

An Analysis of the Growth, Pattern and Determinants of Public Expenditure in Assam

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Abstract:

Governments in the recent years are increasingly realizing the importance of public expenditure as a tool for achieving their objectives, particularly in the area of poverty reduction. Most of the state governments in India have been experiencing severe budgetary pressures of varying magnitude, resulting in an explosive growth of public expenditure and the case is no different for the State of Assam. Assam is one of the largest and the most populous states in the north-eastern region with an international boundary of 400 km and a geographical area of over 79,000 sq km, shelters a population of 2.66 crores as per census of 2001. For the past several years, Assam has been facing acute financial crisis caused by raising non-plan expenditure, inadequate resource mobilization and increasing budgetary deficits. Even after more than six decades of 'planning and development', Assam, which was all-India average in terms of per-capita SDP at the beginning of the First Plan, is now one of the most backward states in the country judged by the indicators of development. The objective of the present study is to provide a skeleton on public expenditure of Assam emphasizing on the growth, pattern and determinants of public expenditures in Assam.

Key words: Public expenditure, Public expenditure of Assam.

Introduction

Governments in the recent years are increasingly realizing the importance of public expenditure as a tool for achieving their objectives, particularly in the area of poverty reduction. Most of the state governments in India have been experiencing severe budgetary pressures of varying magnitude, resulting in an explosive growth of public expenditure and the case is no different for the State of Assam. Assam is one of the largest and the most populous states in the north-eastern region with an international boundary of 400 km and a geographical area of over 79,000 sq km, shelters a population of 2.66 crores as per census of 2001. For the past several years, Assam has been facing acute financial crisis caused by raising non-plan expenditure, inadequate resource mobilization and increasing budgetary deficits. Even after more than six decades of 'planning and development', Assam, which was all-India average in terms of per-capita SDP at the beginning of the First Plan, is now one of the most backward states in the country judged by the indicators of development. The objective of the present study is to provide a skeleton on public expenditure of Assam emphasizing on the growth, pattern and determinants of public expenditure in Assam.

Review of Literature

The available literature on growth and determinants of public expenditure is rich and varied. A number of studies were carried out in India and abroad to identify the determinants of public expenditure growth. Almost all the studies in the past employed the regression analysis approach to explain the functional relationship between the determinant variables and public expenditure. Whatever related literature available with us has been put to review to examine their relevance to our present study and also to improve upon their limitations if

necessary to suit the objectives of the present study. Adolf Wagner's (1883) hypothesis states that owing to the "pressure for social progress" in a welfare state, as the economy expands, public expenditure will also tend to increase persistently. Wagner also argued that expenditure on government administration rises faster than the GNP due to the increasing bureaucratization of the state. Fabricant (1952) was the first to make an empirical study on the growth pattern and determinants of local and state level public expenditures. In analyzing the inter-state differentials in the level of public expenditure in the United States, he suggested three independent variables namely per capita income, population density and urbanization and used a multiple regression model to establish the functional relationship between them. With the help of the regression model, Fabricant succeeded in explaining that a state with high level of per capita personal income would incur the same increase in per capita expenditure as urbanization increases by a given amount. Peacock and Wiseman (1961) studied the growth of public expenditure in U.K. Their hypothesis states that public expenditure grows due to the growth in revenue. Okafor and Eiya (2011) studied the determinants of growth in Government Expenditure in Nigeria. As such four variables namely inflation, public debt, tax revenue and population were used in the study to determine the growth in public expenditure. The results indicate that population; public debt and tax revenue has a significant positive relationship with total government expenditure while inflation has a negative relationship with total government expenditure. Some of the other important foreign studies are Keynes (1936), Strayer (1949) Samuelson (1954), Kurnov (1963), Sacks and Harris (1964), Fisher (1964) Kee (1965), Adam (1965), Bahland Saunders (1965), Abizadeh and Yousefi (1968), Weicher (1970), Booms (1971), Goffman and Mahar (1971), Sandford (1984), Mahmood (1988), Joulfian and Mukherjee (1990), Abizadeh and Basilevsk (1990), Bosland Pandiello (1995),

Ahmed, Sohail and Akhtar (2001), Mupimpela (2005), Busemeyar,(2007), etc.

As far as studies on North eastern region of India is concerned, the following studies were undertaken.

Bhuyan (1984) estimated the trends and fluctuation pattern of revenue and expenditures of the government of Assam for thirty consecutive years, i.e., from 1951-53 to 1978-79. The methodology adopted by his study is both descriptive and analytical and statistical techniques of time series analysis have been used. His study asserts that the human capital formation has increased tremendously during the period 1951-52 to 1978-79 but the physical capital formation did not increase the same way. According to him, out of the expenditure on economic services, much emphasis was given on agriculture but industry and transport remained neglected all through. His study however concludes that no budget of the government of Assam were policy oriented.

Nongbri (2002) studied the growth, pattern and determinants of public expenditure for the State of Meghalaya for a period of thirty years, viz, from 1972-73 to 2001-2002. He had used a number of explanatory variables for this purpose. After making an empirical analysis of the variables, Nongbri concluded that per capita income, NSDP, Consumer price index, the tertiary sector and the primary sector are the main variables which determine the growth of public expenditure in an underdeveloped State like Meghalaya. All these factors have led to an increasing growth of public expenditure resulting in poverty of the State.

Mishra and Suresh (2005) studied the growth and determinants of public expenditure in north-eastern states in general and Nagaland in particular for thirty-eight years, ie, from 1963-64 to 2000-01. The study takes into account public expenditure as a dependent variable whereas a combination of both economic variables and political variables on manufacturing sector, service sector, the sectoral incomes

originating in agricultural sector and the remaining sectors are taken as the independent variables. The result of the study suggests that both Congress and non-congress regimes have negative impact on the growth of non-developmental expenditure in the state. The study further concludes that ideological leanings of the parties in power or a change of government from non congress to congress does not seem to make any systematic difference to the determination of public expenditure in the state of Nagaland.

Scope and Objectives of the Study

The study covers a period of thirty six years from 1973-74 to 2008-09. The rationale for choosing the period 1973-74 to 2008-09 is that, it is intended to study the pattern of public expenditure during thirty six year period. This period in the state economy has underscored substantial changes in the expenditure policies.

The specific objectives of the study are-

1. To examine the extent to which state income causes public expenditure, mainly through an increase in demand for public expenditure.
2. To explain the pattern of public expenditure growth in the thirty year time period.
3. To find out the factors responsible for determining the level and size of public expenditure.

Hypotheses of the study:

The study intends to test the following hypotheses:

1. There is a direct relationship between the level of public expenditure and level of NSDP.
2. Changes in Consumer Price Index (CPI) influence the level and quantum of public expenditure.
3. The growth of public expenditure and the quantity of

public services provided bear a functional relationship.

Methodology

The study is based on secondary data. The study covers a time period of thirty-six years, i.e., from 1973-74 to 2008-09. As such the relevant statistical data for thirty-six year period were collected from various government publications and annual budgets of Assam State Government, including their Memoranda. The major sources of secondary data include budgetary data relating to the State Government as published from time to time in the Assam Development Report, The Economic Survey of Assam, Statistical Handbook of Assam, Statistical Abstract of Assam, etc. This is an empirical study and data were collected, tabulated, processed and analyzed by applying appropriate statistical techniques like multivariate linear regression analysis.

The Models

In order to find out the likely determinants of public expenditure of Assam the following multivariate linear regression models have used by trial and error method. So from the results of these regressions, the main determinants will be chosen and they will be included in a final model.

1. $PE = a_0 + a_1 PCNSDP + a_2 CPI + a_3 PCTREC + a_4 DOP + t + D$
2. $PE = a_0 + a_1 PCCE + a_2 TRNSDP + a_3 PCUPTP + t + D$
3. $PE = a_0 + a_1 NSDP + a_2 PCREGS + a_3 PCRESS + a_4 PCREES + t + D$
4. $PE = a_0 + a_1 NSDP + a_2 PCREGS + a_3 PCRESS + a_4 PCREES + a_5 LR + t + D$
5. $PE = a_0 + a_1 PCNSDP + a_2 PCCEGS + a_3 PCCESS + a_4 PCCEES + a_5 LR + t + D$

Where

PE = Total Public Expenditure

NSDP = Net State Domestic Product

CPI = Consumer Price Index

LR = Literacy rate

PCTREC = Per Capita Total Receipts

DOP = Density of Population

PCNSDP = Per Capita Net State Domestic Product

TRNSDP= Percentage of Total Receipts to NSDP

UPTP= Percentage of Urban Population to total population

PCCE= Per Capita Capital Expenditure

PCRE= Per Capita Revenue expenditure

PCREGS = Per Capita Revenue Expenditure on General Services

PCRESS =Per Capita Revenue expenditure on Social Services

PCCEEC =Per Capita Revenue Expenditure on Economic Services

PCCEGS= Per Capita Capital Expenditure on General Services

PCCESS =Per Capita Capital Expenditure Social Services

PCCEEC =Per Capita Capital Expenditure Economic Services

t = time variable

D = dummy variable.

The main thrust of the paper is to find out the major determinants of State's public expenditure in Assam. As such the total public expenditure is taken as the dependent variable while 18 other independent variables have been used based on their theoretical relevance as well as empirical importance as emerged out of the earlier studies conducted by various economists both in India and abroad.

Growth of Public Expenditure in Assam

Public expenditure in a developing economy has certain notable trends and public expenditure in Assam has shown these trends in a marked way. Since the commencement of planning in India, there has been rapid growth of expenditure in the State either due to the adoption of economic planning to achieve higher rate of economic growth or due to the inability of the State government to mobilize resources effectively. The government has been widening its economic and social activities in economic and social spheres and has assumed

many new responsibilities. Its administrative services have been strengthened and it's participating in an ever-increasing measure. In order to have a better idea of the growth of total expenditure in the state of Assam, an attempt has been made to study the trends of public expenditure, per capita expenditure and state income for the period of our study, i.e., from 1973-74 to 2008-09 at constant prices taking 2004-05 as the base year. An attempt has been made to analyze the growth and pattern of public expenditure in the State of Assam and the changes, which were creeping therein during the reference period. Both intensive and extensive expansion in the activities of the government during the planning period has resulted in a spectacular rise in public expenditure. In order to have a better idea of the size of total expenditures of Assam, let us analyze its trends and pattern for the period of from 1973-74 to 2008-09 with the help of Table No.1.

Table 1 Trends of Total Public Expenditure, NSDP and Per capita expenditure

YEAR	TOTAL EXPENDITURE (Rs.Crore)	NSDP (Rs.Crore)	COL 2as % of Col 3
1	2	3	4
1973-74	2.01	10.29	19.53
1974-75	2.04	10.51	19.41
1975-76	1.95	10.90	17.88
1976-77	2.19	11.54	18.97
1977-78	3.02	12.16	24.83
1978-79	3.44	12.28	28.01
1979-80	3.91	11.71	33.39
1980-81	7.54	12.07	62.46
1981-82	8.07	13.44	61.41
1982-83	4.78	14.06	33.99
1983-84	6.62	14.67	45.12
1984-85	8.10	14.74	54.95
1985-86	9.01	15.71	57.35
1986-87	10.86	15.27	71.11
1987-88	12.95	15.95	81.19
1988-89	13.36	16.07	83.13
1989-90	16.28	17.26	94.32
1990-91	33.05	64.73	51.05
1991-92	31.14	67.78	45.94
1992-93	32.25	68.02	47.41
1993-94	36.30	70.78	51.28

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1994-95	45.16	72.46	62.32
1995-96	55.66	74.18	75.03
1996-97	56.20	75.98	73.96
1997-98	52.56	77.22	68.06
1998-99	40.39	75.51	53.48
1999-00	53.75	79.19	67.87
2000-01	59.84	82.30	72.70
2001-02	61.80	86.35	71.56
2002-03	64.37	89.88	71.61
2003-04	76.36	94.56	80.75
2004-05	100	100	100
2005-06	97.46	201.59	45.14
2006-07	108.01	226.03	47.48
2007-08	121.18	238.76	50.75
2008-09	138.98	253.46	54.83

(At 2004-05 Prices)

Source: Economic Survey, Assam, 1975-76, 1982-83, 1997-98, 2005-06, 2009-10.

Statistical Abstract of Assam, 1990, 2000.

Statistical Hand Book, Assam, 1973-74 to 2009-10.

Table 1 reveals that throughout the entire thirty six year period of the study, the total public expenditure at 2004-05 prices has been increasing with some fluctuations in some years. The total public expenditure has been increasing and reached from Rs. 2.01 crores in 1973-74 to Rs. 6.62 crores in 1983-84 to Rs. 36.30 crores in 1993-94 to Rs. 76.36 crores in 2003-04 and finally to Rs. 138.98 crores in 2008-09, the annual average rate of growth of total expenditure during the thirty six year period is **6814.43 per cent** revealing a growth quantum of **69.14 times**. The increasing trend in total public expenditures in Assam during the said period is attributable to the increase in revenue expenditures. The Committee of Fiscal Reforms of Assam (2001) identified the increase of expenditures on salaries, wages and pensions, rise in security related expenditures and grants to autonomous bodies and NGO's, huge loss of public sector undertakings, growing public debt and contingent liabilities, huge borrowings for flood control measures, failure to increase revenue and match expenditure and leakages in check gates, tax offices and business establishments are eating into the vitals of the State economy.

It is also to be noticed from the study that during the period of our study, public expenditure has been increasing continuously and steadily without much fluctuations. However, there has been a sudden increase in total expenditure from Rs. 76.36 crores in 2003-04 to Rs. 100 crores in 2004-05 because since 2005-06, the Ways and Means advances from RBI have been nil. The largest component of debt which came from the central govt. also started reducing after 2005-06. Moreover the implementation of Medium Term Fiscal Reform Programme adopted in March, 2003 in consultation with Government of India in the form of tax reforms, expenditure reforms, modernization of fiscal management system, etc. might also be the reason for declining public expenditure in 2005-06. Further after 2005-06, public expenditure again has been maintaining a increasing trend. This has been explained further with the help of a graph 1 given below.

Graph 1 Graph showing Increase of Public Expenditure in Assam

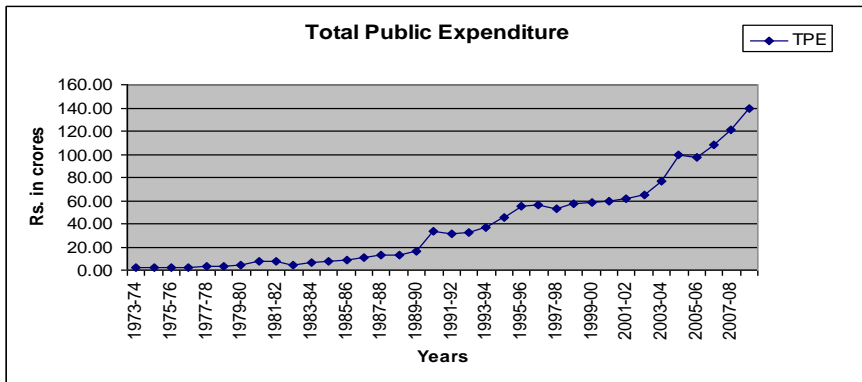


Table 1 also shows that the state income at constant prices (2004-05 prices) has also been registering an increasing trend from Rs. 10.29 crores in 1973-74 to Rs. 94.56 crores in 2003-04 and further to Rs. 253.46 crores in 2008-09, the growth quantum in the period being 24.63 times and the average annual rate of growth in these thirty six years being **2363.17**

per cent which is much lesser than the average annual growth rate of public expenditure being **6814.42** per cent. The share of total expenditure in the state income has been maintaining an increasing but fluctuating trend. The share of total expenditure to NSDP has been increasing but it has been maintaining a fluctuating trend in the decade 1983-94. Since 1993-94, the share of total expenditure to NSDP started increasing from 51.25 per cent in 1983-84 to 80.75 per cent in 2003-04. However since 2005-06, the share of total expenditure to NSDP started declining and reached to 54.83 per cent in 2008-09.

Public expenditure and state income are interrelated and a change in income will definitely lead to a change in public expenditure. In a developing state like Assam where state income has been steadily increasing, increase in absolute amount of public expenditure is quite natural. Though State income may not be the only factor to bring about changes in the total public expenditure, it plays a very important role in shaping public expenditure. If we follow the trends of public expenditure and NSDP portrayed in the above table, we find that from the beginning of the period of our study, public expenditure has been increasing with the increase in State income. Such income expenditure growth is in conformity with the Wagner's doctrine of increase in state activities which says that government expenditure in any society will grow at a faster rate than community output will do. This is also because of the fact that in a comparatively backward State like Assam, government expenditure has been the prime mover of its socio-economic growth. Thus, a major chunk of public expenditure can be derived from the State income and as such more the State income more is the public expenditure.

Revenue Expenditures of Assam

Revenue expenditures are recurring kind of expenditures incurred in running the administration. They are basically of

consumptive type and do not involve creation of productive assets. They include salaries, wages and pensions paid to govt. employees, interest payments by the govt. on internal and external loans, subsidies forwarded to all sectors by the government, law and order expenditures, expenditures on social services, etc. In order to have a better idea of the size of revenue and capital expenditures of Assam, an attempt has been made to analyze its trends and pattern for the period 1973-74 to 2008-09 with the help of Table no. 2 given below.

Table 2 Revenue Expenditures of Assam (Rs. in crore)

YEARS	REVENUE EXPENDITURE	TOTAL EXPENDITURE	Col.2 as % of Col.4
1	2	3	4
1973-74	1.49	2.01	14.48
1974-75	1.53	2.04	14.55
1975-76	1.75	1.95	16.05
1976-77	1.84	2.19	15.94
1977-78	2.45	3.02	20.14
1978-79	2.66	3.44	21.66
1979-80	3.03	3.91	25.87
1980-81	3.61	7.54	29.90
1981-82	3.97	8.07	29.53
1982-83	4.72	4.78	33.57
1983-84	6.73	6.82	45.87
1984-85	8.06	8.10	56.65
1985-86	8.90	9.01	56.65
1986-87	9.24	10.86	60.51
1987-88	10.96	12.95	68.71
1988-89	11.03	13.36	68.63
1989-90	15.30	16.28	88.64
1990-91	18.77	33.05	28.99
1991-92	21.00	31.14	30.98
1992-93	23.96	32.25	35.22
1993-94	28.36	36.30	40.06
1994-95	31.97	45.16	44.12
1995-96	34.96	55.66	47.12
1996-97	34.91	56.20	45.94
1997-98	39.48	52.56	51.12
1998-99	40.15	40.39	53.17
1999-00	47.15	53.75	59.54
2000-01	52.73	59.84	64.07
2001-02	56.93	61.80	65.92
2002-03	60.53	64.37	67.34
2003-04	72.61	76.36	76.78
2004-05	100	100	100
2005-06	96.00	97.46	47.62

2006-07	102.00	108.01	45.12
2007-08	120.59	121.18	50.50
2008-09	129.24	138.98	50.99

Source: Economic Survey, Assam, 1975-76 to 2008-09

Statistical Abstract of Assam, 1990, 2000.

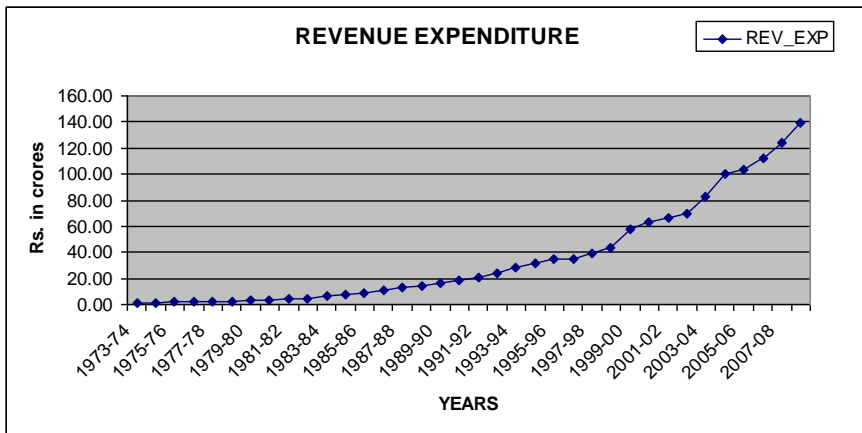
Statistical Hand Book, Assam, 1973, 1976, 1980, 1984, 2003, 2008.

Table 2 above reveals the trends and pattern of revenue expenditures for the period 1973-74 to 2008-09 at 2004-05 prices. So far as the expenditure under revenue account is concerned, it has been noticed that the total expenditure from revenue heads have recorded a considerable rise from Rs. 1.49 crores in 1973-74 to Rs. 6.73 crores in 1983-84 to Rs. 28.36 crores in 1993-94 to Rs. 72.61 crores in 2003-04 and ultimately to Rs. 129.24 crores in 2008-09. The annual average growth rate in the period of our study, i.e., from 1973-74 to 2008-09 is **8573.82 per cent** while the quantum of growth is **86.73 times**. Thus, revenue expenditures as a percentage to total expenditure has been increasing with some fluctuations in some years as shown in column 4 of the above table. The above table (Table 2) also reveals that during the thirty six year period of the study, the revenue expenditures to total expenditures constituted for more than 70 per cent for the said period and more than 90 per cent for thirteen years. Thus, with the increase in revenue expenditures in the State of Assam, we can say that the State has been trying hard and making best possible effort to develop the economy.

The main reason the uncontrollable growth of revenue expenditure is the rise in pensions, wages, salaries, dearness allowances and dearness relief and interest payments due to revised Pay Commissions from time to time. While the wage bill is rising due to both rising number of employees and higher wages, the State government has not been efficient enough to meet the expenditure from its own resources. High level of financial support to public sector undertakings necessitated by their inability to meet their current obligations also led to its increase. Increase in general and social and community services

with a view to fulfill the objectives of Five Year Plans like alleviate poverty, improve upon the education art and culture, provide minimum basic needs to the masses like drinking water, sanitation, health care, energy, roads, generate employment, etc. have also lead to its growth. Moreover, high level of financial support to the PSU's necessitated by their inability to meet their current obligations and by their continuing defaults on government guaranteed loans and bonds have also contributed to the increase. In 2005-06, revenue expenditures declined mainly due to the compression measures of revenue expenditure undertaken by the State government in the recent years wherever possible without affecting public interest but started increasing again from 2006-07 due to the increase in total revenue receipts. This has been explained further with the help of graph 2 given below.

Graph 2 Graph showing growth of Revenue Expenditures in Assam



Capital Expenditures of Assam

Capital expenditure on the other hand is a very important fiscal instrument which forms the foundation of economic development for an under developed State like Assam. It includes the expenditure of the government, which is incurred

for increasing the volume of production. Capital expenditure is of capital type. Since the expenditures are incurred once for all, so they are of non-recurring type. The expenditures on setting up iron and steel plants, multipurpose projects or building multipurpose projects are in the head of capital expenditure. Capital expenditure mainly relates to expenditure on account of capital outlay on development relating to social and community services and economic services, capital outlay on non-development activities, repayment of loans to centre, discharge of internal debt and loans and advances by state government.

In order to have a better idea of the size of capital expenditures of Assam, let us analyze its trends and pattern for the period of the study from 1973-74 to 2008-09 with the help of Table 3.

Table 3 Capital Expenditures of Assam (Rs.crore)

YEARS	CAPITAL EXPENDITURE	TOTAL EXPENDITURE	Col.2 as % of Col.4
1	2	3	4
1973-74	1.09	2.01	54.22
1974-75	1.06	2.04	51.96
1975-76	1.52	1.95	77.94
1976-77	1.42	2.19	64.84
1977-78	2.11	3.02	69.86
1978-79	3.15	3.44	91.56
1979-80	2.57	3.91	65.72
1980-81	3.27	7.54	43.36
1981-82	3.78	8.07	46.84
1982-83	4.12	4.78	86.19
1983-84	4.85	6.82	73.76
1984-85	6.29	8.10	77.65
1985-86	6.29	9.01	69.81
1986-87	7.03	10.86	64.73
1987-88	10.44	12.95	80.61
1988-89	7.68	13.36	57.48
1989-90	13.10	16.28	80.46
1990-91	11.33	33.05	34.28
1991-92	13.08	31.14	42.00
1992-93	10.88	32.25	33.73
1993-94	11.50	36.30	31.68
1994-95	12.71	45.16	28.14
1995-96	13.93	55.66	25.02
1996-97	11.11	56.20	19.60
1997-98	15.10	52.56	28.72

1998-99	16.68	40.39	41.29
1999-00	22.13	53.75	41.17
2000-01	25.75	59.84	43.03
2001-02	25.99	61.80	42.05
2002-03	27.91	64.37	43.35
2003-04	32.53	76.36	42.60
2004-05	100	100	100
2005-06	49.77	97.46	51.06
2006-07	66.64	108.01	61.69
2007-08	77.42	121.18	63.88
2008-09	108.83	138.98	78.30

Source: Economic Survey, Assam, 1975-76 to 2008-09

Statistical Abstract of Assam, 1990, 2000.

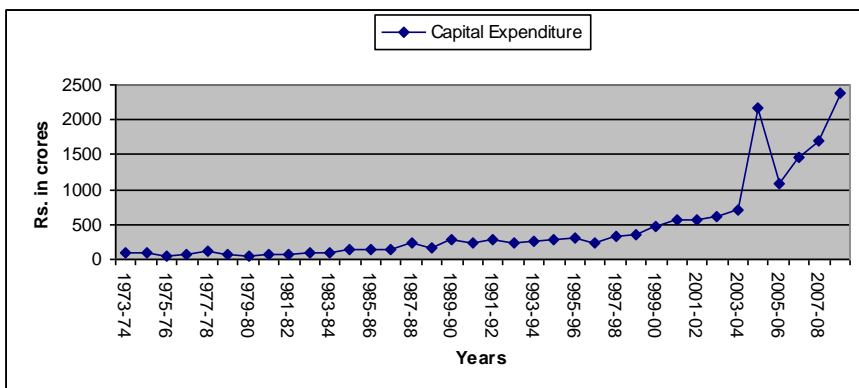
Statistical Hand Book, Assam, 1973, 1976, 1980, 1984, 2003, 2008.

Table 3 above clearly portrays the growth in capital expenditures also. It can be noted from the above table that capital expenditures have been increasing steadily with some fluctuations during some years. The main reason for the growth of capital expenditure in Assam is mainly due to increase in economic services, social and community services, and general services. The growth in the volume of expenditure under capital account has been faster than the expenditure under revenue account during the period of our study. The capital expenditure at 2004-05 prices increased from Rs. 4.09 crores in 1973-74 to Rs. 32.53 crores in 2003-04 to Rs. 108.83 crores in 2008-09, the annual average growth rate of capital expenditures in these thirty six years is **9884.40 per cent** which is less than the growth rate of revenue expenditures being **8573.82** per cent. Moreover, the quantum of growth of capital expenditures in the said period is just **99.84 times** which is greater than the quantum of growth of revenue expenditures being **86.73 times**. This speaks aloud of the inability of the State to pursue public expenditure policies in proportion to the achievement of long term goals and objectives from the Economic services which generates employment ultimately leading to increase in the per capita income of the people of the State. As proportion to the total budgetary expenditure, the capital expenditure on development which is directly related to economic growth have been also increasing accounting for more than 50 per cent for

twenty years.

Table 3 also reveals that during 2004-05, the capital expenditures rose suddenly mainly due to increase in market borrowing under capital receipts revealing that the development activities have been increasing in the State paving the way for development. It came down in 2005-06 due to decline in central loans since 2005-06 but started rising again since 2006-07 due to increase in total revenue receipts.. Thus we can see that the capital expenditures have been increasing during the period of our study contributing significantly to the increase in total public expenditures if the State. This has been explained further with the help of a graph 3 given below.

Graph 3 Graph showing the growth of Capital Expenditures of Assam



Although the State has been spending heavily on tertiary sector, secondary sector and social sector, capital expenditures which is the foundation to economic development has been showing a declining trend which is not at all a healthy indicator of state economy. However, since 2005-06, the share of capital expenditures to total expenditures has been increasing showing signs of recovery. The non-development expenditures have also been brought under control since 2005-06. Thus, the fiscal position of Assam State since 2005-06 staged a remarkable due to consistent and cohesive reformatory measures undertaken by the State Government like (a) implementation of Medium Term

Fiscal Reform Programme adopted in March, 2003 in consultation with Government of India, (b) implementation of comprehensive fiscal restructuring programme titled Assam Governance and Public Resource Management Programme sponsored by the Asian Development Bank and Government of India from 2004, (c) enactment and implementation of Assam Fiscal Responsibility and Budget Management Act, 2005, (d) tax augmentation measures, (e) compression measures of revenue expenditure wherever possible without affecting public interest and (f) containment of public debt including Government Guarantees.

Plan and Non Plan Expenditure

Since the inception of planning in Assam, a significant part of the total expenditure has been devoted for developmental purposes. Along with the developmental expenditures revealing remarkable increases during the Plan periods, the expenditure on non-developmental expenditure on revenue account has also witnessed steady increase. This shows that with every increase in planned expenditures, the non-plan expenditures also tend to rise mainly due to an increase in the administrative machinery in order to carry out the economic activities of the State. Plan and Non-Plan expenditure can be further classified under revenue and capital account. Table 4 below shows the growth of plan revenue and capital expenditures of the State of Assam.

Table 4 Plan Expenditures of the State of Assam (Rs. in crores)

Year	Plan Revenue Expenditure	Plan Capital Expenditures	Total Plan Expenditures
1	2	3	4
1973-74	1.83	3.82	5.65
1974-75	1.59	3.75	5.34
1975-76	2.04	3.65	5.69
1976-77	2.14	3.45	5.49
1977-78	3.14	3.18	6.32
1978-79	3.51	2.97	6.48
1979-80	3.89	2.56	6.45

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1980-81	4.93	3.25	8.18
1981-82	5.00	3.71	8.71
1982-83	6.12	3.98	10.1
1983-84	9.18	4.69	13.87
1984-85	10.71	6.20	16.91
1985-86	11.96	6.18	18.14
1986-87	14.78	6.67	21.45
1987-88	17.14	10.18	27.32
1988-89	18.10	7.54	25.64
1989-90	20.44	12.85	33.29
1990-91	24.27	11.24	35.51
1991-92	29.58	12.93	42.51
1992-93	29.11	10.67	39.78
1993-94	34.19	11.33	45.52
1994-95	37.82	12.43	50.25
1995-96	43.23	13.23	56.46
1996-97	41.50	11.02	52.52
1997-98	45.73	15.00	60.73
1998-99	51.85	16.96	68.81
1999-00	62.26	21.67	83.93
2000-01	67.37	24.44	91.81
2001-02	72.28	25.85	98.13
2002-03	77.55	27.37	104.92
2003-04	90.90	31.93	122.83
2004-05	100	100	200.00
2005-06	157.91	45.27	203.18
2006-07	117.21	65.70	182.91
2007-08	144.17	76.35	220.52
2008-09	130.78	107.51	238.29

Source: Economic Survey, Assam, 1975-76, 1982-83, 1997-98, 2005-06, 2009-10.

Statistical Abstract of Assam, 1990, 2000.

Statistical Hand Book, Assam, 1973-74 to 2009-10.

The above table 4 reveals the plan expenditures under both revenue and capital account at 2004-05 prices for the thirty six year period of our study, i.e., from 1973-74 to 2008-09. The table shows that the plan expenditures under revenue account increased from Rs. 1.83 crores in 1973-74 to Rs. 130.78 crores in 2008-09, the annual average growth rate during the period of the study being **7046.44 per cent** while the quantum of growth being **71.46 times**. On the other hand, the plan expenditures under capital account increased from Rs. 3.82 crores in 1973-74 to Rs. 107.51 crores in 2008-09, the annual average growth rate during the period of the study being **2714.39 per cent** while the quantum of growth being **28.14 times**. The table also shows

that the total plan expenditures increased from Rs. 5.65 crores in 1973-74 to Rs. 238.29 crores in 2008-09, the annual average growth rate being **4117.52 per cent** while the quantum of growth being **42.17 times**. Thus it is clear from the above table that the plan expenditures under revenue expenditures have not only been increasing in absolute figures but also in terms of average annual growth rate and growth quantum which seems to be higher than the plan expenditures under capital account.

Table 5 Non -Plan Expenditures of the State of Assam (Rs. in crores)

Year	Non-Plan Revenue Expenditure	Non-Plan Capital Expenditures	Total Non-Plan Expenditures
1	2	3	4
1973-74	1.10	26.16	27.26
1974-75	1.46	24.14	25.60
1975-76	1.43	20.75	22.18
1976-77	1.51	19.31	20.82
1977-78	1.68	18.96	20.64
1978-79	1.70	18.01	19.71
1979-80	1.98	3.88	5.86
1980-81	2.04	4.65	6.69
1981-82	2.73	9.71	12.44
1982-83	3.07	15.35	18.42
1983-84	3.87	18.20	22.07
1984-85	5.16	13.90	19.06
1985-86	6.06	15.88	21.94
1986-87	7.11	35.95	43.06
1987-88	8.31	31.99	40.03
1988-89	9.37	19.50	28.87
1989-90	11.36	33.63	44.99
1990-91	12.40	18.55	30.95
1991-92	11.13	25.36	36.49
1992-93	18.02	28.18	46.20
1993-94	21.58	25.29	46.87
1994-95	25.25	37.59	62.84
1995-96	25.42	71.36	96.78
1996-97	27.40	18.43	45.83
1997-98	32.43	23.12	55.55
1998-99	33.16	12.95	46.11
1999-00	51.62	40.14	91.76
2000-01	55.24	37.17	92.41
2001-02	58.49	37.32	95.81
2002-03	60.28	71.63	131.91
2003-04	73.44	81.84	155.28
2004-05	100	100	200

2005-06	107.98	110.74	218.72
2006-07	106.11	143.37	249.48
2007-08	102.49	164.81	267.30
2008-09	148.80	217.17	365.97

Source: Economic Survey, Assam, 1975-76, 1982-83, 1997-98, 2005-06, 2009-10.

Statistical Abstract of Assam, 1990, 2000.

Statistical Hand Book, Assam, 1973-74 to 2009-10.

The above table 5 reveals the non-plan expenditures under both revenue and capital account at 2004-05 prices for the thirty six year period of our study, i.e., from 1973-74 to 2008-09. The table shows that the non-plan expenditures under revenue account increased from Rs. 1.10 crores in 1973-74 to Rs. 148.80 crores in 2008-09, the annual average growth rate during the period of the study being **1342.72 per cent** while the quantum of growth being **135.27 times**. On the other hand, the non-plan expenditures under capital account increased from Rs. 26.16 crores in 1973-74 to Rs. 217.17 crores in 2008-09, the annual average growth rate during the period of the study being **730.16 per cent** while the quantum of growth being **8.30 times**. The table also shows that the total non-plan expenditures increased from Rs. 27.26 crores in 1973-74 to Rs. 365.97 crores in 2008-09, the annual average growth rate being **1242.51 per cent** while the quantum of growth being **13.42 times**. Thus what emerges from both the tables showing plan and non-plan expenditures under both revenue and capital expenditures is that the annual average growth rate of plan total expenditures is 4117.52 per cent and growth quantum is 42.17 times which is much higher than the average annual growth rate of total non-plan expenditures being 1242.51 per cent while the growth quantum being 34.51 per cent. Thus, the above tables reveals that throughout the period of our study, the state government of Assam has been giving more importance and stress on social and economic services which has undoubtedly contributed to the significant progress of the state. But it has not been able to alleviate poverty and generate employment as a whole. Though

agriculture and industries consume a major portion of the plan expenditure, industrial production and productivity have remained one of the lowest in India.

Total Expenditure versus Total Receipts

After analyzing the growth and pattern of public expenditures in Assam for the period 1973-74 to 2008-09, it becomes prominent that there has been a tremendous growth of public expenditures in Assam. With the increase in expenditures, there has been growth of the economy. The growth of the economy has given rise to new complexities in life and the government in order to deal with them has to incur increasing expenditures. This increasing expenditure has compelled the State government to increase the total receipts. Analyzing the growth of public expenditures without analyzing the growth of total receipts would be a futile attempt in this research work as both are interrelated. Moreover public expenditure is also derived from total receipts. Hence an attempt has been made to examine the trends and growth of total receipts for the thirty six year period, i.e., from 1973-74 to 2008-09 at 2004-05 prices.

Table 6 Total Public Expenditure versus Total Revenue Receipts

YEARS	TOTAL RECEIPTS	TOTAL PUBLIC EXPENDITURE
1	2	3
1973-74	0.83	2.01
1974-75	0.93	2.04
1975-76	0.94	1.95
1976-77	1.02	2.19
1977-78	1.30	3.02
1978-79	1.55	3.44
1979-80	1.45	3.91
1980-81	2.89	7.54
1981-82	3.38	8.07
1982-83	1.86	4.78
1983-84	2.43	6.62
1984-85	3.20	8.10
1985-86	3.62	9.01
1986-87	3.81	10.86
1987-88	5.47	12.95
1988-89	9.07	13.36

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1989-90	6.95	16.28
1990-91	14.73	33.05
1991-92	12.99	31.14
1992-93	14.34	32.25
1993-94	15.26	36.30
1994-95	17.66	45.16
1995-96	24.60	55.66
1996-97	25.53	56.20
1997-98	30.18	52.56
1998-99	17.30	40.39
1999-00	22.25	53.75
2000-01	25.81	59.84
2001-02	26.47	61.80
2002-03	27.59	64.37
2003-04	33.30	76.36
2004-05	100	100
2005-06	69.03	97.46
2006-07	60.86	108.01
2007-08	79.89	121.18
2008-09	88.67	138.98

Source: Economic Survey, Assam, 1975-76, 1982-83, 1997-98, 2005-06, 2009-10.

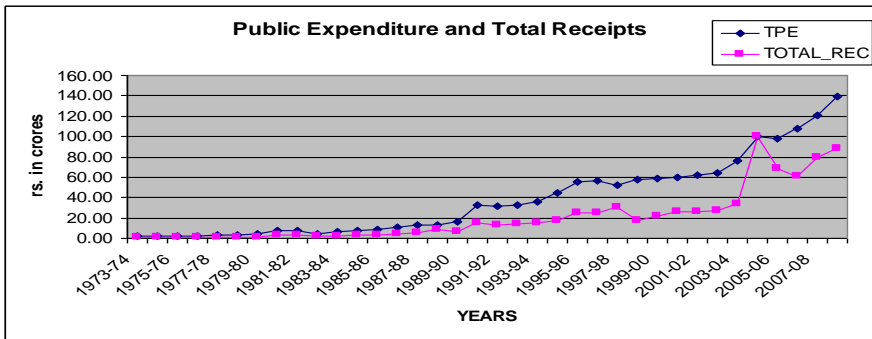
Statistical Abstract of Assam, 1990, 2000.

Statistical Hand Book, Assam, 1973-74 to 2009-10.

With the growth in the size of the State income and State Government Budgets, the total expenditure and receipts of the State increased significantly. The table 6 above reveals the total receipts comprising both revenue and capital receipts and total public expenditure comprising both revenue and capital expenditures. The total receipts at 2004-05 prices as shown in the above table increased from Rs. 0.83 crores in 1973-74 to Rs. 88.67 crores in 2008-09, the annual average growth rate during the thirty six year period is **10583.13 per cent** while the quantum of growth is **106.83 times**. The total public expenditure during the said period recorded an annual average growth rate of **6765.67 per cent** and a quantum of growth of 69.14 times. Although the annual average growth rate and quantum of growth of total receipts is greater than the total public expenditure, the total public expenditure has increasing in absolute figures This proves that the State of Assam have been making a half hearted effort in resource mobilization front and have failed to curb the rising growth of public expenditure.

The table 6 also reveals that there has been continuous increase in both total expenditure and total receipts in the said period at 2004-05 prices and with the increase in total receipts, the total expenditure have also been increasing. It can be seen from the above table that in the year 1998-99, with the decline of total receipts from Rs. 30.18 crores in 1997-98 to Rs. 17.30 crores in 1998-99, the total expenditure also declined to Rs. 40.39 crores in 1998-99 from Rs. 52.56 crores in 1997-98. This is mainly because of the decline of central taxes under revenue receipts during the particular year. Both total receipts and total expenditure started increasing since 1999-00. The total receipts increased suddenly in 2004-05 leading to the increase in total expenditures due to the increase of State taxes, Central Taxes, Non-Tax Revenue and Grants-in –aid under revenue receipts. It came down in 2005 -06 and further to 2006-07 as the central loans under capital receipts started declining since the said period. Moreover, since 2005-06, the Ways and Means advances from RBI had been nil. This has been explained further with the help of a graph 4.

Graph 4 Graph showing the growth of Total Receipts and Total Expenditures



Pattern of Public Expenditure in Assam

A general pattern of the objectives of public expenditure can be

formulated by taking into account the different services like economic services, general services, social and community services already available in the State. It is the implementation of these objectives which have lead to an explosive growth of public expenditure. Table 5 shows the growth of general, economic and social services under both revenue and capital account.

Revenue Expenditure of the Government of Assam under Different Sectors:

The rate of increase in Assam's revenue expenditure is distinctly slower in comparison to the rest of India. However, when expressed as proportion to the total expenditure, it shows an increase from 63.05 per cent in 1973-74 to 85.44 per cent in 2008-09. In order to have a better understanding of pattern of revenue expenditure on Assam, let us have a look at the table 7 explained below.

Table 7 Sector-wise Revenue Expenditures (rupees. in crores)

Year	General Services	Economic services	Social services
1	2	3	4
1973-74	1.40	1.84	1.34
1974-75	1.31	1.52	1.75
1975-76	1.60	1.97	1.85
1976-77	1.71	2.02	1.81
1977-78	2.05	2.69	2.61
1978-79	2.16	3.02	3.41
1979-80	2.52	3.05	3.42
1980-81	2.59	4.12	4.16
1981-82	3.48	4.41	4.07
1982-83	3.90	5.14	5.15
1983-84	4.93	7.05	8.15
1984-85	6.57	8.83	9.12
1985-86	7.70	9.96	10.12
1986-87	9.04	12.22	12.56
1987-88	10.57	14.16	14.58
1988-89	11.92	13.60	16.28
1989-90	14.44	17.69	16.85
1990-91	15.77	20.84	20.13
1991-92	14.16	25.47	24.48

1992-93	22.91	23.13	25.36
1993-94	27.45	24.90	31.29
1994-95	32.11	28.82	33.77
1995-96	32.33	34.61	37.50
1996-97	34.84	27.18	39.99
1997-98	41.24	28.64	44.93
1998-99	42.18	33.15	50.51
1999-00	65.16	38.95	61.20
2000-01	67.44	40.76	72.46
2001-02	77.44	47.35	69.68
2002-03	82.37	42.67	74.60
2003-04	93.72	60.29	86.54
2004-05	100.00	100.00	100.00
2005-06	110.54	87.85	105.68
2006-07	121.05	100.82	110.57
2007-08	130.34	111.22	127.59
2008-09	189.23	161.38	214.57

Source: Economic Survey, Assam, 1975-76, 1982-83, 1997-98, 2005-06, 2009-10.

Statistical Abstract of Assam, 1990, 2000.

Statistical Hand Book, Assam, 1973-74 to 2009-10.

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Table 7 reveals the sector wise revenue expenditure from 1973-74 to 2008-09 at 2004-05 prices. The table shows that that the **general services** under revenue account which was Rs. 1.40 crores in 1973-74 increased to Rs. 93.72 crores in 2003-04 and ultimately to Rs. 189.23 crores 2008-09, the average annual growth rate during the thirty six year period being **9654.59 per cent** while the quantum of growth during the period is **135.16 times**. The **economic services** under revenue expenditure which was Rs. 1.84 crores in 1973-74 increased to Rs. 161.38 crores in 2008-09, the annual average growth rate during the thirty six year period being **8670.65 per cent** while quantum of growth is **87.70 times**. The **social and community service** under total revenue expenditures which was Rs. 1.34 crores in 1973-74 increased to Rs. 214.57 crores in 2008-09, the annual average growth rate during the thirty six year period being **15912.68 per cent** and the quantum of growth being **160.12 times**. Thus, from the above analysis, it is clear that during the period of our study from 1973-74 to 2008-09, the revenue expenditures on social and community services

account for growth quantum of 160.12 times followed by revenue expenditures on general services with growth quantum of 135.16 times and economic services with 87.70 times. The social and community services under revenue account have not only increased by leaps and bounds in absolute figures but also in terms of average annual growth rate, the annual average growth rate during the thirty six year period being **15912.68 per cent** followed by general services being 372.67 percent and economic services being **8670.65** per cent. This makes it evident that the Government of Assam is spending a substantial amount on education, medical, family planning, public health and sanitation so as to improve the living standard and productivity of the people of the State. The literacy rate which was just 29.9 per cent in 1971 census increased to 52.89 per cent in 1991 census and further to 63.25 percent in 2001 census as the State Government has been implementing various educational programmes. To enhance educational progress in the state, Universal Elementary Education (UEE) and Sarva Siksha Abhijan (SSA) is being pursued. Some other schemes under the State Plan such as community ownership of elementary schools operationalized through formation of School Managing Committees and Mother Groups has been introduced. Free textbooks have been given to all the students, MIS known as District Information System on Education (DISE) has been operationalized, etc to give more thrust on the issue of education. As far as health service is concerned, the State Government has been undertaking various programmes and continuously increasing allocation of fund to the health sector in State plans. The fund allocation under the Annual Plan 2008-09 was Rs. 92.95 crores of which Rs. 80.30 crores was earmarked for continuing different schemes under Health Services. Various new schemes have been launched to bring Health care nearer to the people during the Tenth Plan. During this period, as many as 69 CHCs, 34 PHCs and 1000 Sub-Centres have been upgraded. Initiatives have been taken

to establish three more Medical Colleges besides providing funds for upgrading the three existing Medical Colleges. The State Government has launched various schemes and undertaken various steps through Public Private Partnership (POP) to improve the health status of the population of undeserved and uncovered area. Mention can be made of Emergency Response Service called “Mritunjoy” introduced by the State government to take care of people who are in need of emergency care arising out of medical, police or fire situations. Further providing safe drinking water and safe sanitation facilities to the uncovered and under served rural population is the major and prime task to cater the needs for health and improve the quality of life. Out of the total 70669 habitations in the State, 68213 habitations were provided with full water supply benefit and 2425 habitations provided with partial benefit till the end of the Tenth Plan period. In addition to the human habitations, 8152 schools have also been provided with drinking water supply facilities.

The main reason for the growth rate of economic services is that despite slow growth due to various constraints a favorable industrial climate is gradually being created in the State as discernible from the increasing interest shown by investors both from the increasing interest shown by investors both from within the State as well as outside. Development of industrial sector is one of the prime goal of the State government and to achieve this goal through the implementation of various schemes, an amount of Rs. 284.54 crore was allocated in the State during the last nine years, i.e., from 2000-01 to 2008-09.

Now we shall analyze the pattern of capital expenditures according to the general, economic and social services during the period of our study.

Capital Expenditure of the Government of Assam under Different Sectors:

The sector wise growth of capital expenditures have also been showing an increasing trend but it has not been able to increase in the same speed as the sector wise growth of revenue expenditures which makes the fact apparent that the government of Assam have been curtailing its expenditures on development projects essential for overall growth and development of the economy. Table 8 shows the sector-wise growth of capital expenditures during the period of the study.

Table 8 Sector-wise Capital expenditure (rupees. in crores)

Year	General Services	Social Services	Economic Services
1	2	3	4
1973-74	15.73	14.41	2.99
1974-75	19.15	13.16	3.41
1975-76	10.75	11.47	1.98
1976-77	9.64	7.07	3.16
1977-78	4.23	4.42	5.15
1978-79	15.89	9.04	2.69
1979-80	3.43	4.40	2.48
1980-81	4.10	8.19	3.02
1981-82	8.57	10.76	3.38
1982-83	13.54	11.07	3.66
1983-84	16.06	15.98	4.16
1984-85	12.26	18.11	5.64
1985-86	14.01	14.24	5.80
1986-87	31.72	29.51	5.60
1987-88	28.23	46.50	8.48
1988-89	17.20	23.23	6.81
1989-90	29.67	39.74	11.60
1990-91	16.36	31.45	10.30
1991-92	22.38	25.80	12.34
1992-93	24.87	23.12	10.10
1993-94	22.31	27.72	10.58
1994-95	33.17	34.25	11.40
1995-96	62.97	41.09	11.93
1996-97	162.63	16.82	10.76
1997-98	203.97	28.80	14.38
1998-99	114.25	47.75	15.29
1999-00	35.42	52.99	20.47
2000-01	26.88	15.43	20.76
2001-02	32.93	35.31	22.84

2002-03	63.21	51.17	52.97
2003-04	72.21	56.79	53.34
2004-05	100.00	100.00	100.00
2005-06	110.08	123.86	45.39
2006-07	134.04	162.76	61.11
2007-08	145.43	273.18	67.16
2008-09	191.63	617.14	83.56

Source: Economic Survey, Assam, 1975-76, 1982-83, 1997-98, 2005-06, 2009-10.

Statistical Abstract of Assam, 1990, 2000.

Statistical Hand Book, Assam, 1973-74 to 2009-10.

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The above table 8 gives the trend of sector-wise growth of capital expenditure during the period of our study. The above table reveals that the **general services** under total capital expenditures which was merely Rs. 15.73 crores in 1973-74 increased to Rs. 191.63 crores 2008-09, the annual average growth rate during the thirty six year period being **1118.24** per cent and the quantum of growth in the said period being **12.18** times. The **social service** which was Rs. 14.01 crores in 1973-74 increased to Rs. 617.14 crores in 2008-09, the annual average growth rate during the thirty six year period being **4304.99** per cent while the quantum of growth in the said period being **44.04** times. The **economic services** under capital account which was Rs.2.99 crores in 1973-74 increased to Rs. 83.56 crores in 2008-09, the annual average growth rate during the thirty six year period being **2694.64** per cent while quantum of growth being **27.94** times. The above analysis also reveals that the highest growth rate under capital account is registered by social services with annual average growth rate during the thirty six year period being **4304.99** per cent and growth quantum of 44.04 times followed by economic services with growth quantum of 27.94 times and general services with growth quantum of 12.18 times in the said period. Thus, in terms of absolute figures as well as growth quantum, the social services services show the highest increase and growth. This means the State Government has been spending a major chunk of capital expenditures on agriculture and allied services,

industry and minerals, water and power development, transport and communication, etc. The above analysis also shows that the sector-wise growth of capital expenditures is much less than the sector-wise growth rates of revenue expenditures. This means government of Assam have been curtailing on capital expenditure which is not at all a good sign for economic development.

The sector-wise growth of capital expenditures is much less than the sector-wise growth rates of revenue expenditures. However it cannot be denied that the sector-wise analysis shows that revenue and capital expenditures have grown manifold times during the period of our study which has definitely contributed to the tremendous growth of public expenditure in Assam.

Results and Discussion

In this section, an attempt is made to find out the determinants of public expenditure in the state of Assam. All the five models given in section VIII are estimated by the method of OLS. The dummy variable is included to account for the sudden increase in the expenditure during the year 2004-05. It may be pointed out here that the above mentioned model specifications are estimated by OLS. In almost all the estimated regression equations, it is observed that the Durbin – Watson d statistic indicated the presence of either positive or negative auto correlation. Although, OLS estimators remain unbiased as well as consistent, they are no longer efficient when autocorrelation is present in the model [Gujarati, D (2009)]. Also, we cannot apply the t and F tests of significance legitimately. Hence we have to resort to some remedial measures to correct for this auto correlation problem. The remedy depends on what knowledge one has about the nature of interdependence among the disturbance terms.

The remedy for auto-correlation involves in finding out

the coefficient of auto-correlation ρ and then using the estimated ρ to transform the original data by doing some manipulations. There are many methods in the literature which are used to calculate ρ . Durbin-Watson d statistic, Theil-Nagar d statistic, Durbin's two-step procedure and the Cochrane-Orcutt iterative method are some of the well known methods. However, the Cochrane-Orcutt iterative method is very popular in applied econometric research and as such we have used this C-O method to estimate the parameters of the above five models.

The model specifications 1 to 5 are hence estimated using the Cochrane-Orcutt iterative method and are given below.

Table 9 Cochrane-Orcutt Method of Estimation (AR1)

Dependent Variable: TOTAL EXPENDITURE

36 observations used for estimation from 1 to 36

Model 1	Coefficient	Standard Error	T-statistic
Constant	-176.8654	636.0554	-.27807[.783]
TIME	6.5682	11.0796	.59282[.558]
DUMMY	-3.8225	8.1701	-.46786[.643]
PCNSDP	.073796	.12963	.56929[.574]
CPI	-.032995	.027502	-1.1998[.240]
PCTREC	.48819	.20804	2.3466[.026]
DOP	-.016358	.057439	-.28479[.778]

R-Squared: 0.98796 R-Bar-Squared : 0.98484 D-W Statistic: 2.0648

Table 9 shows the results of model 1 estimated by the method of Cochrane-Orcutt Method of Estimation (AR1). In this model the variables, per capita net state domestic product (PCNSDP), consumer price index (CPI), per capita total receipts (PCTREC) and density of population (DOP) are included as explanatory variables of public expenditure. The model is found to be statistically fit with R-Squared and R-Bar-Squared well above 0.98. Also the presence of auto-correlation in the model was taken care of by resorting to the C-O iterative method. The results show that except the variable per capita total receipts

(PCTREC), all the other variables, i.e., per capita net state domestic product (PCNSDP), consumer price index (CPI), and density of population (DOP) including the constant are found to be statistically insignificant. The dummy along with the time variable is also found to be statistically insignificant.

The results of the model specification 2 estimated by the method of Cochrane-Orcutt Method of Estimation (AR1) are given in table 10.

Table 10 Cochrane-Orcutt Method of Estimation (AR1)

Dependent Variable: TOTAL EXPENDITURE

36 observations used for estimation from 1 to 36

Model 2	Coefficient	Standard Error	T-statistic
Constant	-64.4553	92.2709	-.69854[.490]
TIME	3.9992	2.6928	1.4851[.148]
DUMMY	-24.6158	9.9794	-2.4667[.020]
PCCE	.50621	.15088	3.3550[.002]
TRNSDP	.22774	.063686	3.5759[.001]
PCUPTP	-1.1282	2.1843	-.51651[.609]

R- Squared : 0. 98893 R-Bar-Squared : 0. 98656 D-W Statistics : 2.089

Table 10 above shows the results of model 2 estimated by the method of Cochrane-Orcutt Method of Estimation (AR1). Here, the variables per capita capital expenditures (PCCE), total receipts to net state domestic product (TRNSDP), and percentage of urban population to total population (PCUPTP) are included. The model is found to be satisfactory in explaining the variation in dependent variable as reflected by R^2 of 0. 98893 and R-Bar-Squared of 0. 98656. Here, only per capita capital expenditures (PCCE) and total receipts to net state domestic product (TRNSDP) are highly significant and exerting a positive influence on the dependent variable, i.e., total public expenditure. While the other variables including the percentage of urban population to total population (PCUPTP), Constant and time variable are insignificant in determining public expenditure. The dummy variable though significant has a negative influence on the dependent variable.

The results of the model specification 3 estimated by the C-O method are given below in table 11.

Table 11 Cochrane-Orcutt Method of Estimation (AR1)

Dependent Variable: TOTAL EXPENDITURE

36 observations used for estimation from 1 to 36

Model 3	Coefficient	Standard Error	T-statistic
Constant	-10.3088	11.9058	-.86586[.394]
TIME	1.2849	.79483	1.6166[.117]
DUMMY	-141.6127	163.0772	-.86838[.392]
NSDP	.024143	.033071	.73003[.471]
PCREGS	.57859	.24960	2.3181[.028]
PCRESS	-.18615	.16935	-1.0992[.281]
PCREES	1.7119	1.8377	.93154[.359]

R2 Squared: 0. 98650 R-Bar-Squared : 0. 98300 D-W Statistics: 2.0020

The estimated results of model 3 are given above in table 11. In this model, the variables net state domestic product (NSDP), per capita revenue expenditure on general services (PCREGS), per capita revenue expenditures on social services (PCRESS) and per capita revenue expenditures on economic services (PCREES) are taken as determinants of public expenditure. The model is found to be statistically fit with R Squared and R-Bar-Squared being 0.98650 and 0.98300 respectively. The presence of auto-correlation in the model was taken care of by resorting to the C-O iterative method. All the variables are statistically insignificant except per capita revenue expenditure on general services (PCREGS) which is not only significant but exerting a positive influence on public expenditure. The constant and dummy variables are found to be negatively insignificant.

The results of the model specification 4 estimated by Cochrane-Orcutt Method (AR1) are given below in table 12.

Table 12 Cochrane-Orcutt Method of Estimation (AR1)

Dependent Variable: TOTAL EXPENDITURE

36 observations used for estimation from 1 to 36

Model 4	Coefficient	Standard Error	T-statistic
Constant	-10.2252	12.8209	-.79754[.432]
TIME	1.2986	.89826	1.4456[.159]
DUMMY	-143.1642	176.5894	-.81072[.424]
NSDP	.023856	.034896	.68364[.500]
PCREGS	.57533	.27290	2.1082[.044]
PCRESS	-.18495	.17567	-1.0528[.301]
PCREES	1.7295	1.9912	.86855[.392]
LR	-.0076673	.25966	-.029529[.977]

R Squared: 0. 98650 R-Bar-Squared : 0. 98235 D-W Statistics
: 2.0101

Table 12 shows the results of model 4 estimated by the method of Cochrane-Orcutt Method of Estimation (AR1). Here the variables net state domestic product (NSDP), per capita revenue expenditure on general services (PCREGS), per capita revenue expenditures on social services (PCRESS), per capita revenue expenditures on economic services (PCREES) and literacy rate (LR) are taken as explanatory variables of public expenditure. The model is found to be statistically fit with R Squared and R-Bar-Squared above 0.98. All the variables are statistically insignificant except per capita revenue expenditure on general services (PCREGS) which is showing a positive influence on the dependent variable, i.e., public expenditure. The presence of auto-correlation in the model was taken care of by resorting to the C-O iterative method. The constant along with the dummy variable are found to be statistically insignificant, but negatively influencing the dependent variable. The time and are considered to be statistically insignificant in determining public expenditure.

Table 13 shows the results of the model specification 5 estimated by the method of Cochrane-Orcutt Method of Estimation (AR1).

Table 13 Cochrane-Orcutt Method of Estimation (AR1)

Dependent Variable: TOTAL EXPENDITURE

36 observations used for estimation from 1 to 36

Model 5	Coefficient	Standard Error	T-statistic
Constant	-37.0759	71.6591	-.51739[.609]
TIME	2.7557	2.4477	1.1258[.270]
DUMMY	11.5097	3.4316	3.3540[.002]
PCNSDP	.44643	.098668	4.5246[.000]
PCCEGS	.056370	.028147	2.0027[.055]
PCESS	.10086	.050711	1.9890[.057]
PCCEES	-.092788	.070177	-1.3222[.197]
LR	-.18219	.18411	-.98958[.331]

R Squared: .98058

R-Bar-Squared: 0. 97768

. D-W Statistic:

2.123

Table 13 above shows the results of model 5 estimated by the method of Cochrane-Orcutt Method of Estimation (AR1). In this model, the variables per capita net state domestic product (PCNSDP), per capita capital expenditure on general services (PCCEGS), per capita capital expenditures on social services (PCESS), per capita capital expenditures on economic services (PCCEES) and literacy rate (LR) are included as explanatory variables of public expenditure. The model is found to be statistically fit with R Squared and R-Bar-Squared with 0. 98058 and 0. 97768 respectively. The variables per capita capital expenditure on general services (PCCEGS), per capita net state domestic product (PCNSDP) and dummy variable are considered to be statistically significant in determining public expenditure while the rest of the variables are statistically insignificant. The presence of auto-correlation in the model was taken care of by resorting to the C-O iterative method.

The results of the tables 9 to 13, have shown that per capita net state domestic product (PCNSDP), per capita capital expenditure (PCCE), per capita revenue expenditure on general services (PCREGS), per capita capital expenditures on general services (PCCEGS), per capita total receipts (PCTREC) and total receipts to net state domestic product (TRNSDP) are the important determinants of Public expenditure of Assam. Hence,

we have decided to include all these important variables along with some other variables in a single model to further verify their significance. Accordingly, all these variables are included as explanatory variables in model 14, and the model is estimated by Cochrane-Orcutt method. The model is given below.

$$PE = a_0 + a_1 NSDP + a_2 DOP + a_3 PCCE + a_4 PCREGS + a_5 PCCEGS + a_6 PCCEES + a_7 LR + a_8 TREC + a_9 PCRE + a_{10} PCNDRE + t_{11} + D_{12} \dots (6)$$

Table 14 shows the results of the model specification 6 estimated by the method of Cochrane-Orcutt Method of Estimation (AR1).

Table 14 Cochrane-Orcutt Method of Estimation (AR1)

Dependent Variable: TOTAL EXPENDITURE

36 observations used for estimation from 1 to 36

Model 6	Coefficient	Standard Error	T-statistic
Constant	-7.7473	10.9250	-.70914[.485]
TIME	.26427	.51835	.50984[.615]
DUMMY	157.8142	252.3213	.62545[.538]
NSDP	.12203	.043149	2.8281[.010]
DOP	.0058217	.073424	.079288[.937]
PCCE	.48757	.24233	2.0121[.056]
PCREGS	0.3941	34.940	2.1280(.002)
PCCEGS	-0.0330	0.1309	2.5219(.001)
PCCEES	-0.6603	0.2951	2.2374(.003)
LR	20.809	5.6158	3.7055(.001)
TREC	0.0459	0.0126	3.6464(.001)
PCRE	1.1334	0.2066	5.4853(.000)
PCNDRE	.0095391	.23804	.040074[.968]

R Squared: 0.9981

R-Bar-Squared: 0.9990

D-W Statistics: 2.001

Table 14 shows the results of model 6 estimated by the method of Cochrane-Orcutt Method of Estimation (AR1). The model is found to do extremely well with R-Squared and R-Bar-Squared well above 0.9981 and 0.999. Also the presence of auto-correlation in the model was taken care of by resorting to the C-O iterative method. The model reveals that except the variable

per capita non development revenue expenditures (PCNDRE) and density of population (DOP), all the other variables included have been found statistically significant. The time and dummy variable are found to be statistically insignificant. The constant is found to be statistically significant and negatively influencing public expenditure.

A cursory look of all the results reported in tables 9 to 14 reveals that out of six models estimated by Cochrane-Orcutt Method of Estimation (AR1), all the models 1, 2, 3, 4, 5 and 6 performed well. They have reported high R² and R² of well above 0.95 showing good statistical fit. All the results are free from the problem of auto-correlation as they are estimated by C-O procedure assuming first order auto-regressive scheme. One striking feature of all the results is that, density of population and per capita revenue expenditure on social services are insignificant in determining public expenditure while net state domestic product, per capita revenue expenditures on general services, per capita revenue expenditures on economic services, per capita capital expenditure, per capita capital expenditure on economic services, per capita total receipts, total receipts, per capital expenditure on general services, total receipts to net state domestic product, per capita net state domestic product and literacy rate have fared very well indicating positive influence on public expenditure.

Summary of Findings:

- In the present study, an attempt has been taken to analyse the growth, pattern and determinants of public expenditure of Assam for thirty six year period, i.e., from 1973-74 to 2008-09. The study is conducted for time series data pertaining to public expenditure of Assam. The study reveals that total public expenditure both under revenue and capital account have been growing

and increasing tremendously during the period of the study.

- Revenue expenditures have been increasing uncontrollably in absolute figures due to relentless increase on salaries, wages, pensions, debt servicing, financial support to PSU's. The capital expenditures which is a very important fiscal instrument and forms the foundation of economic development for an under developed State like Assam has also been increasing, the growth quantum of capital expenditures being 99.84 times which is higher than the growth quantum of revenue expenditures being 86.73 times.. The annual average growth rate of capital expenditures in these thirty six years is 15912.68 per cent which is higher than the growth rate of revenue expenditures which is 8573.82 per cent.
- From the very beginning of our study, the plan expenditures have always been higher than the non-plan expenditures not only in terms of absolute figures but also as percentage to total expenditures. The analysis reveals that throughout the period of our study, the state government of Assam has been giving more importance and stress on social and economic services which has undoubtedly contributed to the significant progress of the state. But it has not been able to alleviate poverty and generate employment as a whole. Though agriculture and industries consume a major portion of the plan expenditure, industrial production and productivity have remained one of the lowest in India. The non plan expenditures also increased mainly because of excessive expenses to deal with emergencies like yearly floods and draughts, influx, infiltration, militancy, terrorism and law and order problems.
- A general pattern of the objectives of public expenditure had been formulated by taking into account the different

services like economic services, general services, social and community services already available in the State. The sector-wise growth of capital expenditures is much less than the sector-wise growth rates of revenue expenditures. However it cannot be denied that the sector-wise analysis shows that revenue and capital expenditures have grown manifold times during the period of our study which has definitely contributed to the tremendous growth of public expenditure in Assam.

- In order to find out the determinants of public expenditure of Assam, six multivariate linear regression models have been used which were estimated by OLS. Since the results of these models showed the presence of auto correlation, the Cochrane-Orcutt method was used to estimate the parameters of the models to rectify this problem. The results of the analysis showed that net state domestic product, literacy rate, per capita revenue expenditure on general services, per capita revenue expenditure on economic services, per capita capital expenditure on economic services, total receipts, per capita capital expenditure and per capita revenue expenditure were the main determinants of public expenditure in Assam.
- The analysis of the results show that the formulated hypothesis, i.e., there is a direct relationship between the level of public expenditure and level of NSDP was proved to be correct as NSDP variable was found to be statistically significant in determining public expenditure of Assam.
- The analysis of the results also show that the formulated hypothesis , i.e., changes in Consumer Price Index (CPI) influence the level and quantum of public expenditure was proved to be incorrect as the variable CPI was found to be statistically insignificant in determining public expenditure of Assam.

- Further, the analysis of the results also show that the formulated hypothesis, i.e., the growth of public expenditure and the quantity of public services provided bear a functional relationship was proved to be correct as depicted by the statistically significant variables namely per capita revenue expenditure on general services (PCREGS), per capita capital expenditures on general services (PCCEGS) and per capita capital expenditures on economic services (PCCEES).

Concluding Remarks:

Since the commencement of planning in India, there has been a very rapid growth of expenditure in the state of Assam. Much fund has flowed from the Assam government exchequer into the state's economy in the period of our study. However, such massive budgetary expenditure notwithstanding, the benefits could not flow equitably in the desired directions. The revenue expenditure of the state has disproportionately increased while the proportion of capital outlay has gradually been on the decline. The state budget of Assam has been experiencing huge deficits in recent years due to the gap in gross receipts and gross expenditures. With the enormous expansion of social and development services and all other activities of the state government under the impact of planning widened. After five decades of 'planning and development', Assam, which was all-India average in terms of per-capita SDP at the beginning of the First Plan, is now one of the most backward states in the country judged by the indicators of development. It is true that present Assam Government has inherited the financial crisis from its predecessor. As such it becomes essential to carry out certain fiscal reforms followed out by other States like Maharashtra, Kerala and Madhya Pradesh. Temporary palliatives such as doubling the Ways and Means advances, devolution of more revenue from the divisible pool and

increased monthly installments of Central plan fund allocations will not be enough. It has to be recognized by all concerned that the real problem is the present mismatch between the total expenditure and total receipts which needs to be bridged.

The phenomenal growth of public expenditures has no doubt resulted in striking development in the State of Assam in the recent years. However it is indeed common for the people to regret the increase in public expenditures. As such various public expenditure management policies have been introduced from time to time to restrict its growth. Prevention of any further increases in government expenditures would require the halt all changes in our technology and our institutions, the acceptance of an inadequate scale of public services, etc. Instead there is every reason to believe that such expenditures will continue to increase and the inevitability of the increase should be recognized and accepted.

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