



TRENDS OF REVENUES AND EXPENDITURES IN UTTAR PRADESH (INDIA)

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Abstract: *This paper examines the trends and tendencies of revenues and expenditures of U.P. Thus, an attempt has been made to study the empirical behavior of revenues and expenditures of the state. After broadlining the structure of public revenue and expenditures of States, estimates relating to these are presented. This is subsequently followed by estimation of compound annual growth rates of aggregate revenue and aggregate expenditure. For estimating compound annual growth rate semi-log regression model is used. Also, linear regression model on aggregate expenditure to aggregate revenue has been used.*

Keywords: Revenue Receipts, Capital Receipts, Revenue Expenditure, Capital Expenditure

JEL Classification: H71, H72

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INTRODUCTION

The total revenue of the state broadly comprises tax revenue and non tax revenue. Tax revenue is composed of State's own tax revenue and share in central taxes. Non-tax revenue is composed of State's own non-tax revenue and grants from the centre. States' own Tax Revenue comes mainly from taxes on income, taxes on property and capital transactions and taxes on commodities and services. Out of this taxes on commodities and services is the major component of SOTR with state sales Tax/VAT contribution being highest.

Non-Tax revenue is generated from states' own non tax revenue and grants from the Centre. Grants from the Centre has always been greater than states' own non tax revenue. In 2005-06 non plan grants from centre showed a marked increase and in this year it was greater than state plan schemes. Before this the gap between state plan scheme and non plan grants was larger.

States own non-tax revenue comprise interest receipts, dividend and profits, general services, fiscal services and economic services. Total capital receipts of the state comprise internal debt, loans and advances from the Centre, recovery of loans and advances, inter-state settlements, contingency fund, small savings and provident funds etc., reserve funds deposits and advances, suspense and miscellaneous capital receipts.

Total Revenue Expenditure comprises of Development Expenditure, Non-Development Expenditure and grants in aid. Development Expenditure includes **expenditure on social services** comprising expenditure on-1. Education, Sports, Arts and Culture 2. Medical and Public Health 3. Family Welfare 4. Water Supply and sanitation 5. Housing 6. Urban Development 7. Welfare of Scheduled Castes, Scheduled Tribes and Other Backward Classes 8. Labour and Labour Welfare 9. Social Security and Welfare 10. Nutrition 11. Relief on account of Natural Clamities 12. Others. **Expenditure on economic services** such as agriculture and allied activities, rural development, special area programmes, irrigation and flood control, energy, industry and minerals, transport and communication, science and technology and environment and general economic services such as secretariat, tourism, civil supplies and others.

Non-development expenditure constitutes expenditure on general services such as organs of State, fiscal servies, interest payments and servicing of debt, administrative servies,



pensions, miscellaneous and general services. Both developmental and non-development expenditure can be further be divided into plan and non-planned expenditure.

Total capital expenditure of the state is broadly comprised of total capital outlay , discharge of internal debt, repayment of loan to the Centre, loans and advances by the State Government, inter-state settlement, contingency fund, small savings, provident funds etc., reserve fuds , deposits and advances, suspense and miscellaneous , appropriation to contingency fund and remmittances.

It is significant to note that revenue receipts and revenue expenditures are charged on the revenue account and capital receipts and capital expenditures are charged on the capital account of the budget. Revenue receipts and revenue expenditures are of short term nature whereas capital receipts and expenditures are of long term nature. Revenue expenditures imply government's consumption expenditure whereas capital expenditures tend to create physical assets and thereby aim to accelerate the pace of development. The excess of revenue expenditures over revenue receipts imply revenue deficit. It is the revenue deficit which is primarily responsible for fiscal imbalances. The burgeoning trend of revenue deficit ultimately leads to fiscal crisis. If revenue deficit occurs this leads to increase in borrowings on the capital account which entails interest burden and thereby increase in revenue deficit again. Increased revenue deficit increase borrowings and interest burden again and the cycle goes on. This accentuates fiscal crisis. Thus, elimination of revenue deficit and generation of revenue surplus ie. Government savings is presumptuously the core element of fiscal reforms strategy. Furthermore, fiscal deficit which implies indebtedness of the state also needs to be eliminated. Thus, elimination of revenue and fiscal deficit has concomitantly been targeted upon in the state's strategy of fiscal reforms.

In an effort to prevent inter governmental jurisdictional disputes, the constitution divided most taxing powers between the centre and the state without a degree of overlap. Unlike, Central Government, obviously states have limited options at their disposal. These unique assignments have inhibited the states from broadening their tax bases in an efficient manner to meet increasing expenditure responsibilities for infrastructure and social spending. The unique assignments have also undermined the scope for co-operative and tax harmonization initiatives that have developed in other federal countries. The states were given the power to levy a broad based sales tax, but the tax room intended for the states by



this provision has been partially preempted by the authority given to the center to impose excises on almost any commodity.

Resources available to the state government can be broadly classified as states own resources and federal transfers. Sharing of taxes between various levels of government takes place through the mechanism of Finance Commission and Planning Commission. Considering the varying revenue raising capacities at State Level, grants-in-aid are provided through the mechanism of Finance Commission and Planning Commission. Both the institutions make provisions to cover the resource gaps in the state for plan as well as non plan activities by the State Government. States own resources are defined as a sum of states own tax revenues, states share in central taxes and states own non tax revenues. States own tax revenues largely depend on the various consumption and trading activities taking place within the state. On the other hand, central government has the power to levy taxes on various manufacturing as well as the more buoyant service sector of the economy. Indian states raise less than half of their financial requirements from their own resources. Besides, central government can tax various sources of income, state governments are confined to agricultural income and land based taxes, which have posed to be a tough option for many states governments. States own non tax revenues comprises of the profits and dividends from the state level public enterprises and other institutions, returns generated from the provisions of a economic and social services by the government and interest receipts earned by the state government from its lending activities. Federal transfers mean a sum of central grants and central loans. Apart from own taxes and share in central taxes, central government provides grants in aid as well as loans to state for the fulfillment of their developmental plans and other welfare activities, particularly related to social and community services. Over the years, states own resources (only states own tax and nontax revenues) have financed 45 percent of the states aggregate expenditure and for 55 percent of the expenditure they are dependent on the central government approval. Similarly, 53 percent of the states aggregate receipts are in the form of grants and loans. Resources thus can be broadly grouped into three:

- a) States own Resources which includes states own tax and non tax revenues.
- b) Central Transfers which includes devolution of grants and loans from the centre.
- c) Non Central Borrowing which includes market and institutional loans.



The focus of state governments, taxation policy has been on streamlining the tax structure and better tax administration for better tax compliance and greater transparency. Measures towards simplification, rationalisation, modernisation of the tax administration with IT intervention and strengthening enforcement measures have been initiated by various state governments. Financial delegation of certain taxation powers by some of the state governments to the local bodies has led to better resource mobilization. A number of states propose to undertake steps to further increase collections from VAT, excise and other tax and non tax sources through rationalization, better tax compliance and by strengthening the enforcement machinery. The taxation policy of state governments is in general aimed at moderating levels of taxation with emphasis on an efficient and effective tax administration and plugging of revenue leakages. During the recent past tax collections had increased due to a robust growth of states economies and reforms in tax administration. The adoption of state level VAT has been one of the biggest tax reforms undertaken by the state governments so far. The government intends to expand the scope of taxation of services not only by bringing in new services within the tax net but also by increasing the rates of tax and non-tax revenues. In the long run, this will be beneficial for state finances. VAT is the most important tax revenue of the states, contributing almost half of their total own tax receipts.

PUBLIC EXPENDITURE OF STATE GOVERNMENTS

Public expenditure plays an important role in achieving goals of growth, development, equity and stability. For developing countries public expenditure assumes importance to ensure on equitable distribution of resources. The level and composition of public expenditure can have macroeconomic as well social implications. Expenditure on growth promoting functions could enhance future revenue and justify the, provision of fiscal space in the Budget. The State Governments account for around 60 percent of the combined expenditure of the centre and states reflecting the vital role that the states play in the growth and development of the economy. The composition of aggregate expenditure by state governments in terms of revenue and capital expenditure is reflective of the quality of expenditure incurred. The expenditure pattern of the state governments suffers from inherent structural rigidities from components such as subsidies, salaries and wages, pensions and interest payments. As the states play an important role in the development of social and economic infrastructure, expenditure compressions should focus on non-essential



components of aggregate expenditure. The right size and the right composition of government expenditure should be adopted to maximize growth rates besides also providing adequately for governments obligations of health and education. States need to curtail unwarranted items of revenue expenditure that have low growth and welfare implications. As far as the composition of revenue expenditure is concerned, it continues to be dominated by development expenditure which mainly comprises spending by states on social and economic services. Development expenditure accounted for 71 percent of the total revenue expenditure of the states during 1980-85. However, its share in total revenue expenditure steadily declined till 2004-05 (54.7 percent) before rising marginally in subsequent years 58.0 percent during 2005-10. The share of non development revenue expenditure in total revenue expenditure witnessed a concomitant increase till 2004-05 and a moderate decline thereafter. Development revenue expenditure continues to be dominated by social services. Social infrastructure builds upon the provision of public education, public health, nutrition, water supply and particularly social welfare. More than 80 percent of these provisions are made by subnational governments. Similarly 60-70 percent of the spending on economic infrastructure is being done by the state governments. Apart from some major infrastructure areas such as roads, ports, inland waterways and power, state governments have to spend on services, such as agriculture, rural and urban development, industry and minerals, irrigation, land development and several others to support and promote private activities. Education and health are the areas where centre and state, both the governments are spending larger amount. The states have done well during 2010-11 to 2012-13(BE) in comparison with their earlier performance during 2000-01 to 2009-10 in terms of increasing development expenditure and social expenditure as a ratio to aggregate expenditure. The capital outlay has increased while the non development revenue expenditure has come down in recent years, resulting in a lower committed expenditure- revenue receipt ratio.

TRENDS IN REVENUE AND EXPENDITURE OF UTTAR PRADESH

Details of Revenue Receipts and Capital Receipts

The revenue receipts have continuously increasing from 2002-03 to 2009-10 (BE) with both tax and non tax revenue of the state increasing. But the increase in tax revenues is greater than the increase in non tax revenue. Tax revenue is from States' Own Tax Revenue (SOTR)



and share in Central taxes (SCT). From 2002-03 to 2005-06 share in central taxes is less than states own tax revenue but since 2006-07 to 2009-10 (B.E.) states' share in Central Taxes is greater than states own tax revenue.

Estimates show that receipts from dividends and profits declined to half the amount in 2008-09 to that from 2007-08. Receipt from social services also showed marked decline in this period. Receipts from economic services showed major decline from 2006-07 to 2007-08 but increased satisfactorily in 2008-09 and again declined in 2009-10 (BE).

Increase in receipts from economic services in 2006-07 was due to major jump in receipts from power and thereafter decline in receipts from economic services in 2007-08 was primarily due to sharp decline in receipts from power. The receipts from economic services again increased sharply in 2008-09 due to major increase in receipts from power. This, it can be concluded that receipts from economic services is being directly affected by receipts from power. (Appendix I: Details of revenue Receipts, pg.170, Handbook of Statistics On State Government Finances, RBI, 2010).

Total capital receipts increased sharply in 2003-04 to 1,83,25,119 lakh from 14,61,018 lakh in 2002-03 and again rose sharply in 2006-07 to 6,17,97,413 lakh due to hefty rise in recovery of loans and advances from power projects to 12,27,740 lakh and small savings ,provident funds to 3,12,385 lakh from 1,95,667 lakh in 2002-03 and receipts from cash balance investment accounts and deposits with RBI. Major rise in capital receipts is again exhibited in 2006-07 due to sharp rise in small savings, provident fund, cash balances investment accounts and deposits with RBI. Capital receipts from small savings ,provident funds is continuously increasing since 2002-03.Total capital receipts declined from 4,85,87,098 lakh in 2007-08 to 2,16,92,836 lakh in 2008-09 to almost half due to sharp decrease in deposits and advances from 19,45,025 lakh in 2007-08 to 7,78,439 lakh in 2008-09 .There is also sharp decline in receipts from remittances in the same time from 13,28,085 lakh to 2,51,500 lakh.

(Appendix III: Details of capital receipts, pg. 295, Handbook of Statistics on State Government Finances, RBI, 2010)



Table 3.1 : Percentage Share of Revenue Receipts and Capital Receipts in Aggregate Revenue in Uttar Pradesh

Year	Aggregate Revenue (crore)	Revenue Receipts (crore)	Capital Receipts (crore)	%Share of Revenue Receipts	%Share of Capital Receipts
1990-91	12129	8311	3818	68.52	31.48
1991-92	13341	9675	3666	72.52	27.48
1992-93	16355	11676	4679	71.39	28.61
1993-94	15673	12131	3542	77.40	22.60
1994-95	22189	13393	8796	60.36	39.64
1995-96	21602	15215	6387	70.43	29.57
1996-97	23045	16028	7017	69.55	30.45
1997-98	25928	17571	8357	67.77	32.23
1998-99	30034	17379	12655	57.86	42.14
1999-00	33069	21495	11574	65.00	35.00
2000-01	38819	24743	14076	63.74	36.26
2001-02	37582	25597	11985	68.11	31.89
2002-03	42431	27821	14610	65.57	34.43
2003-04	69277	31638	37639	45.67	54.33
2004-05	59392	37618	21774	63.34	36.66
2005-06	68263	45349	22914	66.43	33.57
2006-07	81974	60600	21374	73.93	26.07
2007-08	87016	68672	18344	78.92	21.08
2008-09	104965	85146	19819	81.12	18.88
2009-10 (BE)	121718	94440	27278	77.59	22.41

Source: Handbook of Statistics on State Government Finances, RBI, 2010

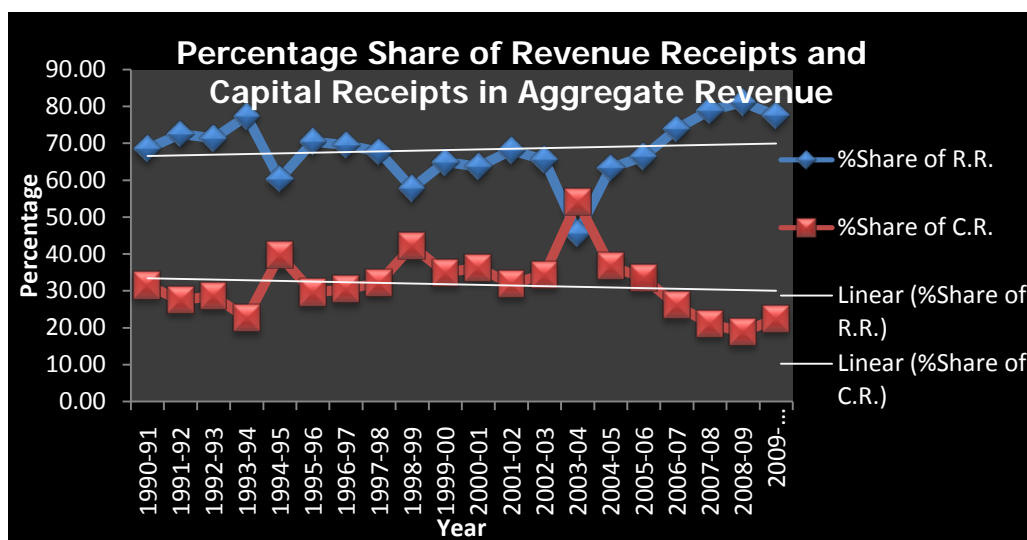


Figure 3.1



The table 3.1 shows that percentage share of revenue receipts (RR) in aggregate revenue (AR) witnessed a sharp decline in 1994-95 then rose in 1995-96 showing rising trend till 1997-98. This again showed a marked decline in 1998-99 then again started increasing and fell to lowest level in 2003-04 to 45.67 percent though increased in 2004-05 and rose to highest level in 2008-09 to 81.12 percent of AR. Since aggregate revenue is the sum of RR and capital receipt (CR) in the years when percent of revenue receipt will rise capital receipt percentage will decline and vice versa.

When we look at the amount of revenue receipts and capital receipts we find that there is continuous increase in amount of revenue receipts even in years when RR as percent of AR has fallen to lowest. But the amount of capital receipts has shown fluctuations. Hence, fluctuations in percent of revenue and capital receipts as percent of aggregate revenue has occurred. In the year 2003-04 when percent of RR as percent of AR has fallen to lowest 45.7 percent and that of CR as percent of AR highest 54.3 the amount of capital receipt has risen from Rs. 1461 crore in 2002-03 to Rs. 37639 in 2003-04 to its highest level even greater than the amount of revenue receipt which was Rs. 31638 crore in 2003-04. Thus we can deduce that it is fluctuation in amount of capital receipt which is causing fluctuations in the percent of RR and CR as percent of AR despite continuous rise in the amount of RR.

Figure 3.1 shows fluctuations in the percentage of revenue receipt and capital receipt as percent of aggregate revenue. **But when we deduce a linear trend line for both RR and CR from 1990-91 to 2009-10 period the linear trend line for revenue receipt shows overall increasing trend and linear trend line for same period shows overall decreasing trend for capital receipt.**

Compound Annual Growth Rate of Aggregate Revenue

For estimating compound annual growth rate, semi log regression model is used. In this model, log value of Aggregate revenue is a dependent variable which is explained by time as an independent variable. Thus the following semi log regression model is used.

Semi log regression model

$$\text{LAR} = \beta_1 + \beta_2 T + \mu_i$$

Where

LAR = Log value of Aggregate Revenue

β_1 = Intercept of Aggregate Revenue



β_2T = Slope of Time (Financial Year)

U_i = Error term

Above model measures the growth rate by which compound annual growth rate is calculated as below mentioned formula:

$$CAGR = \{(Antilog\ of\ Growth\ rate) - 1\} * 100$$

In this study the value of CAGR have been put instead of the value of growth rate which are presented by Table 3.2

Table 3.2 Compound Annual Growth Rate of Aggregate Revenue in U.P.

Year	CAGR LAR	R ²	F Statistics
1991-2010	11.874 (33.45)*	0.9842	(1118.58)*
1991-1995	13.690 (4.58)**	0.8751	(21.02)**
1996-2000	11.165 (14.69)*	0.9863	(215.66)*
2001-2005	14.620 (2.73)***	0.7123	(7.43)***
2006-2010	14.039 (13.10)*	0.9828	(171.61)*

Note: See Appendix for stata result

In this table compound annual growth rate of aggregate revenue is measured by semilog regression model. For seeing trend line, initially compound annual growth rate of aggregate revenue is measured from 1991 to 2010, further it is measured on the basis of five year.

Compound annual growth rate of Aggregate Revenue from 1991-2010

In this model, the value of F statistics is 1118.58 which is statistically significant at 1 percent level of significance. It means the model is fit. In this model, R² value is estimated to be 0.9842, i.e. 98.42%. It reveals that 98.42% of the observations are explained by semilog regression function. Approximately only 1.58% of observations are not explained by the above function. Aggregate revenue in Uttar Pradesh is increasing at the annual rate of 11.87 percent. This is statistically significant at the 1 percent level of significance. On the basis of this result it is concluded that aggregate revenue increases 11.87 percent yearly.



Compound annual growth rate of Aggregate Revenue from 1991-1995

In this model, the value of F statistics is 21.02 which is statistically significant at 5 percent level of significance. It means the model is fit. In this model, R^2 value is estimated to be 0.8751, i.e. 87.51%. It reveals that 87.51% of the observations are explained by semi log regression function. Approximately only 12.49% of observations are not explained by the above function. Aggregate revenue in Uttar Pradesh is increasing at the annual rate of 13.69 percent. This is statistically significant at the 5 percent level of significance. On the basis of this result it is concluded that aggregate revenue increases 13.69 percent yearly.

Compound annual growth rate of Aggregate Revenue from 1996-2000

In this model, the value of F statistics is 215.66 which is statistically significant at 1 percent level of significance. It means the model is fit. In this model, R^2 value is estimated to be 0.9863, i.e. 98.63 %. It reveals that 98.63 % of the observations are explained by semi log regression function. Approximately only 1.37% of observations are not explained by the above function. Aggregate revenue in Uttar Pradesh is increasing at the annual rate of 11.16 percent. This is statistically significant at the 1 percent level of significance. On the basis of this result it is concluded that aggregate revenue increases 11.16 percent yearly.

Compound annual growth rate of Aggregate Revenue from 2001-2005

In this model, the value of F statistics is 7.43 which is statistically significant at 10 percent level of significance. It means the model is fit. In this model, R^2 value is estimated to be 0.7123, i.e. 71.23 %. It reveals that 71.23 % of the observations are explained by semi log regression function. Approximately only 28.77% of observations are not explained by the above function. Aggregate revenue in Uttar Pradesh is increasing at the annual rate of 14.62 percent. This is statistically significant at the 10 percent level of significance. On the basis of this result it is concluded that aggregate revenue increases 14.62 percent yearly.

Compound annual growth rate of Aggregate Revenue from 2006-2010

In this model, the value of F statistics is 171.61 which is statistically significant at 1 percent level of significance. It means the model is fit. In this model, R^2 value is estimated to be 0.9828, i.e. 98.28 %. It reveals that 98.28 % of the observations are explained by semi log regression function. Approximately only 1.72% of observations are not explained by the above function. Aggregate revenue in Uttar Pradesh is increasing at the annual rate of 14.03 percent.



percent. This is statistically significant at the 1 percent level of significance. On the basis of this result it is concluded that aggregate revenue increases 14.03 percent yearly.

Trend in Expenditure in Uttar Pradesh

Aggregate Expenditure in Uttar Pradesh has increased continuously in the period 1990-91 to 2009-10,(table 3.3) this is due to the fast increasing functions of the State Government as economy grows which is in consonance with Wagners Law which states that as economy grows, functions of the Government increases therefore expenditures of the Government also increase. Amount of revenue expenditure has increased continuously in the period 1990-91 to 2009-10 except for the years 2004-05 and 2005-06 where it was lower 44160 crore and 46617 crore than its preceding year i.e. 2003-04 when it was 50221 crore. Except these two years amount of revenue expenditure has increased continuously. If we look at the amount of the capital expenditure though it is much less than revenue expenditure but its amount is also continuously increasing with mild fluctuations. In 2003-04 when revenue expenditure showed marked increase Capital expenditure also increased sharply to 19220 crore than its previous year in which it was 9148 crore. As Revenue expenditure showed a decline in 2004-05 and 2005-06 than it previous year 2003-04, in the same manner, amount of Capital expenditure showed decline in same two years thereafter from 2006-07 it started rising.

If we analyze the percent share of the revenue expenditure(RE) in Aggregate Expenditure(AE) from 1995-96 to 2001-02, it was above 80 percent in this period which shows that percentage share of Capital Expenditure(CE) in AE has been confined to 16-17 percent as AE is the sum of percentage share of RE and percentage share of CE. Since 2002-03, percent share of RE reduced and that of CE increased, but change is not remarkable, percent share of RE is hovering around 75 percent and that of CE has been above 22 percent and moving around 25 percent. Thus **it can be inferred that since 2002-03 RE is approximately three fourth and CE one fourth of aggregate expenditure.**

In fig. 3.2 we try to deduce linear trend line for RE and CE from 1990-91 to 2009-10 period, the linear trend line for RE shows decreasing trend and linear trend line for same period shows increasing trend for Capital Expenditure.

In 2002-03 total revenue expenditure was Rs. 32,93,850 lakhs out of which developmental expenditure was Rs. 16,19,124 lakh and non-developmental expenditure was Rs. 15, 58,269



lakh. Total expenditure increased remarkably in 2003-04 to Rs. 50,22,112 lakh and the major expenditure was developmental expenditure. Only in 2004-05 non-developmental expenditure exceeded developmental expenditure, in all other years developmental expenditure has been greater than non-developmental expenditure. In 2003-04 developmental expenditure shot sharply than non-developmental expenditure leading to sharp rise in total revenue expenditure due to sharp increase in expenditure on power.(Appendix II:Details of Revenue Expenditure pg251-253, Handbook of Statistics on State Government Finances, RBI 2010)

Estimates show that capital expenditure rose to almost double in 2006-07 to Rs.6,23,01,209 lakh than its preceding year 2005-06 which was Rs. 3,02,78,520 lakh and this marked increase was due to rise in sharp increase in Capital Outlay from Rs.8,71,123 lakh to Rs. 13,98,412 lakh thereafter capital expenditure decreased but Total Capital Outlay kept on rising in the following years.(Appendix IV: Details of Capital Expenditure pg456-461, Handbook of Statistics on State Government Finances, RBI 2010)

Table 3.3 Percentage Share of Revenue Expenditure and Capital Expenditure in Aggregate Expenditure in Uttar Pradesh

Year	Aggregate Expenditure (crore)	Revenue Expenditure (crore)	Capital Expenditure (crore)	%Share of Revenue Expenditure	%Share of Capital Expenditure
1990-91	12240.00	9539.00	2702.00	77.93	22.08
1991-92	13246.00	10399.00	2847.00	78.51	21.49
1992-93	16135.00	12691.00	3445.00	78.66	21.35
1993-94	16275.00	13280.00	2995.00	81.60	18.40
1994-95	21062.00	15396.00	5666.00	73.10	26.90
1995-96	20787.00	17556.00	3231.00	84.46	15.54
1996-97	23017.00	19208.00	3809.00	83.45	16.55
1997-98	26626.00	22195.00	4431.00	83.36	16.64
1998-99	31462.00	26075.00	5388.00	82.88	17.13
1999-00	34615.00	28748.00	5868.00	83.05	16.95
2000-01	36681.00	31033.00	5649.00	84.60	15.40
2001-02	38104.00	31780.00	6324.00	83.40	16.60
2002-03	42086.00	32939.00	9148.00	78.27	21.74



2003-04	69441.00	50221.00	19220.00	72.32	27.68
2004-05	59124.00	44610.00	14514.00	75.45	24.55
2005-06	59839.00	46617.00	13222.00	77.90	22.10
2006-07	74983.00	55699.00	19284.00	74.28	25.72
2007-08	87304.00	65223.00	22081.00	74.71	25.29
2008-09	109185.00	81041.00	28144.00	74.22	25.78
2009-10	121597.00	92867.00	28730.00	76.37	23.63

Source: Handbook of Statistics on State Government Finances, RBI, 2010

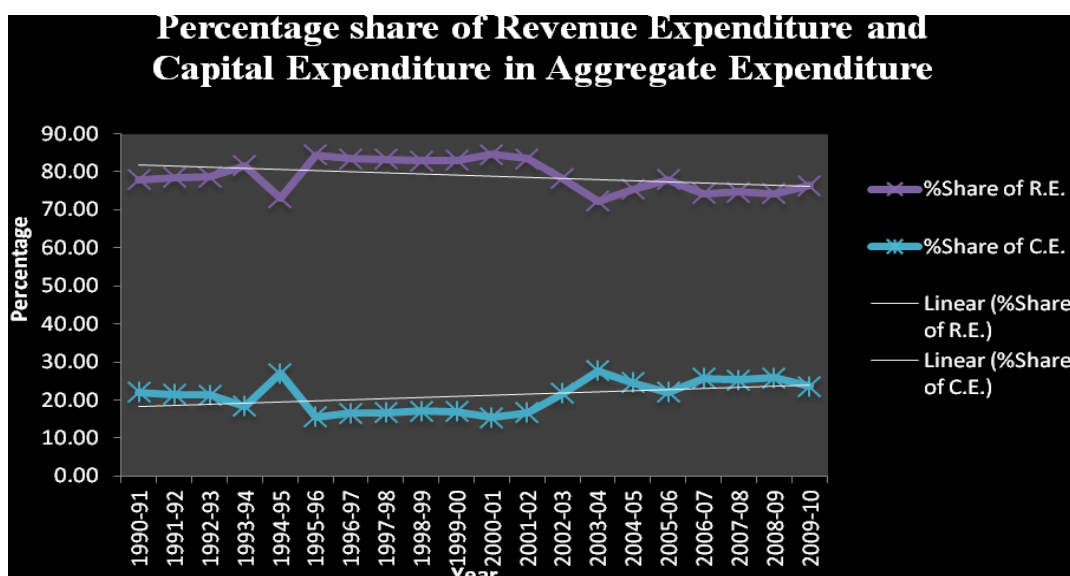


Figure 3.2

Compound Annual Growth Rate of Aggregate Expenditure

For estimating compound annual growth rate, Semilog regression model is used. In this model, log value of Aggregate expenditure is a dependent variable which is explained by time as an independent variable. Thus the following Semilog regression model is used.

Semilog model

$$LAE = \beta_1 + \beta_2 T + \mu_i$$

Where

LAE = Log value of Aggregate Expenditure

β_1 = Intercept of Aggregate Expenditure

$\beta_2 T$ = Slope of Time (Financial Year)

μ_i = Error term



Above model measures the growth rate by which compound annual growth rate is calculated as below mentioned formula:

$$CAGR = \{(Antilog \text{ of Growth rate}) - 1\} * 100$$

In this study the value of CAGR have put instead of the value of growth rate . These are presented in Table 3.4

Table 3.4 Compound Annual Growth Rate of Aggregate Expenditure in U.P.

Year	CAGR LAE	R ²	F Statistics
1991-2010	11.745 (31.93)*	0.9826	(1019.33)*
1991-1995	12.914 (6.55)*	0.9346	(42.84)*
1996-2000	13.324 (19.50)*	0.9922	(380.20)*
2001-2005	15.549 (3.00)**	0.7505	(9.02)**
2006-2010	17.939 (16.18)*	0.9887	(261.68)*

Note :See Appendix for stata result

The table 3.4 reveals compound annual growth rate of aggregate expenditure. It is measured by semilog regression model. For seeing trend line, initially compound annual growth rate of aggregate expenditure is measured from 1991 to 2010, further it is measured on the basis of five year.

Compound annual growth rate of Aggregate Expenditure from 1991-2010

In this model, the value of F statistics is 1019.33 which is statistically significant at 1 percent level of significance. It means the model is fit. In this model, R² value is estimated to be 0.9826, i.e. 98.26%. It reveals that 98.26% of the observations are explained by semi log regression function. Approximately only 1.74% of observations are not explained by the above function. Aggregate expenditure in Uttar Pradesh is increasing at the annual rate of 11.74 percent. This is statistically significant at the 1 percent level of significance. On the basis of this result it is concluded that aggregate expenditure increases 11.74 percent yearly.



Compound annual growth rate of Aggregate Expenditure from 1991-1995

In this model, the value of F statistics is 42.84 which is statistically significant at 1 percent level of significance. It means the model is fit. In this model, R^2 value is estimated to be 0.9346, i.e. 93.46 %. It reveals that 93.46 % of the observations are explained by semi log regression function. Approximately only 6.54% of observations are not explained by the above function. Aggregate expenditure in Uttar Pradesh is increasing at the annual rate of 12.91 percent. This is statistically significant at the 1 percent level of significance. On the basis of this result it is concluded that aggregate expenditure increases 12.91 percent yearly.

Compound annual growth rate of Aggregate Expenditure from 1996-2000

In this model, the value of F statistics is 380.20 which is statistically significant at 1 percent level of significance. It means the model is fit. In this model, R^2 value is estimated to be 0.9922, i.e. 99.22 %. It reveals that 99.22 % of the observations are explained by semi log regression function. Approximately only 0.78 % of observations are not explained by the above function. Aggregate expenditure in Uttar Pradesh is increasing at the annual rate of 13.32 percent. This is statistically significant at the 1 percent level of significance. On the basis of this result it is concluded that aggregate expenditure increases 13.32percent yearly.

Compound annual growth rate of Aggregate Expenditure from 2001-2005

In this model, the value of F statistics is 9.02 which is statistically significant at 5 percent level of significance. It means the model is fit. In this model, R^2 value is estimated to be 0.7505, i.e. 75.05 %. It reveals that 75.05 % of the observations are explained by semi log regression function. Approximately only 24.95 % of observations are not explained by the above function. Aggregate expenditure in Uttar Pradesh is increasing at the annual rate of 15.54 percent. This is statistically significant at the 5 percent level of significance. On the basis of this result it is concluded that aggregate expenditure increases 15.54 percent yearly.

Compound annual growth rate of Aggregate Expenditure from 2006-2010

In this model, the value of F statistics is 261.68 which is statistically significant at 1 percent level of significance. It means the model is fit. In this model, R^2 value is estimated to be 0.9887, i.e. 98.87 %. It reveals that 98.87 % of the observations are explained by semi log regression function. Approximately only 1.13 % of observations are not explained by the



above function. Aggregate expenditure in Uttar Pradesh is increasing at the annual rate of 17.93 percent. This is statistically significant at the 1 percent level of significance. On the basis of this result it is concluded that aggregate expenditure increases 17.93 percent yearly.

Linear Regression Model on Aggregate Expenditure to Aggregate Revenue

For regression model analysis, Aggregate expenditure is a dependent variable which is explained by Aggregate revenue independent variable. Thus the following regression model is used for estimating Aggregate expenditure.

$$AE = \beta_1 + \beta_2 AR + \mu_i$$

Where

AE = Aggregate Expenditure

β_1 = Intercept of Aggregate Expenditure

$\beta_2 AR$ = Slope of Aggregate Revenue

U_i = Error term

$$AE = \beta_1 + \beta_2 AR + \mu_i$$

$$AE = (0.1185) + (0.9879) + \mu_i$$

$$t = (0.75) \quad (66.16)$$

$$p = (0.461) \quad (0.000)^*$$

$$F = (2491.40)^*$$

$$R\text{-squared} = 0.9959$$

See Appendix for strata result

Here, *Indicates p value at 1 percent level of significance.

In this model, the value of F statistics is 2491.40 at (1, 18) degree of freedom. This value is statistically significant at 1 percent level of significance. It means the model is fit. In this model, R^2 value is estimated to be 0.9959, i.e. 99.59%. It reveals that 99.59% of the observations are explained by linear regression function. Approximately only 0.41% of observations are not explained by the above function. This implies that on percentage change in aggregate revenue brings forth 0.9879 times change in aggregate expenditure. This is statistically significant at the 1 percent level of significance. On the basis of this result it is concluded that one unit change in aggregate revenue increases 0.9879 unit aggregate expenditure. Aggregate expenditure is positively affected with aggregate revenue.



SUGGESTIONS

- Tax efforts should be improved through increasing efficiency and other initiatives and expenditure policies should be focused and reoriented to improve the quality of expenditure along with the target of fiscal sustainability in medium term.
- Tax revenues can be increased through improvement in efficiency and compliance by tightening vigilance and increasing the use of information technology for tax collections.
- Improvement in the quality of life and human capital yields "demographic dividend" which necessitates higher social sector expenditures as well as effective delivery of public goods. The quality of expenditure can be improved by curtailing non-productive expenditure while enhancing expenditure that would impart countercyclical growth impulses to the economy. If financial restructuring scheme is worked out in right spirit, states can come out of the problem of state finances through converting state discoms into financially viable units.
- The real strength of U.P. is its big market and massive population base, which could be supported through proactive budget policies and their proper implementation.
- States should try to identify unwarranted items of revenues expenditure that have low growth and welfare implications.
- The amount of social sector expenditure and mechanism of delivery of social services needs considerable improvement.
- In view of energy constraint states should explore options for alternatives. The process of fiscal correction should not adversely impact capital outlay and expenditure on social sectors.

Author's Note: Any errors or shortcomings in the article, however, are of the author.

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