CHAPTER- I
INTRODUCTION

1.1 Introduction

Fiscal policy refers to the use of a Government’s taxation and expenditure policies to influence the level of economic activities at the macroeconomic level. Export-import duties, subsidies etc. are important instruments of fiscal policy on the external front. The broad objectives of the fiscal policy are as under:

Mobilisation of Resources

Resources for public life can be acquired through several ways. First, the government can purchase a part of the goods and services available in the economy through deficit financing, however, such a policy often resulted into price rise. Second, the government can raise resources by charging for the goods and services it provides. This mode works when it operates like a commercial enterprise and is not applicable in case of the provision of pure public goods i.e. defense, law and order etc. The third way of raising resources is through loans, which can be raised internally as well as externally. These public borrowings again involve problems of debt management, debt servicing and increase in government’s liabilities besides burdening future generations. Last but not the least, the government can impose taxes to finance public expenditure, which, in modern economies are the main instrument for transferring resources from private to public use.

Allocation of Resources

In developing countries, the scarcity of real resources calls for their optimum utilization. A prudent public policy must discourage the flow of resources to low priority areas so that they could be diverted to vital sectors of the economy. For example, by imposing high tax rates
on luxuries, the government can discourage the consumption and production of such items. It ensures the release of resources for high priority areas.

**Distributive Justice**

Providing distributive justice is an important function of fiscal policy. This justice relates largely to distribution of tax burden and benefits of public expenditure. If these distributions are not efficient then the gulf between the rich and the poor goes on widening, threatening political stability and social order. Tax and expenditure policies are the democratic methods to influence the distribution of income and wealth on desired lines.

**Stabilisation**

A reasonable degree of price stability is a primary concern among government’s economic policies. The overall level of economic activities in an economy depends upon aggregate demand, relative to capacity output. At times, the level of aggregate demand may be insufficient to secure full employment of labour and other factors of production. At other times, aggregate demand may exceed available output at full employment level. Government intervention in both the cases becomes essential to correct such disequilibrium in an economy. Reduction in taxes during deflation would leave greater disposable incomes with the people, giving boost to aggregate demand. The reverse is true in times of inflation.

Modern economies are frequently beset with problems like inflation, excessive fluctuations in economic activities, and deficit in the balance of payments. Every economy has to make suitable changes in its fiscal policy as demanded by the macro economic conditions of the economy. In India also, the government had been designing the fiscal policy since independence according to the requirements of the
economy. It generally consists of a suitable mix of taxation, expenditure and debt policy. The present study is also an attempt to analyze the fiscal reforms undertaken in India since 1991.

1.2 Fiscal Reforms of the Central Government

1.2.1 Revenue Reforms

Since independence a number of attempts have been made at improving the tax structure in the sphere of direct as well as indirect taxes. The first comprehensive attempt at reforming the tax system was made by the Tax Enquiry Committee in 1953 (Rao, 2000).

In the case of personal income taxes, the policy makers designed the income tax system with confiscatory marginal rates. Tax evasion and the ineffective legal system that failed to impose penalty within a reasonable time period (Rao, 2005) led the Direct Taxes enquiry committee in 1971 to recommend significant reduction in marginal tax rates. On the recommendation of the Direct Taxes Enquiry Committee, the highest marginal tax rate has been brought down from 77 per cent in 1974-75 to 66 per cent in 1976-77, to 50 per cent in 1985-86, to 40 per cent in 1992-93 and further to 30 per cent since 1997-98.

In line with the Long term Fiscal Policy (LTFP), significant reforms were also carried out in the area of corporate taxation which aimed at increasing the generation of internal resources, while simultaneously providing stimulus to industrial investment, growth and modernization. Corporate income tax has been substantially rationalized in real earnest in 1983-84, with removal of the step system of taxation of corporate income. By the year 1991-92, widely held (shares quoted in stock market) and closely held (family concerns) domestic companies were taxed at 51.75 and 57.5 per cent, respectively and foreign companies were taxed at 65 per cent. Following the recommendations of Tax Reforms Committee (TRC) 1991, the
distinction between closely held and widely held companies was unified at 46 per cent in 1994-95. The tax rate on foreign companies was reduced to 55 per cent in 1994-95 (Economic Survey, 1994-95). However, the rates were progressively reduced in 1997-98 to 35 per cent in case of domestic companies and 48 per cent in case of foreign companies. In 2002-03, the rate of tax for foreign company was further reduced to 40 per cent while the rate of tax for domestic company remained at 35 per cent. The corporate income tax for domestic companies was reduced to 30 per cent in 2005-06. Also, the dividend tax at the individual income tax level was abolished. However, to tackle the phenomenon of zero tax, an effort was made by bringing such companies having substantial book profits under Minimum Alternative Tax (MAT) in 1997-98. The rate under MAT was increased from 7.5 per cent of book profits in 2000-01 to 10 percent in 2006-07.

As regards the wealth tax rate, the highest wealth tax rate was reduced from 8 per cent in 1974-75 to 2.5 per cent in 1976-77 and further increased to 5 per cent in 1979-80. In 1985-86, it was again lowered to 2.5 per cent and made applicable to net wealth over Rs. 20 lakh. On the recommendations of the Tax Reforms Committee, 1991, wealth tax was charged at the flat rate of 1 percent with a basic exemption of value of Rs. 15 lakh on taxable items of wealth. With this, the scope of wealth tax was drastically reduced. Infact, the Task Force on Direct Taxes had recommended the abolition of wealth tax.

However, a major relief was provided in 2004-05 in the form of abolition of tax on long-term capital gains and reduction in tax on short-term capital gains from 30 per cent to a flat rate of 10 per cent on securities transactions. In 2005-06, a new tax i.e., fringe benefit tax was introduced which targeted at those benefits enjoyed collectively by the employees, and not attributable to individual employees, which
were to be taxed in the hands of the employer. But fringe benefit tax was abolished after realization of its considerable compliance burden in 2009-10.

Indirect taxation has remained a major source of tax revenue in India. Therefore, measures were also taken in the area of indirect taxes to improve the efficiency of these taxes. However, on the indirect taxes side, a major simplification exercise was attempted by the Indirect Taxes Enquiry Committee in 1972. As the excise system had no built-in-checks against evasion, it recommended the conversion of specific duties into an ad-valorem, unification of tax rates and introduction of input tax credit to convert the tax into a manufacturing stage value added tax (MANVAT), but it was not implemented until 1986-87. Then, a wide ranging and systematic effort to minimize the incidence of taxation on inputs was undertaken, through the introduction of Modified Value Added Tax System (MODVAT) in 1987. It was introduced in a limited manner on a few commodities and the coverage was gradually extended over the years. As a result of simplifications and relaxations introduced in the MODVAT scheme, availment of MODVAT credit for payment of duty had gone up appreciably over the years.

Further after 1991, reform impetus on excise duties came with the implementation of the recommendations of the Tax Reforms Committee (TRC). In 1999-00, almost eleven major ad-valorem duty rates were reduced to three, namely, a central rate of 16 per cent, a merit rate of 8 per cent and a demerit rate of 24 per cent. In order to bring further simplification in the rate structure, these were further merged into a uniform 16 per cent Central Value Added Tax (CENVAT) at production stage. Also, a special excise duty (SED) rates of 8 per cent, 16 per cent and 24 per cent continued on specified goods
in 2000-01. This was further improved in 2001-02 with the reduction of three special excise duty rates to a single rate 16 per cent. In 2008-09, the general CENVAT rate on all goods and services was reduced to 14 per cent.

The tariff rates were extremely high by the middle of 1980s. The Long Term Fiscal Policy (LTFP) presented in the Parliament in 1984-85 emphasized the need to reduce tariffs, have fewer rates and greater uniformity and reduce and eventually eliminate quantitative restrictions on imports. However, for reasons of revenue and also to counter unfair competition from imports, the tariffs were raised and the weighted average rate increased from 38 per cent in 1980-81 to 87 per cent in 1989-90 (Rao, 2005). As a fiscal reform measure, there was drastic reduction in both the average and peak tariff rates to make Indian industry competitive in the long run in 1990-91. The peak rate of custom duty was reduced to 40 per cent in 1997-98 from 355 per cent in 1990-91. The peak rate of custom duty was further reduced to 35 per cent in 2001-02, to 30 per cent in 2002-03 and to 25 per cent in 2003-04. The average rate of custom duty was further reduced to the level of 15 per cent in 2005-06 with steeper reductions for capital goods and raw materials and corrections for inverted duty structures. This was done due to pre-announced commitment to align tariffs to the levels prevailing in the South-East Asian countries (Economic Survey, 2005-06). Further, the peak rate of custom duty was reduced to 10 per cent in 2007-08 with a few exceptions (Economic Survey, 2007-08).

The Tax Reforms Committee (TRC), 1991 recommended the introduction of selective tax on services. As the service tax was never visualized by the framers of the Constitution and policy makers, it does not find any place in the Constitution of India. As a result, it belongs to the central government. But in view of Gupta (2007), the entire
proceeds from service tax should form part of the divisible pool as it is more buoyant in future than commodity taxes. However, the central government by invoking residency powers introduced a tax on services at the rate of 5 per cent since 1994-95 namely, non-life insurance, stock brokerage and telecommunications. In 2001-02, the coverage of service tax was extended to 15 new services at the rate of 5 per cent. It was extended to 10 new services including life insurance, insurance of auxiliary services, inland cargo handling, storage and warehousing etc. in 2002-03. However, subsequently life insurance was exempted from service tax. In 2003-04, service tax was raised to 8 per cent and the tax was imposed on 10 new services. Again in 2004-05, "Service tax has been extended to over 75 separate services and the revenue yield accounted for nearly 5 per cent of gross central revenues" (Acharya, 2005). This sustained expansion in service tax was due to the growing need to find alternative revenue resources in the face of the declining role of customs and excise revenues However, the rate of service tax was raised to 10 per cent in 2005-06. The number of services liable for taxation was raised to 99 services in 2006-07 and then gradually to 100 services in 2007-08. The rate of service tax was further raised to 12 per cent in 2006-07 and was retained at this same rate in 2007-08.

A comprehensive indirect tax reform in the country is going to take place in future with the implementation of dual Goods and Services Tax (GST), levied concurrently by the centre as Central Level GST (CGST) and by the states as State Level GST (SGST). GST would be further improvement over the VAT. This new system, which is being steered by an Empowered Committee of State Finance Ministers and the central government will replace state level VAT and CENVAT. In case of Central GST, central excise duty, additional excise duty, service tax, additional custom duty (countervailing duty), special additional duty, surcharge and cesses would be subsumed with CGST
which are at presently levied separately on goods and services by central government. In case of State GST, VAT/sales tax, entertainment tax, luxury tax, taxes on lottery, betting and gambling, state cesses and surcharges, and entry tax except for stamp duty, toll tax, passenger tax and road tax would be subsumed with SGST which are at present levied separately on goods and services by state government. This will mark a major step in unifying the tax regime across the country and do away with tax arbitrage that currently disturbs investment decisions.

1.2.2 Expenditure Reforms

The fiscal position of the central government has been under stress since the mid-1980s as public expenditure has grown at a very rapid rate as compared to the growth rate of public revenue. Reflecting the fiscal stress, the expenditure for developmental activities, which are directly related to growth, has suffered. On the other hand, expenditure on non-developmental purposes, largely committed, has witnessed a steady rise. It was crucial to bring about improvement in the finances with a view to restructuring the expenditure in favour of developmental expenditure in order to enable higher growth. Therefore, successive central government budgets since 1990s have been contemplating a host of measures to curb built-in-growth in expenditure and to bring about structural changes in the composition of expenditure and effecting economy in non-plan expenditure.

The need to control public expenditure was realized even in 1979-80 and a Commission on public expenditure, the first in independent India, was set up by a resolution of the Government of India on May 29, 1979. But it was wound up on January 31, 1980 before it could submit its report.

With a view to restraining the growth of expenditure, a package of measures was taken by the central government in January 1984. Plan
expenditure was to be reduced by 5 per cent including supplementary grants. Non-plan expenditure (excluding interest payments and transfers to states) was cut by 3 per cent (Economic Survey, 1983-84). It was expected that these measures would result in a reduction of about Rs. 800 crore in non-plan expenditure during that year.

Recognizing the gravity of the expenditure problem, a system of zero-base budgeting was initiated in the course of the formulation of the budgets of all central government departments for 1987-88 (Economic Survey, 1986-87). Efforts were made by the government to check the fiscal imbalances in 1990-91 and emphasis was laid on curtailing unproductive expenditure by undertaking a number of measures. These measures included monthly budgeting of expenditure in all the departments, cut in the expenditure on staff cars, electricity and telephone bills, and a complete ban on the purchase of new vehicles (Economic Survey, 1990-91).

The government initiated few measures on the expenditure front to correct the fiscal imbalance during 1991-92. Such measures mainly were reduction in the fertilizer subsidy by 30 per cent, abolition of Cash Compensatory Support for exports, abolition of subsidy on sugar. Further the government had also “imposed 5 per cent cut on the expenditure of all Ministries/Departments. Only a few items of expenditure, such as, statutory grants to state governments, block grants and loans for state Plan schemes, interest payments and pension payments were exempted from the expenditure cut” (Economic Survey, 1991-92).

The problem of high rate of growth of non-developmental expenditure persisted for a long time, but the reforms on this front started very late with the beginning of the process of downsizing the government. The government abolished the four-secretary level posts
through a process of merger and rationalization of central government departments with effect from April 1, 1999. To carry this process forward in a systematic way towards reducing the role and the administrative structure of the government, an Expenditure Reforms Commission was constituted on February 29, 2000. Areas identified by the Expenditure Reforms Commission included creation of a national food security buffer stock and minimization of fertilizer subsidies through dismantling of controls in a phased manner.

In 2000-01, government took number of measures to control growth in non-plan, non-developmental expenditure which included: a mandatory 10 per cent cut in the budgetary allocation for non-plan non-salary expenditure of all ministries/departments and autonomous institutions; a complete ban on purchase of new vehicles for one year; ten per cent cut in the consumption and allocation of funds for expenditure on petroleum oil and lubricants (POL) for staff cars; ban on creation of new posts for one year; ban on foreign travel for study tours, seminars, etc.

The measure to improve the quality of expenditure includes subjecting all existing schemes to zero-based budgeting and only those that were demonstrably efficient and essential were decided to be retained from 2001-02. “This was sought to be achieved by reviewing norms for creation of posts and fresh recruitment and introduction of voluntary retirement scheme (VRS) for surplus staff. The process also involved review of all subsidies” (Kapila, 2003).

Other important measures of expenditure reform undertaken were optimizing government staff strength through a ban on the creation of new posts for a period of two years and the redeployment of surplus staff in various government departments and autonomous institutions which have budgetary support through grants.

Also, the central government has brought about pension reforms
by introducing a new pension scheme with effect from January 1, 2004 for central government employees recruited on or after that date (except Armed Forces, in the first stage) replacing the existing defined benefit pension system. "The central government has also initiated the process for bringing out legislation for the appointment of an independent pension regulatory authority, which can ensure proper investment of pension funds" (Srivastava, 2005).

In 2006-07, government took a series of initiatives for fiscal reforms like avoiding rush of expenditure through releases in a time sliced manner and simplification of procedures (Economic Survey, 2006-07).

1.2.3 Public Debt Reforms

The significant changes in the process of central government borrowings to meet the budgetary and temporary mismatches have also been part of the fiscal sector reforms. During 1976-77, long-term borrowings and debentures were excluded from the capital base and a new National Savings Annuity Scheme was introduced to promote small savings from April 1, 1976. To mobilise the savings for development purposes, National Development Bonds of Rs. 10/-, Rs. 100/- and Rs. 500/- were introduced from August 31, 1977.

For canalising the unaccounted money for productive purposes, the Government of India announced the Scheme of Special Bearer Bonds on January 15, 1981. To mobilise private savings for public use, Capital Investment Bonds were introduced on June 28, 1982. These bonds with a ten year maturity period carried an interest rate of 7 per cent. With a view to mopping up excess liquidity in the banking system as also to mobilise some resources for public investment, the government introduced the ‘National Deposits Scheme’ with effect from July 30, 1984. During 1984-85, for the first time long-dated
securities with a maturity of 30 years were introduced with a coupon rate of 10.50 per cent. As the subscription to the deposits under the National Deposit Scheme since inception were placed at Rs. 68.3 crore as on March 8, 1987 as against a target of Rs 500 crore, this scheme was discontinued by government with effect from April 1, 1987.

In order to strengthen fiscal discipline as a significant step, the system of ad-hoc treasury bills as a means of financing the budget deficit was discontinued. With effect from April 1, 1987, this system was replaced by a system of Ways and Means Advances (WMA). To provide short-term investment opportunity to financial institutions and others, the 182-days treasury bills were introduced.

After the fiscal crisis of 1991, a number of policy changes during 1992-93 to activate internal debt management policy were made. The monetary policy of April 1992 heralded a new approach to internal debt management by introducing market operation in regard to absorption of Government of India dated rupee securities and longer term Treasury bills and this was to be facilitated by overall reduction in the borrowing programme in 1992-93. These were in line with the recommendations of the Chakravarty Committee and Narasimham Committee.

The Government of India for the first time, offered to sell dated securities on an auction basis in June 1992. In addition to this, government introduced 364-days treasury bills and 91-days Treasury bills on an auction basis from April 1992 and December 1992, respectively. Moreover, auctions of repurchase agreements (REPOS) of dated securities were introduced from December 1992. However, it was realised that these developments in the first place would have implications for monetized deficit. Moreover, they might lead to discipline in use of borrowed funds at relatively high rates of interest.
Besides, they would import liquidity as well as flexibility to investors.

Another noteworthy reform in process of borrowing was the reduction of the difference between the interest rate on market borrowings and 'other internal liabilities' (small savings, provident funds, etc.) in 1993-94. Further in 1994-95, there was inclusion of loans in conversion of maturing treasury bills and Zero Coupon Bonds and increase in the rate of interest on 'other internal liabilities'.

In 1999-00, there was conversion of other liabilities into central government securities which led to the sharp increase in internal debt and corresponding decline in 'other internal liabilities'. Thereafter, the most notable outcome of external debt management has been the control over short term debt.

1.3 Research Design

1.3.1 Research Problem

Modern economies are frequently beset with problems like inflation, excessive fluctuations in economic activities, and deficit in the balance of payments. The year 1990-91 was one of the toughest years for the Indian economy. All the macroeconomic indicators became adverse. The overall economic growth slumped to a mere 1.1%. The gross fiscal deficit stood at 7.7% of the GDP. In the external sector, the balance of payment with as little as $1.1 billion foreign reserves or barely enough to meet two weeks’ import bill became precarious. The shortage of foreign exchanges apart from inducing import squeeze for industrial production led the country by June 1991 to face a hard option of defaulting on international commitments such as debt servicing or accepting IMF structural adjustment and stabilization programme in 1990-91. International financial institutions such as the World Bank and IMF objected to the high rate of fiscal deficit (7.7% of GDP) and refused to bail out India unless it
reduced its fiscal deficit. And the Govt. was forced to take stringent measures to control non-plan expenditure. Over a period of time, the means of generating revenue have been changed, both in nature and size. Rigorous reforms have been undertaken in direct as well as indirect taxes in India since independence. The speed of these reforms increased substantially in the post liberalized era. Similarly the nature, size and direction of Union Government’s expenditures have also changed a lot during these years. In 1950-51 total expenditure of central govt. was just Rs. 530 crores which has increased to Rs.557653 crores in 2007-08. The Govt. is spending a lot on general and social services, which is bound to raise the fiscal deficit on the one hand as well as pressurize the society through taxes in the subsequent periods. This deficit problem can further burden the govt. through debt trap. In the name of ensuring horizontal and vertical equity, the union govt. is bound to make certain transfer payments to needy states. It further aggravates the problem of deficit financing for the central govt. The new government decided to adopt in June 1991 a programme of macro-economic stabilization to restore viability to fiscal balances and the balance of payments. At the same time it undertook a far reaching programme of structural reforms involving bold initiatives in external trade, exchange rate, industrial policy and so on, all aiming at moving the country to a higher growth through infusing efficiency and international competitiveness. It also aimed at integrating the Indian economy with the global system and enhancing its robustness through wider access to better technology and benchmarking with the global performers. The reforms process was comprehensive. The initial reforms focused on fiscal reforms, policy paradigm shift from physical control regime to the one relying more on market forces and trade related reforms. Subsequently reforms were extended to cover financial sector and to put in place law and regulatory framework compatible
with a market system. My work will evaluate the impact of fiscal reforms in India. It is against the background that the topic entitled “An Evaluation of Fiscal Reforms in India Since 1991” has been chosen.

1.3.2 Objectives of the Study

The main objectives of this study are:-

1. to analyse the position of revenue of the central and state governments including the components of revenue receipts and capital receipts since 1991.
2. to study the relative significance of various taxes in India and the changing pattern since 1991.
3. to scrutinize the expenditure pattern of the central government
4. to study the determinants of various components of public expenditure in India.
5. to examine the position of public debt of the central government since 1991.

1.3.3 Data Sources

The study is based on the secondary data which have been collected from various published sources such as handbook of Statistics on Indian Economy, India Public Finance Statistics, Economic Surveys, RBI Bulletins- various issues.

1.3.4 Data Analysis

1.3.4-A Analysis of Taxation

To analyse the taxation aspects, various hypotheses have been taken. These hypotheses have been selected/rejected using t-test as well as regression analysis.

1. H0 = There is no significant difference between All India Direct
Taxes (TOTALD) and All India Indirect Taxes (TOTALIN).

2. \( H_0 \) = There is no significant difference between Central Direct Taxes (CENTRALD) and Central Indirect Taxes (CENTRLIN).

3. \( H_0 \) = There is no significant difference between States’ Share in Direct Taxes (STATESHD) and States’ Share in Indirect Taxes (STATSHIN).

4. \( H_0 \) = There is no significant difference between Central Net Direct Taxes (CENTRNTD) and Central Net Indirect Taxes (CENTRNTI).

5. \( H_0 \) = There is no significant difference between States’ Own Direct Taxes (STOWND) and States’ Own Indirect Taxes (STOWNIN).

6. \( H_0 \) = There is no significant difference between States’ Direct Tax Revenue (STTAXD) and States’ Indirect Tax Revenue (STTAXIN).

To capture the tax buoyancy of the whole study period, the estimate of the response coefficient is obtained by fitting a regression using a double log specification.

It is described as follows:

\[
\ln IT_t = b_0 + b_1 \ln GDP_t + e_t \tag{1}
\]

\[
\ln CT_t = b_0 + b_1 \ln GDP_t + e_t \tag{2}
\]

\[
\ln ED_t = b_0 + b_1 \ln GDP_t + e_t \tag{3}
\]

\[
\ln CD_t = b_0 + b_1 \ln GDP_t + e_t \tag{4}
\]

\[
\ln DT_t = b_0 + b_1 \ln GDP_t + e_t \tag{5}
\]

\[
\ln IND_T_t = b_0 + b_1 \ln GDP_t + e_t \tag{6}
\]

\[
\ln GROSST_t = b_0 + b_1 \ln GDP_t + e_t \tag{7}
\]

Where the abbreviations stands for
To study the determinants of central government revenue the following variables have been chosen to run the regression:

Dependent Variable

Central government tax revenue (% of GDP) - CGTR

Independent Variables

1. Per capita GDP (LOG) - LPCY
2. Agriculture (% of GDP) - SHAG
3. Manufacturing (% of GDP) - SHMAN
4. Imports (% of GDP) - SHIMP
5. Foreign Aid (% of GDP) - FAID
6. Debt (% of GDP) - SHDBT
7. Tax revenue from goods and services (% of total revenue) - TRGS
8. Tax revenue from income, corporation and capital gains (% of total revenue) - TRDT
9. Tax revenue from trade (% of total revenue) - TRT
10. Tax revenue from exports (% of total revenue) - TREX
11. Highest marginal tax rate, individual rate (%) - HMTRI
12. Highest marginal tax rate, corporate rate (%) - HMTRC
13. Political stability - POLST
14. Economic stability - ECOST
15. Corruption - CRPTN
16. Law and order - LAODR
17. Government stability - GOVST
18. Fiscal Reforms as Dummy - DREFORMS

From the above mentioned variables, the following multiple linear regression model has been formulated:

\[ CGTR = \alpha + \beta_1 LPCY + \beta_2 SHAG + \beta_3 SHMAN + \beta_4 SHIMP + \beta_5 FAID + \beta_6 SHDBT + \beta_7 TRGS + \beta_8 TRDT + \beta_9 TRT + \beta_{10} TREX + \beta_{11} HMTRI + \beta_{12} HMTRC + \beta_{13} POLST + \beta_{14} ECOST + \beta_{15} CRPTN + \beta_{16} LAODR + \beta_{17} GOVST + \beta_{18} DREFORMS + \varepsilon \]

1.3.4-B Analysis of Public Expenditure

Various sub-heads of public expenditure have been analysed using linear multiple regression model. The descriptions are as under:-

Defense = \( a + b_1 \text{Time} + b_2 \text{DREFORMS} + \varepsilon \)
Interest payments = \( a + b_1 \text{Time} + b_2 \text{DREFORMS} + \varepsilon \)
Pension = \( a + b_1 \text{Time} + b_2 \text{DREFORMS} + \varepsilon \)
Education = \( a + b_1 \text{Time} + b_2 \text{DREFORMS} + \varepsilon \)
Medical = \( a + b_1 \text{Time} + b_2 \text{DREFORMS} + \varepsilon \)
Family Welfare = \( a + b_1 \text{Time} + b_2 \text{DREFORMS} + \varepsilon \)
Agriculture = \( a + b_1 \text{Time} + b_2 \text{DREFORMS} + \varepsilon \)
Scientific Research = \( a + b_1 \text{Time} + b_2 \text{DREFORMS} + \varepsilon \)
Fertilizer Subsidies = \( a + b_1 \text{Time} + b_2 \text{DREFORMS} + \varepsilon \)
Industry and Minerals = \( a + b_1 \text{Time} + b_2 \text{DREFORMS} + \varepsilon \)
Power and Irrigation = \( a + b_1 \text{Time} + b_2 \text{DREFORMS} + \varepsilon \)

Transport and Communication = \( a + b_1 \text{Time} + b_2 \text{DREFORMS} + \varepsilon \)

Public Works = \( a + b_1 \text{Time} + b_2 \text{DREFORMS} + \varepsilon \)

Developmental Expenditure = \( a + b_1 \text{Time} + b_2 \text{DREFORMS} + \varepsilon \)

Non-Developmental Expenditure = \( a + b_1 \text{Time} + b_2 \text{DREFORMS} + \varepsilon \)

Here Time and DREFORMS (dummy variable representing reforms) are independent variables.

Linear multiple regression equation is also employed to identify the socio, economic and political constraints of public expenditure and it is presented as follows:-

\[ \text{PE}_i = a_0 + a_1 \text{PCTR} + a_2 \text{PGDP} + a_3 \text{UNEMP} + a_4 \text{URBNPOP} + a_5 \text{DNSTY} + a_6 \text{PRIMARY} + a_7 \text{WPI} + a_8 \text{BPL} + a_9 \text{OLDAGE} + a_{10} \text{PCDEBT} + a_{11} \text{DREFORMS} + \varepsilon \]

Where,

\[ i = 1, 2, 3, \ldots, 13 \] (dependent variables)

**Description of Independent Variables**

PCTR = per capita tax revenue.

PGDP = per capita gross domestic product

UNEMP = unemployment rate in India

URBNPOP = percentage of urban population

DNSTY = density of population in India

PRIMARY = primary sector contribution in National Income (%)

WPI = wholesale price index-Annual average (Base: 1993-94=100)

BPL = population below poverty line (%)

OLDAGE = population above the age of 65 (%)
PCDEBT  =  per capita combined debt of centre and states  
    (external + internal debt)
DREFORMS  =  dummy variable representing reforms

**Description of Dependent variables**

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<td>PE2</td>
<td>PCRCEND</td>
<td>Per Capita Combined Revenue And Capital Exp. of Centre And States (Non-Developmental)</td>
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<td>PE3</td>
<td>PCRCED</td>
<td>Capita Per Capita Combined Revenue And Capital Exp. of Centre And States (Developmental)</td>
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<td>PCRCEAD</td>
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<td>PCCE</td>
<td>Per Capita Combined Capital Exp. of Centre And States</td>
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<td>PCCEND</td>
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</tbody>
</table>
Besides, backward step-wise regression analysis was carried out to overcome the problem of multicollinearity and the equation selected for the analysis is on the basis of higher $R^2$ value and a larger number of significant explanatory variables.

1.3.4-C Analysis of Public Debt

Annual Compound Growth Rates (ACGR) have been used to compare the growth of internal liabilities, external debt and total public debt of central govt. and also to compare the rate of growth of national income and rate of growth of public debt of central govt. in pre-reforms period and after-reforms period. Following model has been adopted for calculating annual compound growth rates.:-

\[ Y = ab^t \]  
\[ Y = a(1+g)^t \quad [ b=(1+g)] \]

\[ \log Y_i = \log a + t \log (1+g) \]  

\[ Y_t = t^{th} \text{ observation on the variable } Y \text{ (which can be amount of national income, public debt, internal liabilities or external debt of central govt.) for which rates of growth is to be calculated.} \]

\[ t = \text{time variable taking } n \text{ values (n takes 15 values for 1975-76 to 1989-90 for pre-reform period, 17 values from 1991-92 to 2007-08 for after-reform period).} \]

\[ g = \text{annual compound growth rate.} \]
Here $a$ and $b$ are parameters of the model.

\[ g = \text{Antilog} \left( \log b \right) - 1 \] \hspace{1cm} (iii)

Rate of growth is calculated in percentage term as

\[ g = \left[ \text{Antilog} \left( \log b \right) - 1 \right] \times 100 \] \hspace{1cm} (iv)

Besides ratio analysis (fiscal deficit/ GDP, primary deficit/ GDP, revenue deficit/ GDP, budgetary deficit / GDP, revenue deficit/ fiscal deficit, public debt/GDP etc.) have been used to show fiscal position of central govt.

### 1.3.5 Scope of the Study

The present study considers the impact of economic reforms done after the year 1991 in India on various aspects like revenue, expenditure and public debt. However, to capture the long range impacts and to make the data more dependable, data from the year 1950-51 to 2007-08 have been taken.

### 1.3.6 Limitations of the Study

1. The study did not analyse the pattern of public expenditure of states separately.

2. The study did not take into account the separate public debt position of states.

### 1.3.7 Chapter Scheme

- Chapter-1 Introduction
- Chapter-2 Review of literature
- Chapter-3 Analysis of Taxation
- Chapter-4 Analysis of Public Expenditure
- Chapter-5 Analysis of Public Debt
- Chapter-6 Findings and Policy Implications