy with the R-square value of 0.821. This plot indicates a continuous fall in the degree of dispersion in social sector expenditure across the Indian

States since 2014-2015. Thus, a path of convergence in social sector development in India is indicated. However, sustaining this path over long-run depends on the policy choice - the governments at all levels should emphasize on the optimal allocation of resources for the development of the social sector.

Government of India, although reduced its expenditure on social services and leaves it to State Governments, recognising the role of the social sector in economic development and growth, has undertaken certain noteworthy steps in the Budget for the FY 2016-2017. The government has decided to set up a 'National SC and ST Hub' to provide support to SC/ST entrepreneurs. An allocation of Rs.500 crores has been made to promote women entrepreneurship and entrepreneurs belonging to SC/ST through 'Stand Up India'. An outlay of Rs.151,581 crores has been allocated for the social sector, including education and health. A total of Rs.2,000 crores has been allocated for families below the poverty line as the initial cost to have the LPG connections. New health protection scheme has been launched for senior citizens which will provide health cover upto Rs.1 lakh per family with Rs.30,000 as an additional top-up package. Under 'Jan Aushadhi Yojana', 3000 stores were proposed to be opened during 2016-2017. The 'National Dialysis Services Programme' has been launched through Public Private Participation (PPP) mode to help the poor patients suffering from renal diseases. Similarly, following the recommendations of the 14th Finance Commission, all State governments have been provided with ample untied resources that they can allocate for the development of the social sector. Recently, in the Union Budget for FY 2017-2018, there are several social sector programmes for which the allocations are either at the same level as those in 2016-2017 or only marginally higher. For example, the share of education in total budget allotment remains stagnant at 3.7 percent as was in the budget estimates for the FY 2016-2017. However, the overall allocation for the health sector in the 2017-2018 budget has increased by 27 percent over the budget for FY 2016-2017. Similarly, the budget estimate for the drinking water and sanitation sector in rural India has increased by 43 percent in the FY 2017-2018 over that of in FY 2016-2017. The share of budget allocation for rural development in FY 2017-2018 has increased only marginally to 4.9 percent from 4.8 percent in FY 2016-2017. The share of budget allocation for nutrition-related schemes in the FY 2017-2018 declined to 13.9 percent from 14.2 percent in FY 2016-2017. Similarly, the overall budget allocation for social security sector has declined in absolute terms in FY 2017-2018 in comparison to that in FY 2016-2017. Given the fiscal policy of the government for FY 2017-2018, the stagnation in budget allocations could be justified on the ground that, bringing efficiency in public expenditure management is more important than putting more money in social sector programmes for getting better development outcomes.

5. IMPACT OF SOCIAL SECTOR DEVELOPMENT ON ECONOMIC GROWTH IN INDIA

The dynamics of the impact of public expenditure in the social sector on economic growth in the context of the selected 23 Indian States over the period 1990-1991 to 2017-2018 was examined in a panel data framework considering its superiority over individual time series analysis (Jaman, 2016). The analysis measures real social sector development in a multidimensional framework in terms of government expenditure on Education, Sports, Art and Culture (ESAC); Family Welfare, Medical and Public Health (FWMPH); Housing and Urban Development (HUD); Water Supply and Sanitation (WSS); Labour and Labour Welfare (LLW); and Social Security and Welfare (SSW). Similarly, real economic growth (EG) is measured by the Gross State Domestic Product (GSDP) at constant prices with the base year of 2004-2005. All required data have been collected from the CMIE and EPWRF database on the states of India. Expenditure on the social sector includes both the Revenue and Capital Expenditures. And, each component of social sector expenditure was expressed in real terms by deflating the current year's actual estimate of government expenditure on it. All the variables are taken in their natural logarithms to reduce the scale and avoid the likely problems of heteroscedasticity. Thus, the theoretical framework hypothesized in this empirical study can be stated as follows:

$$EG_{it} = f(ESAC_{it}, FWMPH_{it}, HUD_{it}, WSS_{it}, LLW_{it}, SSW_{it}), \quad (1)$$

and the econometric specification of (1) to evaluate the impact of social sector development on the real economic growth of India is:

$$EG_{it} = \beta_{i0} + \beta_{i1}ESAC_{it} + \beta_{i2}FWMPH_{it} + \beta_{i3}HUD_{it} + \beta_{i4}WSS_{it} + \beta_{i5}LLW_{it} + \beta_{i6}SSW_{it} + u_{it}, \quad (2)$$

where β_0 is the constant, all other β 's measure the degree and direction of each of the social sector indicator included in the model and u_{it} is the error term.

In our panel data series, the cross-section dimension is smaller (23) than the time period (28). Thus, it is essential to check whether the panel data series are cross-sectionally independent or not. Baltagi and Pesaran (2007) argued that cross-section dependence can arise due to spatial or spillover effects, or could be due to unobserved common factors. For this purpose, we have used the Cross-Sectional Dependence (CD) test as proposed by Pesaran (2004) as no other test performs better than CD (Moscone and Tosetti, 2009). The CD test statistic is given by

$$CD = \sqrt{\frac{2T}{N(N-1)}} \sum_{i=1}^{N-1} \sum_{j=i+1}^N \hat{\rho}_{ij}. \quad (3)$$

Here $\hat{\rho}_{ij}$ is the average of the pair-wise correlation coefficients of OLS residuals regressions under fixed/random effect model. The null hypothesis under the CD test is

cross-sectional independence (means errors in different cross-section units are not correlated). The results present in Table 3 conclude the presence of cross-sectional dependence in our data set.

Table 3. Pesaran's Cross-sectional Dependence Test

Panel Data Model	CD test stat.	p-value
Fixed Effect	13.516*	0.000
Random Effect	15.289*	0.000

Note: H_0 : No Cross-Sectional Dependence; * significant at 1% level.

Source: Authors' Estimation

The presence of cross-sectional dependency has been noticed at the 1% level of significance. Baltagi and Pesaran (2007) mentioned that the first generation unit root tests, which assume cross-sectional independence, are inadequate and could lead to significant size distortions in the presence of neglected cross-section dependence. Therefore, we have used Cross-sectional Augmented Dickey-Fuller (CADF) unit root test as proposed by Pesaran (2007) that accommodates for cross-sectional dependence among the variables. The CADF equation as used by Pesaran (2007) is:

$$\Delta Y_{it} = \alpha_i + \beta_i Y_{i,t-1} + \gamma_i \bar{Y}_{t-1} + \varphi_i \Delta \bar{Y}_t + \varepsilon_{it}. \quad (4)$$

Here, the hypothesis is tested based on the OLS results derived from the Equation (4) and the CADF test statistic is given by

$$CADF = \frac{\Delta Y_i \bar{M}_W Y_{i-1}}{\hat{\delta} (Y'_{i-1} \bar{M}_W Y_{i-1})^{1/2}}. \quad (5)$$

Table 4. Pesaran (2007) Cross-Sectional ADF Unit Root Test

Variables	CADF at Level with Constant and no Trend		CADF at 1 st Difference with Constant and no Trend		Decision
	t-bar	p-value	t-bar	p-value	
EG	-1.939	0.177	-3.101*	0.000	I(1)
ESAC	-1.917	0.207	-2.819*	0.000	I(1)
FWMPH	-1.831	0.346	-3.121*	0.000	I(1)
HUD	-1.897	0.236	-2.892*	0.000	I(1)
WSS	-2.096**	0.045	-	-	I(0)
LLW	-2.379*	0.001	-	-	I(0)
SSW	-2.494*	0.000	-	-	I(0)

Note: *significant at 1% level; **significant at 5% level

Source: Authors' Estimation

Thus, we have used the cross-sectional ADF unit root test to observe the stationary properties the variables. The findings of CADF test are presented in the Table 4 which indicates that the variables are a mix of integrated of order zero and one, i.e., I(0) and I(1). And, it is ensured that none of the variables is integrated of order two. Therefore, the Equation (2) has been estimated in the Autoregressive Distributive Lag (ARDL) framework based on the Pooled Mean Group (PMG) estimators (Pesaran et al., 1999). This PMG based ARDL is preferred because the estimator combines both averaging and pooling the residuals, incorporates the intercept, short-run coefficients and different error variances across the groups, and holds the long-run coefficients that are equal across the groups (Pesaran et al., 1997, 1999; Mallick et al., 2016). The use of this technique is justified when variables are a mix of level and 1st difference stationary, and are not integrated of order two (Pesaran and Shin, 1999). The Akaike information criterion (AIC) suggests the one lag both for the regressand and regressors. So, both the long-run and short-run relationships have been estimated using the set up (6):

$$\begin{aligned}
\Delta EG_{i,t} = & \phi_i ECT_{i,t} + \sum_{j=1}^{p-1} \lambda_{i,j} \Delta EG_{i,t-j} + \sum_{j=0}^{q-1} \beta_{1i,j} \Delta ESAC_{i,t-j} \\
& + \sum_{j=0}^{r-1} \beta_{2i,j} \Delta FWMPH_{i,t-j} + \sum_{j=0}^{s-1} \beta_{3i,j} \Delta HUD_{i,t-j} \\
& + \sum_{j=0}^{u-1} \beta_{4i,j} \Delta WSS_{i,t-j} + \sum_{j=0}^{v-1} \beta_{5i,j} \Delta LLW_{i,t-j} \\
& + \sum_{j=0}^{x-1} \beta_{6i,j} \Delta SSW_{i,t-j} + \varepsilon_{i,t}.
\end{aligned} \tag{6}$$

In this framework, the error correction term (ECT) indicates the departures from the long-run relationship and thus, expected to have a negative coefficient which further reveals the rate of adjustments required in the short-run to restore the equilibrium in the long-run.

Therefore, the impact of social sector development on economic growth in India can be estimated in the panel ARDL framework. This ARDL estimation included one lag of the dependent variable, and also one lag of each dynamic regressor as suggested by AIC. The estimation outcomes are presented in the Table 5 which depicts that the public spending on social sector indicators such as FWMPH, HUD, WSS and SSW have a statistically significant positive impacts on the economic growth of Indian states in the long-run. Specifically, 1 per cent increase in public expenditure on family welfare, medical and public health is likely to increase the gross state domestic product of Indian states by 0.43 per cent in the long-run, ceteris paribus. Similarly, 1 per cent increase in

public expenditure on housing and urban development is likely to increase the gross state domestic product of Indian states by 0.14 per cent in the long-run, *ceteris paribus*. Also, 1 per cent increase in public expenditure on water supply and sanitation is likely to increase the gross state domestic product of Indian states by 0.53 per cent in the long-run, *ceteris paribus*. Furthermore, 1 per cent increase in public expenditure on social security and welfare is likely to increase the gross state domestic product of Indian states by 0.30 per cent in the long-run, *ceteris paribus*.

Table 5. Results of Panel ARDL Model (PMG Estimates)

Dependent Variable: ΔEG		Dependent Lag: 1		Dynamic Regressors Lag: 1	
Regressors	Coefficient	Std. Error	t-statistic	p-value	
Long-Run Relationship					
ESAC	0.0991	0.1959	0.5059	0.6132	
FWMPH	0.4321	0.2464	-1.7532	0.0802***	
HUD	0.1413	0.0591	2.3919	0.0172**	
WSS	0.5296	0.1478	3.5823	0.0004*	
LLW	-0.2234	0.1360	-1.6432	0.1010	
SSW	0.2998	0.0947	3.1670	0.0016**	
Error Correction Term					
ϕ	-0.0477	0.0071	-6.7282	0.0000*	
Short-Run Relationship					
$\Delta(ESAC)$	0.0132	0.0288	0.4566	0.6482	
$\Delta(FWMPH)$	0.0166	0.0297	0.5594	0.5761	
$\Delta(HUD)$	-0.0110	0.0083	-1.3305	0.1840	
$\Delta(WSS)$	-0.0241	0.0137	-1.7526	0.0803***	
$\Delta(LLW)$	0.0188	0.0095	1.9862	0.0476**	
$\Delta(SSW)$	-0.0062	0.0081	-0.7633	0.4457	
C	0.5072	0.0600	8.4575	0.0000*	

Note: *, ** significant at 1% and 10% levels respectively; Lag order selection by AIC value of -4.473750

Source: Authors' Estimation

The indicator ESAC, although has a positive impact (1 percent increase in government expenditure on education, sports, art and culture may contribute to 0.09 percent increase in gross state domestic product, *ceteris paribus*), but not statistically significant in the long-run. It is crucial to note that the statistical insignificance of this indicator of social sector development does mean its complete irrelevance in Indian states. Thus, the policy-makers should also focus on the allocation of budgetary resources to this sub-sector. Furthermore, the indicator LLW has a negative impact, but not statistically significant in the long-run. This finding does not mean that the public expenditure on labour and labour welfare is detrimental to the economic growth of Indian states. Rather policy focus should be on this sub-sector to allocate more resources such that its long-run growth impact can be made positive in the country.

The coefficient of ECT is negative (-0.0477) and statistically significant at 0.01

levels. This means that the short-run deviations from the long-run equilibrium relationship can subsequently be restored. In other words, the Indian states would benefit from social sector development in the long-run. Thus, it is found that the public expenditure on family welfare, medical and public health, housing and urban development, water supply and sanitation, and social security and welfare exert a positive impact on the economic growth of Indian states. So, it can be aptly said that social sector development favourably influences the economic growth in India. In other words, the social sector is a significant determinant of economic growth in the long-run. Such a finding is very important in the sense that it justifies the national development goal of inclusive growth. This outcome is significant from the point of view of the planners and policy-makers of an emerging market economy like India to allocate total expenditure among various sectors. In chalking out long-run plans and policies, the emphasis should be laid on the development of each of these areas of the social sector so that the very objective of inclusive growth can be achieved. Specifically, the central as well as state governments should strategically allocate more financial resources to different schemes of family welfare, medical and public health, housing and urban development, water supply and sanitation, and social security and welfare. However, it does not recommend

6. CONCLUSIONS

The long-standing consensus is that the economic prosperity of a nation can be ensured through the enriched quality of life of people. It helps in building up the strong edifice of a vibrating economy. It lays down the foundation for productivity growth, technological advancement, rising income and employment opportunities. Thus, development literature recognises human development as an essential prerequisite for the sustainable development of an economy. And, also it is well recognised that social sector development can go a long way in contributing to the development of human resources. The social sector development, in turn, depends on the pattern of government spending on various social services including education, health, sanitation, water supply, housing, the welfare of weaker sections, and social security, etc. This ultimately contributes to higher economic growth by eradicating the evils of society such as poverty, malnutrition, unemployment and illiteracy. In this context, this paper examines the impact of social sector development on economic growth across Indian states. It is observed that different states of India are not only spending unequally on social sector activities, but also giving unequal importance to different components constituting the social sector. This has widened a disparity in the level of social sector development which might have led to an inequality in the human resource development and consequential disproportionate economic growth across the Indian States. The States like Gujarat, Haryana, Karnataka and Punjab are more developed while some other States like Bihar, Madhya Pradesh, Rajasthan, Uttar Pradesh and J&K are less developed.

However, the findings of this study have predicted a convergence in the social sector development across the Indian States. So, the policy implication is that the budgetary allocation to social sector development needs to be increased in the lagging states of India. This would supplement the catching up effect that has been implied in the study. The findings of the study also support the existence of a long-run equilibrium relationship between social sector development and economic growth in the country. Furthermore, it has been found that the public expenditure on the sub-social sectors such as family welfare and medical & public health, housing and urban development, water supply and sanitation, and social security and welfare have a positive impact on the economic growth of Indian states in the long-run. Hence, the budgetary allocations to these sub-sectors required to be increased both at centre and state levels. And, to ensure optimal utilization of these allocations, it is essential to focus on the development of social overhead capital and skill development in the country. All these can go a long way in achieving and sustaining a high growth trajectory in India.

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