

PUBLIC EXPENDITURE AND NATIONAL INCOME IN INDIA

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ABSTRACT:

Public expenditure is one of the important instruments of fiscal policy to influence the process of economic growth. Public expenditure is increasing in almost all the developing countries. There are many reasons why public expenditure is increasing. Increase in welfare activities, increase in defence expenditure, increase in population, planning, increase in public investment, increase in Research and Development, increase in administrative expenditure are some important factors causing the increase in public expenditure. The general expectation is that public expenditure when used for productive purpose will increase the production, national income and economic growth.

This study aims at studying the growth of public expenditure in India over a period of 30 years and the influence of public expenditure on GDP during the three decades. The public expenditure of the Central Government in constant prices has increased from Rs 1152 billions in 1981-82 to Rs 8496 billions in 2010-11. Thus the public expenditure of the Central Government has increased by more than seven times during the period of 30 years. During the decade 2001-02 to 2010-11, the public expenditure of the Central Government has increased annually by Rs 464 billions. The per capita public expenditure has increased by Rs 336 per year. For the period 1981-82 to 1990-91, GDP increases by Rs. 4.23 if public expenditure increases by one Rupee. During 1991-92 to 2000-01 GDP increases by Rs. 6.90 when public expenditure increases by one

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Rupee. During the period 2001-02 to 2010-11, GDP increases by Rs. 5.89 if the public expenditure increases by one Rupee.

The elasticities of GDP with respect to public expenditure for the three sub periods, namely, 1981-82 to 1990-91, 1991-92 to 2000-01 and 2001-02 to 2010-11 are 0.750, 1.109 and 0.940 respectively. Before liberalization, one per cent increase in public expenditure has led to 0.750 per cent increase in GDP. However, GDP has increased by more than one per cent for one per cent increase in public expenditure during 1991-92 to 2000-01. The proportionate increase in GDP is reduced to 0.94 for one per cent increase in public expenditure during 2001-02 to 2010-11. Therefore, the elasticity of GDP is the highest with respect to public expenditure during the decade 1991-92 to 2000-01.

Public expenditure should be increased only when it is necessary for development purpose. Otherwise, it should not be increased since increase in public expenditure forces the government to increase the taxes which in turn increases the tax burden of the people. The government should utilize its revenue only to increase the public welfare. Otherwise increase in public expenditure cannot be justified.

1. INTRODUCTION:

Public expenditure is one of the important instruments of fiscal policy to influence the process of economic growth. Public expenditure is increasing in almost all the developing countries. There are many reasons why public expenditure is increasing. Increase in welfare activities, increase in defence expenditure, increase in population, planning, increase in public investment, increase in Research and Development and increase in administrative expenditure are some important factors causing the increase in public expenditure. The general expectation is that public expenditure when used for productive purpose will increase the production, national income and economic growth.

This study aims at studying the growth of public expenditure in India over a period of 30 years and the influence of public expenditure on GDP during the three decades.

II. METHODOLOGY:

In this study, the total public expenditure of the Central Government is only included. The time taken for analysis is 30 years period from 1981-82 to 2010-11. This period is divided in to three sub periods, namely, 1981-82 to 1990-91, 1991-92 to 2000-01 and 2001-02 to 2010-11. The data required are total public expenditure of the Central Government, GDP, Population and Whole sale price index number. These data are taken from the various issues of Hand Book of Statistics on the Indian Economy. Data available in current prices are converted in to constant prices (2004-05) using the appropriate deflators.

For the public expenditure expressed in constant prices of Indian Rupee, index numbers and annual growth rates have been worked out. To know the annual increase in public expenditure and to estimate the compound growth rate, simple linear regression and semi – log linear regression models have been used. To study the influence of public expenditure on GDP, simple linear regression model is used by taking the public expenditure as the independent and GDP as the dependent variables. To find the elasticity of GDP with respect to public expenditure, the log-log model is used in which the log of public expenditure is taken as the independent variable and the log of GDP is taken as the dependent variable. The estimated regression coefficients have been tested against the null hypothesis that their value is zero using the t test.

III. REVIEW OF LITERATURE:

In the field of public expenditure, only limited studies are available. These works concentrate more on the theoretical side of the public expenditure. Some works available in this category are: Lynn MacDonald [2008], Premchand A [2004], John Charles Bradbury and E. Frank Stephenson [2003], George Tridimas [2001], Ludger Schuknecht [2000], Robin Boadway and Maurice Marchand [1995], Daniel A. Graham [1992], and so on. A few works undertaken on Indian Public Expenditure are: S. Mahendar Dev and Jos Mooij [2002], Shenggen Fan, Peter Hazell and S.K.Thoratk [2000], and so on. Specific study on the public expenditure of India is not available much in the literature.

IV. ANALYSIS AND INTERPRETATION:

1. Growth of Total Public Expenditure:

The total public expenditure of India was Rs. 1152 billions in 1981-82. It increased continuously year by year and reached Rs. 2576 billions in 1990-91. The average value of total public expenditure is Rs. 1879.83 billions. Index numbers show that the public expenditure has increased by 2.23 times in this period.

During 1991-92 to 2000-01, the total public expenditure increased from Rs. 2401 billions to Rs. 4052 billions. It increased by 1.68 times. The average value of public expenditure in this period is Rs. 3135 billions.

The total public expenditure was Rs. 4352 billions in the year 2001-02. It increased to Rs. 4794 billions in the next year. However, it declined marginally to Rs. 4671 billions. Thereafter it increased continuously and reached Rs. 8496 billions in 2010-11. During this period, total public expenditure has increased by 1.95 times. The average value of total public expenditure in this period is Rs. 5876 billions.

2. Trend Analysis of Total Public Expenditure:

The results of the trend analysis for the total public expenditure in constant prices for the three sub-periods are given in Table 4. During 1981-82, the total public expenditure has increased annually by Rs. 156 billions. This value is statistically significant at one per cent level. The value of adjusted R^2 is 0.98 and it implies that the total public expenditure has registered a linear trend in this period. The total public expenditure increased at the compound growth rate of 9.09 per cent per year.

During 1991-92 to 2000-01, the total public expenditure has increased annually by Rs. 201 billions. This value is statistically significant at one per cent level. The value of adjusted R^2 is 0.94 and it implies that the total public expenditure in this period also has registered a linear trend. The regression coefficient of the semi-log linear regression model suggests that the total public expenditure increased at the compound growth rate of 6.61 per cent.

During 2001-02 to 2010-11, the total public expenditure increased annually by Rs. 464 billions. This value is statistically significant at one per cent level. The value of adjusted R^2 is 0.87 and it implies that the total public expenditure has registered a linear trend. The regression

coefficient of the semi-log linear regression model implies that the total public expenditure has increased at the compound growth rate of 7.89 per cent per year.

3. Public Expenditure as a Percentage to GDP:

Public expenditure worked out as a percentage to GDP will measure the growth of public expenditure in relation to the GDP. The values of public expenditure expressed as a percentage of GDP for various years are given in Table 5. It has increased from a minimum of 15.04 to a maximum of 19.00 per cent in 1986-87 and then declined to 18.42 per cent in 1990-91. The average during this decade is 17.96.

In the next decade, that is during 1991-92 to 2000-01, public expenditure formed 16.99 per cent in 1991-92 and it came down to 15.53 per cent in 2000-01 with fluctuations. The average for this decade is 15.69 per cent. During 2001-02 to 2010-11, it varied between a minimum of 13.90 (2006-07) and a maximum of 16.87 (in 2002-03). The average for this decade is 15.36.

The average values indicate that public expenditure as a percentage to GDP is slowly declining. It is a trend to be welcome. Government at this stage should not try to increase the public expenditure. Rather it should try to increase the productivity and marginal social benefit from the public expenditure.

4. Per capita Public Expenditure:

Per capita public expenditure is one of the indicators of economic development. The higher the per capita public expenditure, higher will be the growth rate. The growth of per capita public expenditure implies that the growth rate of public expenditure is higher than the growth rate of population. Since independence, per capita public expenditure is also growing. The data on per capita public expenditure over the three decades are given in Table 6.

During 1981-82 to 1990-91, the per capita public expenditure is growing continuously, except the year 1987-88. There is a marginal decline in per capita public expenditure in this year. It has increased in constant prices from Rs. 1665 to Rs. 3071 during this decade. It has increased by 1.84 times during this period. The average value of per capita public expenditure in this period is Rs. 2476.

During the period 1991-92 to 2000-01, the per capita public expenditure has grown from Rs. 2805 to Rs. 3977. However, there are marginal declines in 1991-92, 1992-93 and 1994-95. The per capita public expenditure has increased by 1.42 times in this period. The average value of per capita public expenditure in this period is Rs. 3322.

In the year 2001-02, the per capita public expenditure is Rs. 4180. It has increased continuously in different proportions and touched the highest value of Rs. 7164 in the year 2010-11. During this decade, the per capita public expenditure has increased by 1.71 times. The average value of per capita public expenditure in this decade is Rs. 5238/-. Thus per capita public expenditure has increased by 4.30 times during the period of 30 years.

5. Trend Analysis of Per capita Public Expenditure:

To study the trend of per capita public expenditure, simple linear regression and semi-log linear regression models are fitted by taking the time as the independent variables, for the three sub periods. The results are given in Table 7. During the period 1981 -82 to 1990-91, the per capita public expenditure has increased by Rs. 161 per year. This value is significant at one per cent level. The value of adjusted R^2 is 0.96 and it implies that per capita public expenditure has registered a linear trend in this period.

During 1991-92 to 2000-01, the per capita public expenditure has increased by Rs. 149 per year. Compared to earlier decade this increase is less by Rs. 12 annually. The regression value is significant at one per cent level. The value of adjusted R^2 is 0.90 and it suggests that the per capita public expenditure has registered a linear trend in this period also.

During the decade 2001-02 to 2010-11, the per capita public expenditure has increased by Rs. 336 per year. This value is significant at one per cent level. The value adjusted R^2 suggests that 83 per cent of variations in the dependent variable are explained by the independent variable.

The semi – log linear regression models suggest that the per capita public expenditure has grown at the compound growth rate of 7.04 per cent during 1981-81 to 1990-91, 4.60 per cent during 1991-92 to 2000-01 and 6.39 per cent during 2001-02 to 2010-11. Thus the per capita public expenditure has grown more in terms of compound growth rate during 1981-82 to 1990-91.

However, in terms of absolute value, per capita public expenditure has grown by the highest value of Rs. 336 per year during 2001-02 to 2010-11. Compared to earlier decades, the per capita public expenditure grows by more than two times during 2001-02 to 2010-11.

6. Relationship between Public Expenditure and GDP:

The relationship between public expenditure and GDP has been studied through simple linear regression model by taking GDP in constant prices as the dependent variable and public expenditure of the Central Government in constant prices as the independent variable for the three sub – periods and the results are given in Table 8.

For the period 1981-82, GDP increases by Rs. 4.23 if public expenditure increases by one Rupee. This value is statistically significant at one per cent level. The value of adjusted adjusted R^2 is 0.96 and it implies that 96 per cent of variations in GDP are explained by the variations in public expenditure in this period. In the next decade, that is, during 1991-92 to 2000-01 GDP increases by Rs. 6.90 when public expenditure increases by one Rupee. This value is also significant at one per cent level. In this period also, 96 per cent variations in GDP are explained by the public expenditure. During the period 2001-02 to 2010-11, GDP increases by Rs. 5.89 if the public expenditure increases by one Rupee. In this model also, the regression coefficient is significant. In this period, 94 per cent of variations in GDP are explained by the variations in public expenditure.

7. Elasticity of GDP w.r. to Public Expenditure:

The elasticity of GDP with respect to public expenditure can be defined as the proportionate change in GDP due to proportionate change in Public expenditure. When logarithm of GDP is defined as a function of logarithm public expenditure, and regression model is fitted, the first order derivative of GDP with respect to public expenditure will measure the elasticity of GDP with respect to public expenditure. Therefore the log linear model, $\log(\text{GDP}) = a + b \log(\text{Public Expenditure})$ is fitted. The b coefficient will measure the elasticity of GDP with respect to public expenditure. For the data on GDP and public expenditure, this type of log linear models are fitted for the three decades and the results are given in Table 9.

The elasticity of GDP with respect to public expenditure the regression coefficient for the three sub periods, namely, 1981-82 to 1990-91, 1991-92 to 2000-01 and 2001-02 to 2010-11 are

0.750, 1.109 and 0.940 respectively. Before liberalization, one per cent increase in public expenditure has led to 0.759 per cent increase in GDP. However, GDP has increased by more than one per cent for one per cent increase in public expenditure during 1991-92 to 2000-01. The proportionate increase in GDP is reduced to 0.94 for one per cent increase in public expenditure during 2001-02 to 2010-11. Therefore, the elasticity of GDP is the highest with respect to public expenditure during the decade 1991-92 to 2000-01.

V. CONCLUSION:

The public expenditure of the Central Government in constant prices has increased from Rs. 1152 billions in 1981-82 to Rs. 8496 billions in 2010-11. Thus the public expenditure of the Central Government has increased by more than seven times during the period of 30 years. During the decade 2001-02 to 2010-11, the public expenditure of the Central Government has increased annually by Rs. 464 billions. The per capita public expenditure has increased by Rs. 335 per year. Public expenditure should be increased only when it is necessary for development purpose. Otherwise, it should not be increased since increase in public expenditure forces the government to increase the taxes which in turn increases the tax burden of the people. The government should utilize its revenue only to increase the public welfare. Otherwise increase in public expenditure cannot be justified.

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TABLE 1
Public Expenditure of the Central Government During 1981-82 to 1990-91
(Rupee in Billions)

Year	Public Expenditure	Index No	Annual Growth Rate (in Per cent)
1981-82	1152.35	100.00	-
1982-83	1339.57	116.25	16.25
1983-84	1459.47	126.65	8.95
1984-85	1665.46	144.53	14.11
1985-86	1870.28	162.30	12.30
1986-87	2022.27	175.49	8.13
1987-88	2030.19	176.18	0.39
1988-89	2177.93	189.00	7.28
1989-90	2504.58	217.35	8.69
1990-91	2576.19	223.56	2.86
Average	1879.83		9.47

Source: Hand Book of Statistics on the Indian Economy 2011-12.

TABLE 2
Public Expenditure of the Central Government During 1991-92 to 2000-01
(Rupee in Billions)

Year	Public Expenditure	Index No	Annual Growth Rate
1991-92	2401.57	100.00	-6.78
1992-93	2402.57	100.04	0.04
1993-94	2735.53	113.91	13.86
1994-95	2747.92	114.42	0.45
1995-96	2819.76	117.41	2.61
1996-97	3039.52	126.56	7.79
1997-98	3368.32	140.25	10.82
1998-99	3827.94	159.39	13.65
1999-20	3958.22	164.82	3.40
2000-01	4052.16	168.73	2.37
Average	3135.35		7.64

Source: Hand Book of Statistics on the Indian Economy 2011-12.

TABLE 3
Public Expenditure of the Central Government During 2001-02 to 2010-11
 (Rupee in Billions)

Year	Public Expenditure	Index No	Annual Growth Rate
2001-02	4352.30	100.00	7.41
2002-03	4794.45	110.16	10.16
2003-04	4671.77	107.34	-2.56
2004-05	4778.60	109.79	2.29
2005-06	4973.56	114.27	4.08
2006-07	5359.03	123.13	7.75
2007-08	6229.83	143.14	16.25
2008-09	7139.24	164.03	14.60
2009-10	7968.98	183.10	11.62
2010-11	8496.44	195.22	6.62
Average	5876.42		10.58

Source: Hand Book of Statistics on the Indian Economy 2011-12.

TABLE 4
Results of Trend Analysis for the Public Expenditure of the Central Government in India

Period	Model	a	b	SE of b	t	R ²	Adj. R ²
1981-82 to 1990-91	Simple linear	1019.559	156.413	7.016	22.294	0.984	0.982
	Semi-log linear	7.032	0.087	0.005	16.188	0.970	0.967
1991-92 to 2000-01	Simple linear	2025.755	201.745	16.874	11.956	0.947	0.940
	Semi-log linear	7.680	0.064	0.005	14.095	0.961	0.956
2001-02 to 2010-11	Simple linear	3323.237	464.215	60.520	7.670	0.880	0.865
	Semi-log linear	8.233	0.076	0.008	9.003	0.910	0.8799



TABLE 5
Public Expenditure as Percentage to GDP

Year	Percentage	Year	Percentage	Year	Percentage
1981-82	15.04	1991-92	16.99	2001-02	15.96
1982-83	16.39	1992-93	16.28	2002-03	16.87
1983-84	16.49	1993-94	16.39	2003-04	15.46
1984-85	17.89	1994-95	15.80	2004-05	14.74
1985-86	18.58	1995-96	14.92	2005-06	14.07
1986-87	19.00	1996-97	14.54	2006-07	13.90
1987-88	18.15	1997-98	15.19	2007-08	14.57
1988-89	17.67	1998-99	15.95	2008-09	15.98
1989-90	18.97	1999-20	15.26	2009-10	16.14
1990-91	18.42	2000-01	15.53	2010-11	15.87
Average	17.66	Average	15.69	Average	15.36

Source: Worked out from the data on Public Expenditure in the Hand Book of Statistics on the Indian Economy 2011-12.

TABLE 6
Per capita Public Expenditure of the Central Government
(in Rupees)

Year	Per capita Expenditure	Year	Per capita Expenditure	Year	Per capita Expenditure
1981-82	1665.25	1991-92	2805.57	2001-02	4184.90
1982-83	1892.05	1992-93	2755.24	2002-03	4540.20
1983-84	2018.63	1993-94	3066.74	2003-04	4357.99
1984-85	2253.67	1994-95	3019.69	2004-05	4388.06
1985-86	2477.19	1995-96	3038.53	2005-06	4496.89
1986-87	2760.13	1996-97	3213.02	2006-07	4776.32
1987-88	2716.21	1997-98	3494.11	2007-08	5474.37
1988-89	2862.58	1998-99	3894.14	2008-09	6186.52
1989-90	3046.93	1999-20	3954.27	2009-10	6811.09
1990-91	3070.55	2000-01	3976.60	2010-11	7163.95
Average	2476.32	Average	3321.79	Average	5238.03

Source: Worked Out from the Data Published in Various issues of Handbook of Statistics on the Indian Economy 2011-12.

TABLE 7
Results of Trend Analysis of Per capita Public Expenditure of Central Government in India

Period	Model	a	b	SE of b	t	R ²	Adj. R ²
1981-82 to 1990-91	Simple linear	1588.913	161.346	10.770	14.981	0.966	0.961
	Semi-log linear	7.420	0.068	0.006	11.490	0.943	0.936
1991-92 to 2000-01	Simple linear	2499.550	149.498	16.426	9.101	0.912	0.901
	Semi-log linear	7.854	0.045	0.005	9.747	0.922	0.913
2001-02 to 2010-11	Simple linear	3391.739	335.689	50.721	6.618	0.846	0.826
	Semi-log linear	8.207	0.062	0.009	7.172	0.865	0.849

TABLE 8
Relationship between Public Expenditure and GDP in India

Period	Variables	a	b	SE of b	t	R ²	Adj. R ²
1981-82 to 1990-91	GDP → Total Expenditure	2236.067	4.419	0.256	17.262	0.974	0.971
1991-92 to 2000-01	GDP → Total Expenditure	-1551.340	6.905	0.441	15.664	0.968	0.964
2001-02 to 2010-11	GDP → Total Expenditure	3635.113	5.892	0.514	11.457	0.943	0.935

TABLE 9
Elasticity of GDP with respect to Public Expenditure in India

Period	Variables	a	b	SE of b	t	R ²	Adj. R ²
1981-82 to 1990-91	GDP → Total Expenditure	3.617	0.750	0.048	15.575	0.968	0.964
1991-92 to 2000-01	GDP → Total Expenditure	0.975	1.105	0.075	14.801	0.965	0.960
2001-02 to 2010-11	GDP → Total Expenditure	2.390	0.940	0.092	10.219	0.929	0.920

DIAGRAM 1
TREND OF PUBLIC EXPENDITURE IN INDIA
DURING 1981-82 TO 1990-91

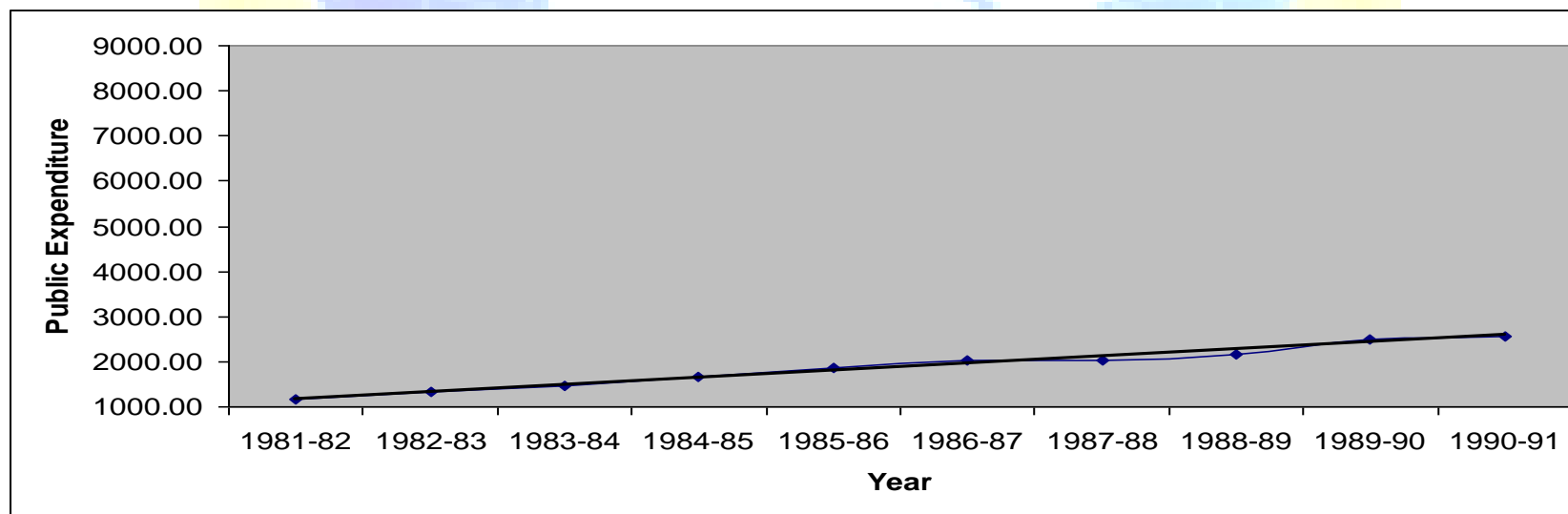


DIAGRAM 2
TREND OF PUBLIC EXPENDITURE IN INDIA
DURING 1991-92 TO 2000-01

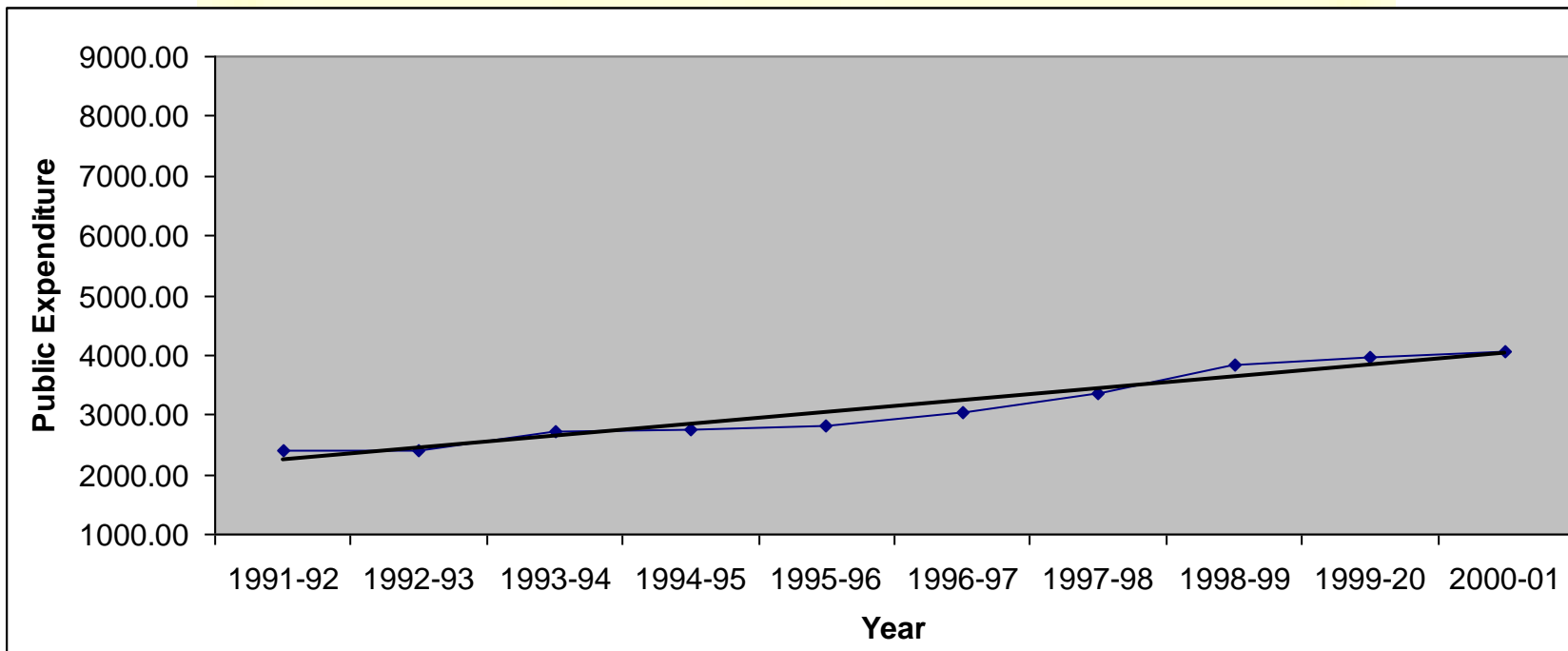


DIAGRAM 3
TREND OF PUBLIC EXPENDITURE IN INDIA
DURING 2001-02 TO 2010-11

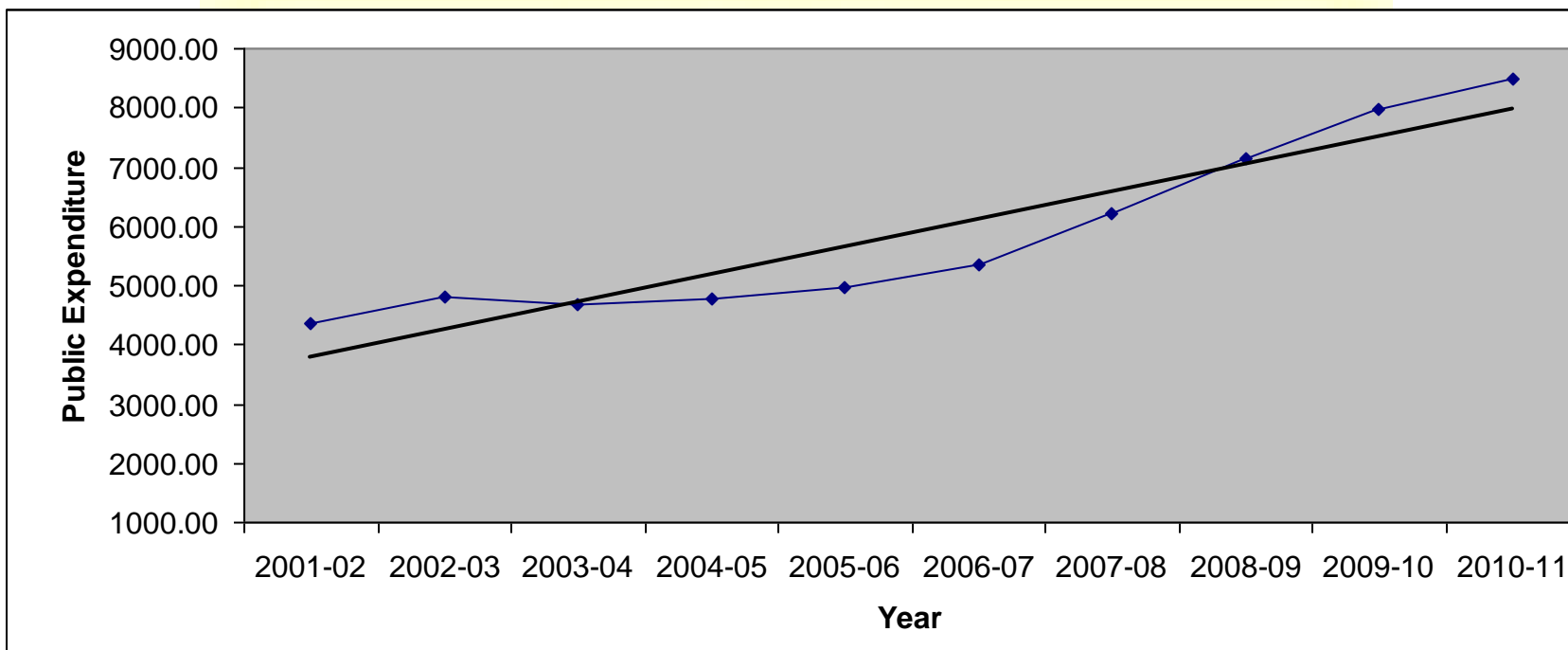


DIAGRAM 4
TREND OF PER CAPITA PUBLIC EXPENDITURE IN INDIA
DURING 1981-82 TO 1990-91

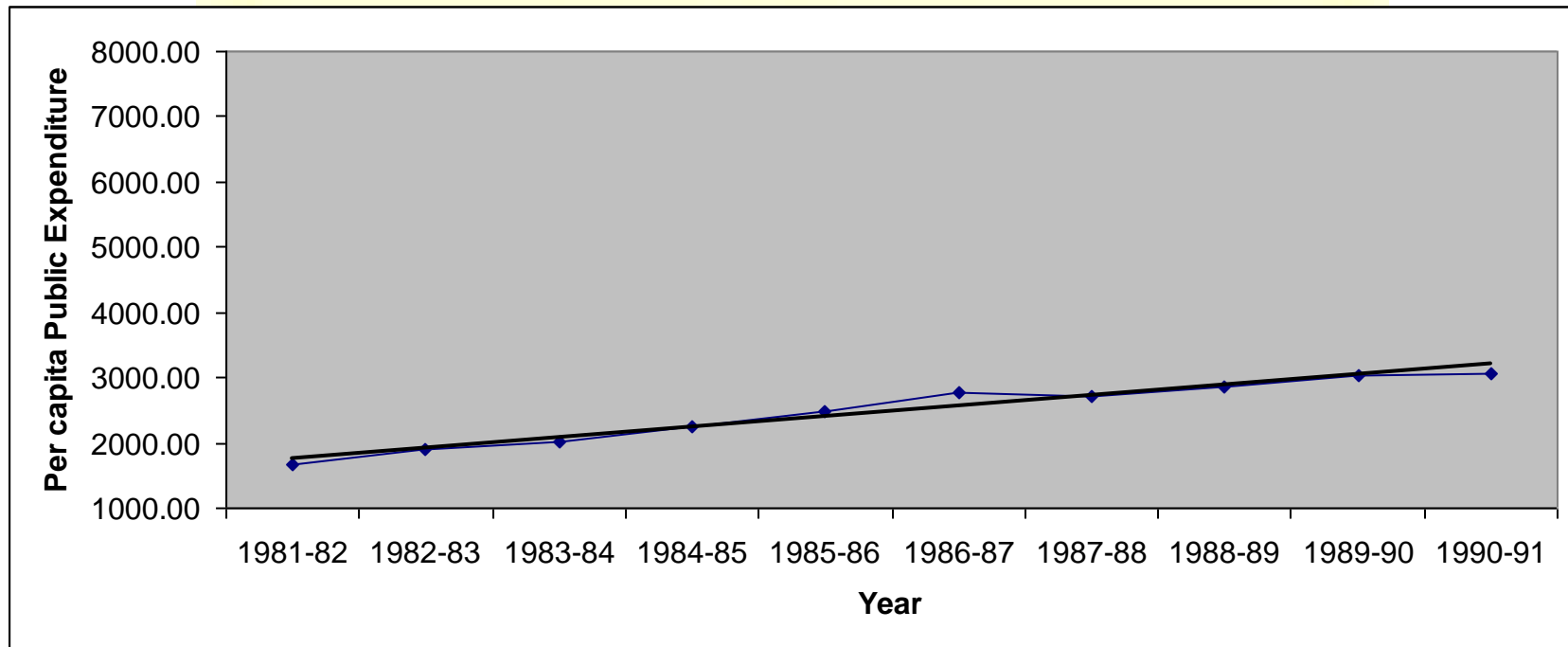


DIAGRAM 5
TREND OF PER CAPITA PUBLIC EXPENDITURE IN INDIA
DURING 1991-92 TO 2000-01

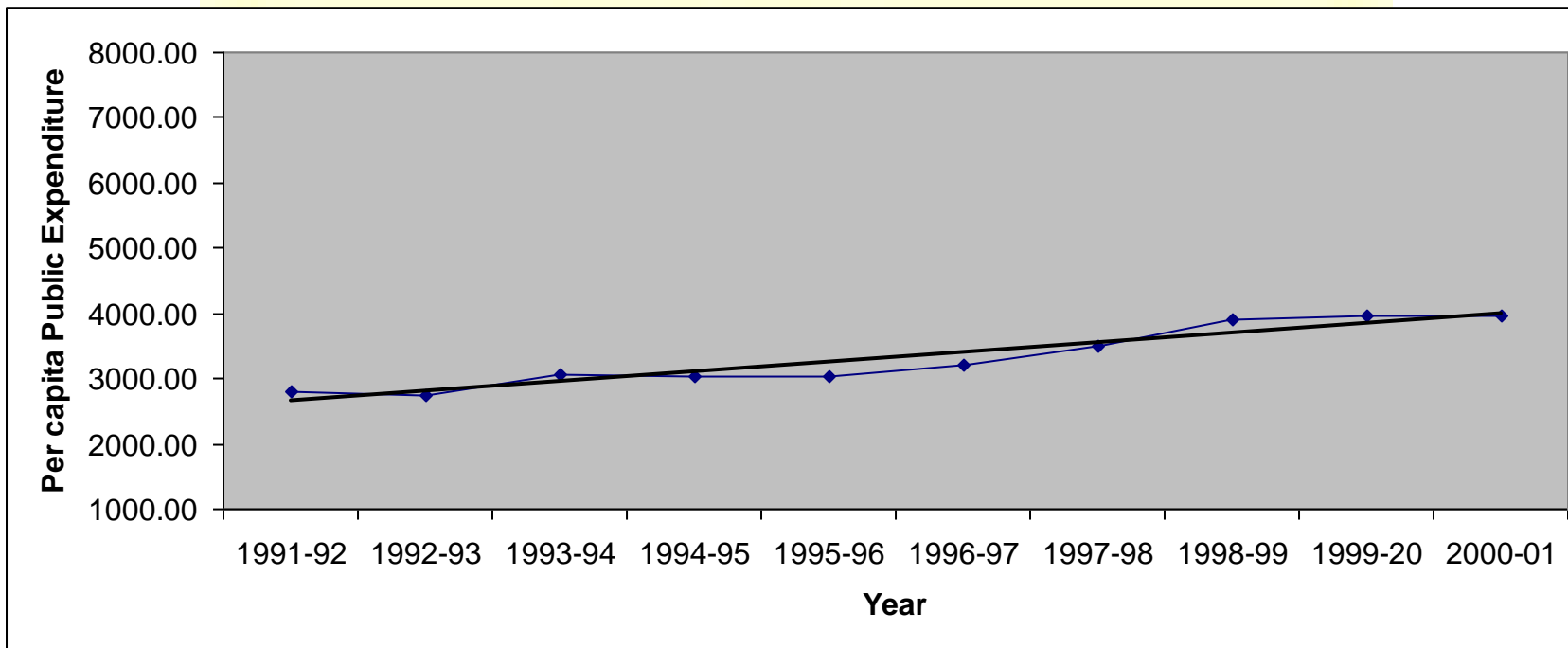


DIAGRAM 6
TREND OF PER CAPITA PUBLIC EXPENDITURE IN INDIA
DURING 2001-02 TO 2010-11

