

Trends of Public Expenditure on Infrastructure in Karnataka

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Abstract: *This article examined the trends and patterns of Public expenditure on infrastructure across economic and social sectors in Karnataka and also analysed the association between capital expenditure spent on various socio-economic services with GSDP. It found that there is significantly high positive correlation between capital expenditure spent on various socio-economic services and GSDP. Further the share of Capital Expenditure on Economic services in total Capital expenditure has declined, but the share of Capital Expenditure on Social services in total has seen increase. The share of Capital Expenditure in GSDP seems lower in the context of infrastructural development. The Government should reform its investment policies on infrastructure whenever it feels that its investment on infrastructure is inadequate and accordingly the capital investment has to be realigned across economic and social sectors in the state.*

Keywords: Capital Expenditure, Infrastructure Development and GSDP

Introduction

Infrastructure is an inevitable component which supports the activities of the economy. These facilities and services directly and indirectly support the activities of social and economic sectors. It also helps to maintain high growth rate by supporting production, consumption, distribution and exchange activities in the economy. Therefore the pace of development of economy is dependent on the level of infrastructure present in the economy. The Government is providing various economic and social infrastructural facilities across the country by spending from capital account of its budget. The Planned Capital Expenditure is devoted for building sound economic and social infrastructure. It is necessary to accelerate the pace of economic growth of a country. This article explores the trends and patterns in the growth of capital expenditure in Karnataka and analyses the relationship between the capital expenditure and state's GSDP.

Methodology

Review of Literature

Nanjundappa Report (2002) The high power committee on redressal of regional imbalance popularly known as Nanjundappa committee submitted its report in June 2002. The committee on the basis of 35 socio-economic indicators assessed the level of development of 175 taluks in

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the state. These indicators are spread over five sectors like agriculture, industry, economic infrastructure, and social infrastructure and population characters, taking the state average of development of these indicators as the benchmark equal to one. The committee prepared a comprehensive composite development index (CCDI) with appropriate weights and identified 114 taluks as backward talukas. These taluks were farther classified into three groups, most backward, more backward, and backward based on the value of the comprehensive composite development index (CCDI). those with the values ranging from 0.52 to 0.79 as most backward, 0.80 to 0.88 as more backward, 0.89 to 1.00 as backward. On this range the committee found that 39 most backward, 40 more backward and 35 backward talukas out of 175 in the Karnataka. Among the 39 most backward talukas 26 in north karnataka and 13 in south Karnataka

Ghosh and Prabir (2004) In this paper the reachers investigate the role played by various types of infrastructure facilities in determining the level of economic development across Indian states in the period of 1970-71 to 1999-2000. The major findings are interstate disparity in physical, social and financial infrastructural facilities have remained at high level over the same period and physical and social infrastructure facilities highly significant factors determining the interstate level of development, while financial infrastructure dose not play clear role

Shiddalingaswami and Raghavendra (2010) In this paper the authors analyze the trends and pattern of per capita income of Karnataka with special focus on district and division level disparities and also study the relationship among and between per capita income, human development, workforce and work participation rate from 1991 to 2007-08. The major finding of the study is social overhead capital (SOC) is key factor in promoting higher and economic development, which will reduce the regional disparity.

Data Collection and Analysis

The data with regard to capital expenditure incurred in Karnataka is collected from Annual Financial Statements of Budget documents of Government Documents. It is collected from the period 1991-92 to the latest 2016-17 Budget Document. The trends and patterns of capital expenditure have been analysed using percentages, averages and trend growth rate. The relationship between the capital expenditure and state's GSDP has been analysed with the help of Correlation Matrix.

Result and Discussion

Growth of Capital Expenditure in Karnataka

To accelerate the activities of social and economic sectors, priority has to be laid on increasing the investment on infrastructure of these sectors. Further it is also necessary to upgrade the infrastructure from time to time to maintain and sustain the growth rates of these sectors. Table 1 provides the growth of capital expenditure incurred by the Government in Karnataka from the period 1991-92 to 2014-15.

During the year 1991-92, the total capital expenditure spent in the state was Rs. 78586.08 lakhs. It has increased drastically since the years. It stood at Rs. 1962229.82 lakhs during 2014-15. It has progressed with a growth rate of 16.65 per cent. The variation in capital expenditure from 1991-92 to 2014-15 stood at 96.8 per cent. The average share of capital expenditure to the total expenditure during this period stood at 14.7 per cent and the average share of capital expenditure in state's GSDP stood at 2.61 per cent (See Chart 1).

During the year 2015-16, it is expected that the total capital expenditure in the state would be Rs. 2113391.32, an increase by 7.70 per cent over the previous year. Further during 2016-17, the total capital expenditure allotted by the Government stood at Rs. 2571590 lakhs. 16.49 per cent of the total expenditure is earmarked for infrastructure in the state.

Table 1: Growth of Capital Expenditure in Karnataka (Rs. in lakhs)

Year	Total Capital Expenditure	Capital Expenditure on Economic Services	Share to the Total	Capital Expenditure on Social Services	Share to the Total
1991-1992	78586.08	73982.42	94.14	3244.94	4.13
1992-1993	78663.36	72883.72	92.65	3871.70	4.92
1993-1994	118786.45	111283.37	93.68	5205.63	4.38
1994-1995	113681.17	104601.11	92.01	6861.02	6.04
1995-1996	124045.02	113342.97	91.37	8232.78	6.64
1996-1997	115195.46	106726.05	92.65	5051.11	4.38
1997-1998	120995.26	103718.10	85.72	13754.32	11.37
1998-1999	174422.74	125429.36	71.91	45537.63	26.11
1999-2000	177930.10	135219.96	76.00	37715.64	21.20
2000-2001	194689.99	160055.30	82.21	29869.78	15.34
2001-2002	210567.03	184182.96	87.47	21230.02	10.08
2002-2003	293599.85	256484.33	87.36	29530.23	10.06
2003-2004	302939.21	247375.02	81.66	42721.57	14.10
2004-2005	467368.24	405142.55	86.69	48604.34	10.40
2005-2006	582192.76	449870.57	77.27	110529.97	18.99
2006-2007	854257.22	692900.69	81.11	129262.51	15.13
2007-2008	864893.80	616224.31	71.25	214767.65	24.83
2008-2009	987028.72	683976.20	69.30	255516.14	25.89
2009-2010	1213668.32	899615.41	74.12	265067.74	21.84
2010-2011	1335516.63	1027300.50	76.92	261669.60	19.59
2011-2012	1550565.22	1218496.90	78.58	269519.54	17.38
2012-2013	1547847.17	1197301.40	77.35	291598.34	18.84
2013-2014	1694686.12	1339343.50	79.03	305268.23	18.01
2014-2015	1962229.82	1482294.50	75.54	418089.00	21.31
2015-2016 RE*	2113391.32	1562287.40	73.92	475010.89	22.48
2016-2017 BE\$	2571590.00	1770419.00	68.85	689429.00	26.81
Trend Growth Rate @	16.65	15.52	-	24.82	-
CV#	96.80	94.3	-	109.7	-

Note:

* RE refers to Revised Estimates, \$ BE refers to Budget Estimates,

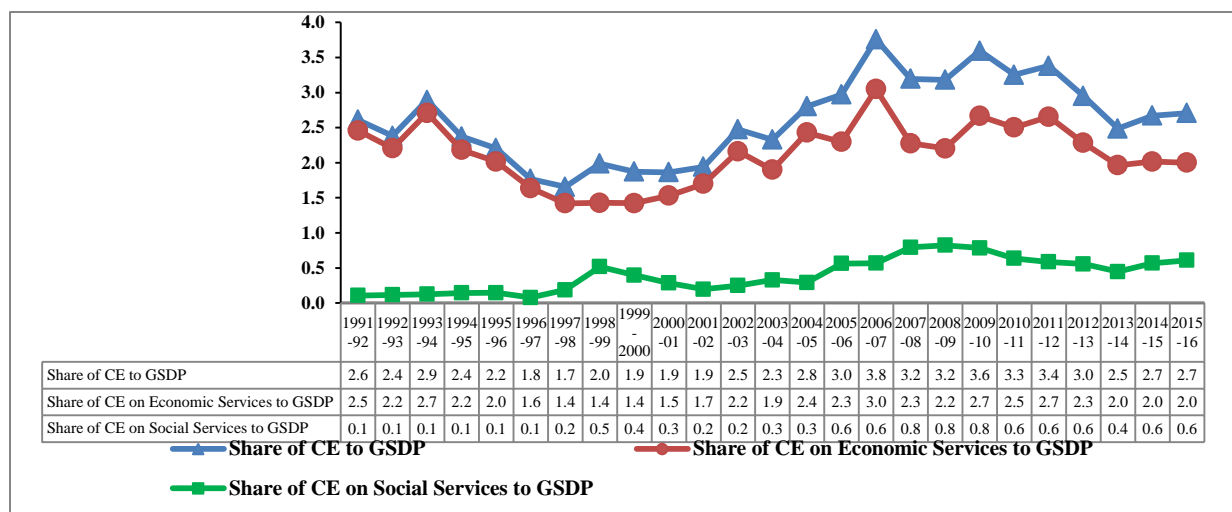
@ Trend Growth Rate is calculated using LOGEST function in Excel

CV refers to Co-efficient of Variation of Capital Expenditure over years

Source: Various Issues of Budget Documents, Government of Karnataka

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Chart 1: Share of Capital Expenditure in GSDP



Capital Expenditure on Economic Services

During the year 1991-92, the total capital expenditure spent on economic services in the state was Rs. 73982.42 lakhs. Nearly 94 per cent of the total capital expenditure was spent on economic services. Further it increased tremendously and stood at Rs.1482294.50 lakhs during 2014-15. It has progressed with a growth rate of 15.52 per cent. The variation in capital expenditure from 1991-92 to 2014-15 stood at 94.3 per cent. The share of capital expenditure on economic services to the total capital expenditure has seen drastic decline during this period. It has declined from 94 per cent to 75.5 per cent. On an average, the share stood at 82.3 per cent during this period. Further it is expected that the share of capital expenditure on economic services in the total capital expenditure for the year 2015-16 would be 73.9 per cent. The average share of capital expenditure on economic services in state's GSDP stood at 2.13 per cent during the period 1991-92 to 2014-15 and it is expected that during 2015-16, it would be 2 per cent in state's GSDP (See Chart 1). The total budget allotted for infrastructural development across economic services in 2016-17 is Rs.1770419 lakhs. (See Table 1).

Table 2 provides the growth of expenditure spent on infrastructure across selected economic services in Karnataka from the period 1991-92 to 2014-15. The economic services selected for analysis are agriculture and allied sector; irrigation and flood control; energy; industry and minerals; transport.

The trend growth rate of capital expenditure on transport sector is highest. It has progressed with a growth rate of 22.88 per cent. It is followed by growth rate across agricultural and allied sector which stood at 13.78 per cent. The Energy sector is crucial and critical input for running activities of different sectors in the state. The capital expenditure spent on energy sector is progressed at a negative rate of 98.75 per cent. Across the various economic services, it can be noticed that the capital expenditure has shown much variation in energy sector. The value of CV has stood at 142.4 per cent. It is followed by agriculture and allied sector. Comparatively, the growth of capital expenditure across irrigation and flood control is more consistent because the value of CV is comparatively less i.e., 78.45 per cent.

Table 2: Capital Expenditure on Selected Economic Services and its Share in Total Capital Expenditure on Economic Services

Year	Agricultural & allied services	Share in Total	Irrigation & flood control	Share in Total	Energy	Share in Total	Industries & minerals	Share in Total	Transport	Share in Total
1991-1992	1306.1	1.8	37376.7	50.5	24514.4	33.1	2656.1	3.6	8155.3	11.0
1992-1993	1485.8	2.0	51721.1	71.0	7216.3	9.9	3358.9	4.6	9050.8	12.4
1993-1994	856.7	0.8	70639.9	63.5	23163.0	20.8	3401.7	3.1	13006.2	11.7
1994-1995	1333.5	1.3	74473.8	71.2	12001.1	11.5	4710.5	4.5	11844.1	11.3
1995-1996	1648.7	1.5	79647.3	70.3	14052.0	12.4	3838.2	3.4	14262.9	12.6
1996-1997	2473.1	2.3	91507.4	85.7	0.0	0.0	1702.4	1.6	11162.8	10.5
1997-1998	1886.9	1.8	85263.1	82.2	0.0	0.0	3633.5	3.5	12990.6	12.5
1998-1999	2093.6	1.7	100103.0	79.8	0.0	0.0	6607.7	5.3	16469.7	13.1
1999-2000	1262.9	0.9	110775.6	81.9	0.1	0.0	5712.1	4.2	17513.6	13.0
2000-2001	3199.1	2.0	122139.2	76.3	0.0	0.0	4984.6	3.1	29018.9	18.1
2001-2002	2763.7	1.5	152486.3	82.8	0.0	0.0	1687.9	0.9	26465.9	14.4
2002-2003	2295.0	0.9	202845.6	79.1	0.0	0.0	1607.3	0.6	42308.2	16.5
2003-2004	744.8	0.3	188145.9	76.1	0.0	0.0	351.9	0.1	51021.4	20.6
2004-2005	1880.1	0.5	300972.5	74.3	0.0	0.0	887.4	0.2	89582.4	22.1
2005-2006	1716.2	0.4	332969.6	74.0	5000.0	1.1	1209.6	0.3	103044.8	22.9
2006-2007	3314.8	0.5	411573.7	59.4	43047.0	6.2	6371.6	0.9	182350.3	26.3
2007-2008	7893.6	1.3	344149.8	55.8	43290.4	7.0	8590.0	1.4	151161.8	24.5
2008-2009	3984.6	0.6	298588.9	43.7	93662.5	13.7	26143.4	3.8	224674.6	32.8
2009-2010	6389.1	0.7	394199.0	43.8	175037.1	19.5	20575.2	2.3	264638.9	29.4
2010-2011	9898.5	1.0	476527.0	46.4	138109.7	13.4	10383.5	1.0	306854.0	29.9
2011-2012	19843.7	1.6	569036.4	46.7	108164.5	8.9	37208.7	3.1	403099.8	33.1
2012-2013	21001.2	1.8	511512.3	42.7	116090.3	9.7	11564.1	1.0	468337.0	39.1
2013-2014	26134.9	2.0	638381.8	47.7	30488.2	2.3	17729.2	1.3	529847.3	39.6
2014-2015	26639.7	1.8	777922.1	52.5	25208.9	1.7	23998.1	1.6	514677.1	34.7
2015-2016 RE	17911.0	1.1	739559.0	47.3	82722.0	5.3	35277.5	2.3	562100.0	36.0
2016-2017 BE	26980.0	1.5	974455.0	55.0	6138.0	0.3	38792.0	2.2	565528.0	31.9
Trend Growth Rate	13.78		13.03		-98.75		9.35		22.88	
CV	129.46		78.45		142.41		110.05		120.72	

Source: Various Issues of Budget Documents, Government of Karnataka

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During the year 2016-17, the highest share of capital expenditure on economic services is allotted to irrigation and flood control. Nearly 55 per cent is earmarked for this sector. This is followed by 31.9 per cent which is allotted for transport sector. The average share of capital expenditure spent on agriculture and allied sectors during the period 1991-92 to 2014-15 stood at 1.3 per cent. Across irrigation and flood control, it stood at 64.9 per cent. Further across energy it is 7.1 and across industry and minerals it stood at 2.3 per cent. Lastly the average share for transport sector stood at 21.3 per cent.

Capital Expenditure on Social Services

During the year 1991-92, the total capital expenditure spent on social services in the state was Rs. 3244.94 lakhs. 4.13 per cent of the total capital expenditure was spent on social services. Further the capital expenditure increased tremendously and stood at Rs.418089 lakhs during 2014-15. It has progressed with an impressive growth rate of 24.82 per cent. The variation in capital expenditure on social services from 1991-92 to 2014-15 stood at 109.7 per cent. The share of capital expenditure on economic services to the total capital expenditure has seen considerable increase during this period. It has risen from 4.13 per cent to 21.31 per cent. On an average, the share stood at 14.62 per cent during this period. Further it is expected that the share of capital expenditure on economic services in the total capital expenditure for the year 2015-16 would be 22.48 per cent. The average share of capital expenditure on social services in state's GSDP stood at just 0.4 per cent during the period 1991-92 to 2014-15 and it is expected that during 2015-16, it would be 0.6 per cent in state's GSDP (See Chart 1). The total budget allotted for infrastructural development across social services in 2016-17 is Rs.689489 lakhs. 26.81 per cent out of the total capital expenditure is earmarked for social services. (See Table 1).

Table 3 provides the growth of expenditure spent on infrastructure across selected social services in Karnataka from the period 1991-92 to 2014-15. The social services selected for analysis are education, sports, arts and culture; medical and public health.

The capital expenditure on education, sports, arts and culture has progressed at a growth rate of 22.91 per cent during this period. During the year 2015-16, it is expected that the capital expenditure spent on this social sector would be Rs. 75323 lakhs. The share of capital expenditure spent on this sector to the total capital expenditure on social services has been dwindling during this period. On an average, it stood at 9.23 per cent. Further in 2015-16, it is expected to be 15.86 per cent. There is huge variation in the capital expenditure spent on this sector because the value of CV is quite high at 131.38 per cent. During the year 2016-17, the total capital expenditure allotted for this sector is Rs.84128 lakhs. 12.20 percent of the total capital expenditure on social services is earmarked for this sector.

The capital expenditure on medical and public health has progressed at a growth rate of 20.44 per cent during this period. During the year 2015-16, it is expected that the capital expenditure spent on this social sector would be Rs. 70299.3 lakhs. The share of capital expenditure spent on this sector to the total capital expenditure on social services has not been consistent during this period. It has seen variation from highest share of 60.85 per cent to lowest share of 0.70 percent. On an average, it stood at 19.24 per cent. Further in 2015-16, it is expected to be 14.80 per cent. The variation in the capital expenditure spent on this sector is high with CV value of 116.10 per cent. During the year 2016-17, the total capital expenditure allotted for the medical and public health sector is Rs.63008 lakhs. 9.14 percent of the total capital expenditure on social services is earmarked for this sector.

Table 3: Capital Expenditure on Selected Social Services and Its Share in Total Capital Expenditure on Social Services

Years	Education, sports, art & culture	Share in Total	Medical & Public Health	Share in Total
1991-1992	363.3	11.20	527.8	16.26
1992-1993	575.3	14.86	712.1	18.39
1993-1994	906.4	17.41	1024.6	19.68
1994-1995	1049.9	15.30	1111.7	16.20
1995-1996	892.1	10.84	1692.1	20.55
1996-1997	879.4	17.41	1039.7	20.58
1997-1998	879.8	6.40	8369.1	60.85
1998-1999	11023.3	24.21	11040.2	24.24
1999-2000	1424.8	3.78	10821.3	28.69
2000-2001	613.9	2.06	10175.5	34.07
2001-2002	446.9	2.10	9951.7	46.88
2002-2003	670.8	2.27	5047.3	17.09
2003-2004	530.7	1.24	3677.3	8.61
2004-2005	492.4	1.01	830.1	1.71
2005-2006	5267.1	4.77	768.9	0.70
2006-2007	5498.5	4.25	14295.4	11.06
2007-2008	12077.4	5.62	35423.8	16.49
2008-2009	19932.4	7.80	30064.8	11.77
2009-2010	21569.9	8.14	32097.1	12.11
2010-2011	42230.9	16.14	43686.1	16.70
2011-2012	32446.7	12.04	35903.1	13.32
2012-2013	36143.5	12.39	36129.9	12.39
2013-2014	38810.7	12.71	44041.4	14.43
2014-2015	31721.1	7.59	79042.6	18.91
2015-2016 RE	75323.0	15.86	70299.3	14.80
2016-2017 BE	84128.0	12.20	63008.0	9.14
Trend Growth Rate	22.91		20.44	
CV	131.38		116.10	

Source: Various Issues of Budget Documents, Government of Karnataka

Relation between Capital Expenditure on Socio-Economic Services and GSDP

This section analyses the association between Capital Expenditure on various socio-economic services and the economic growth by using correlation matrix. Gross State Domestic Product (GSDP) is the important identifier for economic growth.

Table 4 suggests that the total capital expenditure in Karnataka is highly significant with the GSDP. It has high positive correlation of 0.983. Further the capital expenditure on economic services and GSDP is also found to have high positive correlation significant at 1 per cent level of significance. Further the association between capital expenditure on social services and GSDP is found to be highly positively correlated at 1 per cent level of significance.

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Table 4: Correlation Matrix between Capital Expenditure (CE) and State's GSDP

	CE on Economic Services	CE on Social Services	Total CE	State's GSDP
CE on Economic Services	1			
CE on Social Services	0.972**	1		
Total CE	0.998**	0.984**	1	
State's GSDP	0.982**	0.968**	0.983**	1

Note: **Correlation is significant at 0.01 level of significance

The association between various economic services and State's GSDP is depicted in Table 5 and the association between Capital Expenditure on selected social services and State's GSDP is depicted in Table 6.

Table 5: Correlation Matrix between CE on selected Economic Services and State's GSDP

	CE on Agriculture & Allied Services	CE on Irrigation & Flood Control	CE on Energy	CE on Industries & Minerals	CE on Transport	State's GSDP
CE on Agriculture & Allied Services	1					
CE on Irrigation & Flood Control	0.887**	1				
CE on Energy	0.450*	0.556**	1			
CE on Industries & Minerals	0.725**	0.761**	0.658**	1		
CE on Transport	0.940**	0.962**	0.626**	0.812**	1	
State's GSDP	0.930**	0.971**	0.554**	0.798**	0.988**	1

Note: *Correlation is significant at 0.05 level of significance

**Correlation is significant at 0.01 level of significance

Table 6: Correlation Matrix between CE on selected Social Services and State's GSDP

	CE on Education, Sports, Arts & Culture	CE on Medical & Health	State's GSDP
CE on Education, Sports, Arts & Culture	1		
CE on Medical & Health	0.883**	1	
State's GSDP	0.915**	0.943**	1

Note: **Correlation is significant at 0.01 level of significance

It is found that the association of Capital expenditure on energy with GSDP and Capital Expenditure on Industries and minerals with GSDP is moderately correlated significant at 1 per cent level of significance. Whereas the correlation between the Capital Expenditure on Agriculture and allied services with GSDP, Capital Expenditure on Irrigation and Flood control with GSDP and between Capital Expenditure on transport with GSDP are highly and positively correlated at 1 per cent level of significance. Further it can also be noticed that the relation between Capital Expenditure on Agriculture and allied services and Capital Expenditure on

Energy has low positive correlation significant at 5 per cent. It is found that the association of Capital expenditure on Education, Sports, Arts and Culture with GSDP is highly positively correlated at 1 per cent. Similarly the association of Capital expenditure on Medical and Public Health with GSDP is also highly positively correlated at 1 per cent.

Conclusion

This article analysed the expenditure spent on infrastructure development in Karnataka state by the Government and examined the correlation between the capital expenditure spent on various socio-economic services with GSDP. It was found that there is considerable increase in Government's expenditure on infrastructure across social and economic services. Further the share of Capital Expenditure on Economic services in total Capital expenditure has declined, but the share of Capital Expenditure on Social services in total has increased. The association between the Capital Expenditure on Economic and Social services with GSDP has high-positive correlation. The Government should reform its investment policies on infrastructure whenever it feels that its investment on infrastructure is inadequate and accordingly the capital investment has to be realigned across economic and social sectors. This is needed to boost the infrastructural development in the state.

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