GROWTH, PATTERN AND DETERMINANTS OF PUBLIC EXPENDITURE IN MEGHALAYA

EMILIUS NONGBRI
DEPARTMENT OF ECONOMICS

SUBMITTED IN FULFILMENT OF THE REQUIREMENT OF
THE DEGREE OF DOCTOR OF PHILOSOPHY IN ECONOMICS OF
NORTH-EASTERN HILL UNIVERSITY
SHILLONG

NORTH-EASTERN HILL UNIVERSITY
DEPARTMENT OF ECONOMICS

NOVEMBER 2002

I, ***Shri Emilius Nongbri,*** hereby declare that the subject matter of the thesis is the record of the work done by me, that the contents of this thesis did not form basis of the award of any previous degree to me or to the best of my knowledge to anybody else, and that the thesis has not been submitted by me for any research degree in any other University/Institute.

This is being submitted to the North-Eastern Hill University for the degree of Doctor of Philosophy in Economics.

(Emilius Nongbri)
Candidate

(N. Srivastav)
Professor & Head

(B. Mishra)
Reader in Economics
Supervisor

CONTENTS

ACKNOWLEDGEMENT

At the very beginning I would like to express my sincere gratitude to Dr. B. Mishra, Reader, Department of Economics, North Eastern Hill University, Shillong, for his exemplary sincerity, dedication and ability to guide me in the right direction so as to be able to complete my work in time. I am deeply impressed by his sterling qualities of a human heart.

I would like to thank Prof. N. Srivastav, Prof. S.K. Mishra and Prof. M. Lalwani of the Deparment of Economics, NEHU, Shillong, for their valuable comments from time to time.

I owe a special debt of gratitude to Prof. K. Bez (Retired Head of the Department of Economics, NEHU, Shillong) from whom, in the course of our discussion, I have been able to extract immense knowledge for developing the methodology and undertaking the empirical analysis.

I wish to express my thanks to Mr. C.M. Syiem, Deputy Director, Mr. S. S. Mawlong, Research Statistical Officer and Mrs. R. D. Pathaw, of the Department of Economics and Statistics, Government of Meghalaya, the Staff of NEHU Library, Meghalaya State Central Library, North Eastern Council Library and Meghalaya Legislative Assembly Library for their kind help and co-operation.

My gratitude also goes to Mrs. P. Kharmalki, Mr. George Jyrwa and especially Mr. Godfrey Pathaw for his valuable help in checking and arranging the materials of the dissertation.

I take this opportunity to thank my wife, Cecil, my children – Peter, John, Jerry, Denis, Larihun, Mario and Duh-duh for their constant encouragement without which I could not have completed this work.

This work is dedicated to my late parents who had always inspired me in the pursuit of higher learning.

Place : Shillong

Dated the 3rd November, 2002. (**EMILIUS NONGBRI**)

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

1.1 Introduction

In recent years the Government activities *vis-à-vis* public expenditure have grown both relatively and absolutely in all the States of the Indian Federation. This particular observation no doubt serves as the starting point for any systematic treatment of the intricacies of public expenditure growth, for the growth of governmental activities lies in the heart of continued controversy over the increasing importance of the public sector in the process of economic development. This controversy is particularly acute in an underdeveloped State where the public sector is growing more rapidly than the private sector and where it often appears that this growth is at the expense of, or contributes to a diminution in private economic activities. Further, in such type of economic environment where public sector is rated high, regardless of public and private activities, there will be continuously difficult choices in selecting an appropriate composition of government expenditure and in choosing among alternative government programmes that are intended to accomplish social goals.[1] In a welfare state where social goals evolve continually,

selection of appropriate composition of government expenditure remains elusive and as a result the accomplishment of the new goals pushes the public expenditure growth to fantastic heights. In recent times, much of the theoretical as well as applied work has been concentrated on finding out the factors accounted for the major variations in the share of public expenditure in the aggregate national/state income (henceforth referred to as the expenditure ratio) and to identify and specify the nature of relationship between the structure of public expenditure and the level of economic development. In working out a developmental plan which implicitly takes into account the public expenditure ratio, a major question that always arises is: what is the limit to public expenditure growth and what are the inherent economic factors that push the growth of public expenditure to a higher plateau? No doubt, the fiscal philosophy of the government to execute a certain level of public expenditure depends on the societal needs, which are the culmination of societal value judgments. What we intend to hammer at is the fact that public expenditure policies do not emerge in a vacuum, but by and large, are mainly influenced by the socio-economic environment that exists in a State. So, the extent to which these socio-economic factors have been responsible for determining the absolute level of public expenditure in

the States remains an open question. Therefore, by taking into account these socio-economic dimensions, a systematic analysis of expenditure determinants may be illuminating for identifying the factors responsible for the explosive cycles of public expenditure growth. We believe that a determinant study would enable us not only in understanding the intricacies of public expenditure growth but also to have a better understanding of the mechanism of changes that take place in the pattern of public expenditure of the State.

1.2 Background of the Study

Most of the State governments in the Indian Union face severe budgetary pressure of varying magnitude with rising demand for public expenditure. In most cases, the failure of the State governments either to compress public expenditure growth or to mobilize adequate internal resources to meet the ever increasing public expenditure has led to a situation of large fiscal deficits accompanied by an explosive growth of expenditure. Compressing public expenditure entails foregone public utilities, which are much desired in a developing, and welfare characterized state. On the other hand, mobilization of adequate domestic resources for meeting the growing need of the society depends on the capacity of the economy to withstand the pressure of it. Given the economically backward characteristics of the North-eastern

States, it is observed that public expenditures in these States have increased tremendously over the years which might have been due to the adoption of economic planning with a view to achieving a higher rate of economic growth or due to the failure of these States to bring progressivity to their resource mobilization front. As a result, in most of the States in the North-eastern Region, this has led to a spurt in the growth of public expenditure. This has led to a situation of financial dependence of these States on the Union Government over the years.[2] In the face of fiscal crisis, most of the State governments are directed to improve their fiscal position either by compressing public expenditure or by increasing their level of resource mobilization. Since most of the States in the North-eastern Region are in the developing stage, the government share in the state domestic product is supposed to increase. Given the level of economic activities, which determine the poor base of tax structure, mobilization of desirable level of resources remains a Herculean task. That is why it is felt that the government should take steps to compress public expenditures going to the unproductive uses and entering into the consumption expenditure streams of the general public. We believe that proper channelisation of public expenditure into productive uses can be judged by ascertaining the factors which play a decisive role in shaping its pattern, growth and

size. We intend to accomplish this by analyzing the growth, pattern and determinants of public expenditure in Meghalaya in order to ascertain the factors, which have been responsible for its explosive cycles of growth over the years.

Most of the empirical studies carried out so far on public expenditure growth, pattern and determinants remain inconclusive, in the sense that these types of studies are more interested in examining why public expenditure has reached a certain absolute level but they do not seek to find out whether that absolute level is compatible with the pursuit of various policy objectives.

The present study is concerned with a description and analysis of the growth, pattern and determinants of public expenditures of the Government of Meghalaya during the thirty-years (1972-73 to 2001-02) of full-fledged statehood. The expenditures of the Government of Meghalaya deserve a greater and more critical scrutiny because Meghalaya's revenue potential, in so far as it has been tapped, has been very nominal compared to the developmental needs of the State. Some of the variables used in the studies carried out at the international level as well as at the national level cannot be used in Meghalaya to achieve economic logic due to the unique economic, political and social

characteristics prevailing in the State. Therefore to fill in this lacuna, the present study has been undertaken.

The variables, economic and non-economic, are highly interrelated, making the relationship between them and public expenditure very complex.[3] Moreover, the characteristics of non-economic variables are often State specific. This is particularly true of Meghalaya which is a unique State as it is one of the eleven States in the country enjoying a special status category. The State has peculiar social arrangements and the typical land system which is one of the most complicated systems found anywhere.[4] The economy of Meghalya is a less accessible economy. From the view-point of ownership of resources, investment, etc., it is a protected economy. Hence, the influence of these factors on public expenditure will be unique in each situation, and may as well result in the State having its own pattern of evaluation on public expenditure, even if their major economic characteristics are similar. The intricacies in the relationship between the economic and non-economic variables and public expenditure on the one hand and the State specificness in the character of non-economic variables on the other have prompted this study on the growth, pattern and determinants of public expenditure in Meghalaya.

Meghalaya is comparatively a backward State, where agriculture is the predominant sector providing means of livelihood to more than 65 percent of the population. Although certain significant developments have taken place in some spheres in the State since Independence, the access to opportunities for a 'reasonably minimum' standard of living is one of the lowest in the country. The developmental efforts of the State have resulted in a paradoxical growth, where the exponential growth rate of the State income stays at 12.61 per cent level and that of public expenditure at 14.68 per cent. The high exponential growth rate of public expenditure has not provided enough stimuli to the state income to grow at a steady desired level. This, we believe might have been due to the failure of the public expenditure programmes to address themselves to the right set of objectives that fiscal policy accords. The fiscal health of the State provides a gloomy picture where the public expenditure constitutes more than 51 percent of State income and State's own tax revenue contributes hardly 35 percent to the total tax revenue and no more than 3.65 per cent of the State income. Further, looking at the problem of fiscal anomalies from the point of view of State's contribution of own taxes and total taxes to the total public expenditure, then, in a State, where its own tax contributes hardly 7.05 percent to the total public

expenditure and total taxes contribution to public expenditure remains at 26.37 per cent, provides inescapable emphasis on the close scrutiny of public expenditure growth, pattern and its determinant on the one hand and on the resource mobilization front on the other hand. The resultant fiscal disorder has resulted in an explosive growth of public expenditure in the State. The problem is further compounded by the fact that the State has not been able to generate adequate resources from various sources at its command in order to counterbalance the mounting pressure of public expenditure. The expenditures of the Government of Meghalaya deserve a greater and more critical scrutiny because Meghalaya's revenue potential, in so far as it has been tapped, has been very nominal compared to the developmental needs of the State. It is therefore worthwhile to study the various aspects of the effects of public expenditures on equity, revenue and efficiency in production and distribution. However, our study has not gone into some of these aspects of fiscal policy, as its primary aim is specific to the analysis of the determinants of the growth and pattern of public expenditures.

1.3 Problem Formulation

Thus, it is observed that phenomenal growth of public expenditure in the State of Meghalaya without a corresponding growth

in State revenue and income has brought about an explosive growth of public expenditure in the State. A closer scrutiny of Meghalaya's fiscal scenario exhibits a rising trend of public expenditure on the service sector followed by the primary and manufacturing sectors. The resultant pattern of public expenditure has brought about a lop-sided allocation of scarce resources. The neglect of the manufacturing sector over the years has resulted in backwardness manifested in the form of social tensions and unrests. Further, an unabated growth of revenue expenditure in relation to capital expenditure in the State exhibits the fact that the State could not build up all these years the capital base considered necessary for maximising long term growth and development objectives. In other words, the State has been guided more by the notion of maximising present consumption rather than by the long-term perspective of higher economic growth, higher level of income and employment. In this context, the relevant question that arises, what are the main motivating factors which have forced the State government to opt for a policy of lopsided growth of public expenditure? Thus, the present study is an attempt to answer the question posed above in terms of undertaking an analysis of growth, pattern and determinant of public expenditure. Ultimately, we believe, it is the size of public expenditures that the community looks to. No

doubt, public passions about the level of public expenditures run high. But underneath the policy controversies, a vital question about the actual behaviours of the quantum of public expenditures awaits dispassionate analysis.[5] This is what has been set out in this study.

All the points cited above provide a solid ground for the necessity and the desirability of undertaking an anatomy of the growth, pattern and determinants of public expenditure for the State of Meghalaya. Since there is a close nexus between public expenditure and taxation, therefore any attempt to study public expenditure in isolation from the level of taxation would not give the complete picture of the intricate problems of public expenditure. This, besides being essential for arriving at a proper assessment of the overall impact of the factors particularly economic factors on the level of public expenditures, it would also enable us to ascertain whether these factors have played any role in shaping and reshaping the trends and quantum of public expenditures over a period of time in the State. The present study is an attempt in this direction. The two major research questions that we have touched upon in this context are:

(1) To find out the trend of public expenditure growth taking place in the State of Meghalaya for the last thirty years.

(2) To study the changing compositional pattern of public expenditure over the years and find out the factors responsible for the changing compositional pattern of public expenditure.

1.4 Scope and Objectives

The study covers a period of thirty years from 1972-73 to 2001-02. This is a period during which the State economy has witnessed substantial changes in expenditure policies due to both upswing and downswing in its agricultural sector. Further, during this time period, there were some recurrent social tensions, which we believe might have led to substantial changes in its public expenditure policies. Of course, we have not examined in detail the social tension aspect of the public expenditure problem due to the limited scope and objective of our study. However, keeping these general problems in view, an attempt has been made in this work to study in detail the following aspects of State's public expenditure:

(1) To analyze the growth and pattern of public expenditure consequent on the growth of net state domestic product in order to ascertain the intricacies of the public expenditure growth.

(2) To explain the public expenditure growth in terms of resource constraint and prospects of internal resource mobilization.

(3) To find out the factors responsible for determining the level and size of public expenditure.

(4) To suggest some policy implications to rationalize public expenditure in the face of volatile fiscal scenario of the state.

However the main focus of our study as mentioned earlier will be the analysis of the determinants of public expenditure in relation to its growth and pattern.

1.5 Sources and Limitation of Data

The present study is based primarily on the secondary sources of data. The relevant statistical data for the thirty consecutive years from 1972 to 2001-02 are collected from the annual budgets of the Meghalaya State Government, including their Memoranda to various Finance Commissions and other Government Publications. The other sources of information, which have been utilized in this study, include the budget speeches of the Finance Ministers for the years 1972-73 to 2001-02. These are also published along with the respective budgets and their memoranda by the Government of Meghalaya. The figures on net state domestic product were obtained from the Eestimates of State Domestic Product as published by the Directorate of Economics and Statistics, Government of Meghalaya. Only a very few statistical data could not be made available and as a result, we have used the Revised

Estimate and the Budget Estimate. Whenever possible, the budgetary data relating to India published in CMIE and RBI annual reports on Currency and Finance are used and consulted by us. We have used the actual figures from the above sources for the thirty-year period covered by our study. The actual figures have been further compared and verified by us from the corresponding data available in the statistical abstract of the North- Eastern region and the Economic Survey for the above mentioned period published by North Eastern Council. Finally, some data necessary to estimate the different components were not available in the exact form in which they were desired. In such cases, the data-base was prepared with the help of arithmetic adjustments.

1.6 Hypotheses

The study intends to test the following hypotheses:

i) The level of public expenditure responds freely to the rise in the level of net state domestic product.

ii) The level of public expenditure in the state of Meghalaya depends much more heavily on the tax system prevailing in the State so as to place the required revenues at the disposal of the government.

iii) Changes in consumer price index tend to bring about a change in the level and quantum of public expenditure.

iv) In Meghalaya, there exists a functional relationship between the growth of the State's public expenditure and the changes in the quantity of public services provided.

1.7 Methodology

The relevant statistical data for thirty consecutive years i.e., 1972-73 to 2001-02, collected from various official documents has been analyzed with the help of suitable statistical techniques and the results obtained have been subjected to relevant economic logic.

Simple linear regression equations are fitted to the data (by the method of least squares) to estimate the trends and fluctuations in expenditures of the Government of Meghalaya for the said period. The different items or broad heads of expenditures having thus regressed on time, the variations explained by the time factor have been found out. The other factors responsible for residual or unexplained variations have been inquired into as far as possible. The analysis is so made as to find out the trends and fluctuation patterns in the expenditures of the Government of Meghalaya during the thirty-year period. Not only the aggregative picture of the Meghalaya Government budgets for this period has been described and analyzed, the detailed constituent heads of expenditure have also been analyzed in detail. The head-wise expenditures have been interpreted in per capita terms to enable us to

find out the trend of expenditures of the Government of Meghalaya on different items. To analyze the relative growth of expenditure, compound growth rates are calculated by using the formula:

$$Y = ae^{rt}$$

where Y is the public expenditure, 't' is the time period and 'r' is the rate of growth. The least squares estimate of the above formula has been worked out to arrive at the figures of growth rate.

As the main focus of this study is on the analysis of the determinants of growth and pattern of public expenditure in Meghalaya, the proposed method has been geared to that purpose. This study suggests the use of an alternative to the conventional method. The methodology developed in this study is shown in detail in Chapter III.

1.8 Chapter Plan

The topical analysis of the thesis is as follows. For the purpose of expositional covering and systematic analysis, the thesis has been divided into seven chapters.

Chapter I is introductory in nature. In this chapter, we have addressed ourselves to the problems and issues involved in the public expenditure situation of the State. Besides, this chapter incorporates a description and the limitations of the data.

Chapter II is devoted to the review of some important works done on the subject. An attempt has been made in this chapter to give the major conceptual and empirical issues relating to the determinants of public expenditure. This chapter is divided into two sections. Section I of this chapter concentrates on a brief assessment of the major studies undertaken at the international level on the growth, pattern and determinants of public expenditure. In Section II, an attempt has been made to give a comprehensive survey of the major works carried out in India by various researchers relating to the analysis of the growth, pattern and determinants of public expenditure, and the problems that are encountered with in the analysis.

Chapter III is an attempt made to develop an alternative model of estimating public expenditure in order to ascertain the factors influencing the growth and pattern of public expenditure. This chapter is divided into two main sections. In Section I, an attempt is made to develop an alternative econometric model by taking into account the inherent difficulties encountered with in the earlier studies. Section II of this chapter is an attempt to present the theoretical underpinnings of the model to justify the determinant variables used in the model.

Chapter IV is concerned with the critical analysis of the growth and pattern of public expenditure during the thirty years covered by our

study. We have carried out a detailed analysis of the growth of public expenditure consequent upon the growth of net state domestic product in order to ascertain the extent to which public expenditure is responsive to State income. Further, an attempt was made to carry out a detailed analysis about the changes in the compositional pattern of public expenditure that have occurred during the period under study.

Chapter V is an attempt to examine the problems and prospects of internal resource mobilization of the State. The purpose of this exercise is to present an over view of the State finance in order to determine the degree of financial dependency of the State on the Union government in order to finance explosive growth of public expenditure. An attempt has also been made in this chapter to determine the extent to which Meghalaya is financially self-reliant in mobilizing adequate resources from sources within its own jurisdiction. This chapter thus covers the following issues: constraints of internal revenue mobilization, tax effort in terms of State income, composition of tax revenue, compositional pattern of tax revenue, ratio of individual taxes to State income and the role of federal transfers in State finance in order to ascertain their relative contribution to the total public expenditure.

Chapter VI is concerned with the empirical analysis of the determinants of public expenditure in Meghalaya. Given the nexus between the level of public expenditure and the level of taxation, we thought it imperative to touch on the aspect of tax determinant in order to determine the factors that are responsible for the explosive cyclical growth of public expenditure in the State. Hence, in this chapter an attempt is also made to analyze the determinants of revenue of the State so as to have a better perspective of the intricate problems connected with public expenditure. An attempt is made in this chapter to apply the theoretical model as developed in chapter-III to the empirical data that we have collected for the purpose.

Chapter VII gives the summary of our study and the conclusions following from it. We have also made an evaluation of the impact of the explanatory variables on public expenditure and their implications in the light of our study.

1.9 References

1. Burkhead, Jesse and Miner, Jerry (1971): *Public Expenditure,* The Macmillan Press Ltd., London, p.1

2. Bansal, R.K. (1988): *Raising additional Resources in the States*, Atlantic Publishers and Distributors, New Delhi 110 027, p.1

3. Diamond, Lord (1975): *Public Expenditure in Practice,* George Allen & Unwin Ltd., London, pp.11-37

4. R.T. Rymbai (1980): 'Land Reforms and Tribal Economy,' in *Tribal Economy of North Eastern Region,* Edited by T. Mathew, Spectrum Publications, Guwahati, Assam, pp.95-99

5. Pryor, Frederic L. (1968): *Public Expenditures in Communist and Capitalist Nations,* George Allen and Unwin Ltd., London, p.19

CHAPTER II

REVIEW OF LITERATURE

2.1 Introduction

In the previous chapter we have noted that in the wake of fiscal crisis in recent years, many of the state Governments have increasingly began to restructure their tax system to seek higher revenue or to compress their level of expenditures by re-defining their economic goals or/and objectives in order to curb the growing budgetary deficits. In a welfare state, adhering to both the propositions becomes a Herculean task on the part of the government due to the obvious nexus between the level of public expenditure and the level of taxation. We would like to make it clear that since the main emphasis of our study is to carry out an analysis of the growth, pattern and determinants of public expenditure, we have not made any attempt to study in detail the obvious nexus between the level of public expenditure and the level of taxation. It may be noted at this juncture that the causes of the growth of public expenditure are multi-dimensional. These multi-dimensional forces range from a rise in the level of income to urbanization, and from a rise in population to market failures. While some studies in their analysis of the secular growth of public expenditure, have concentrated only on economic dimensions of the problem, others have focused on

its political dimensions. The inferences to be drawn from these two different schools of thought, are that the government operates either in a political or an economic vacuum. Further this economic and political vacuum in its turn is determined by the prevailing socio-political and economic structures. Much of the theoretical as well as applied work has been concentrated on finding out the factors accounted for the major variations in the share of public expenditure in the aggregate National/State income (henceforth referred to as expenditure ratio) and to identify and specify the nature of relationship between the compositional patterns of public expenditure and the level of economic development. In working out a developmental plan which implicitly takes into account public expenditure, a major question that always arises is what should be the absolute level of public expenditure and whether that absolute level is compatible with the pursuits of various policy objectives given its level of taxation. No doubt, this calls forth for a systematic analysis and understanding of the growth, pattern and determinants of public expenditure. Since the determinants of public expenditure implicitly take into account the other two dimensions of the problem, i.e., the growth and pattern of public expenditure, an attempt is made in this chapter to review in brief the various studies on the growth and pattern of public expenditure and in detail the various

studies on public expenditure determinants. This is what has been set out in the following paragraphs.

In the light of the above arguments an attempt is made in this chapter to review some of the important studies undertaken in India and abroad on the important aspect of the present study, namely, the growth, pattern and determinants of public expenditure in Meghalaya. This chapter is divided into two sections. Section I of this chapter concentrates on a brief assessment of the major studies undertaken at the international level on the growth, pattern and determinants of public expenditure. In Section II, an attempt has been made to give a comprehensive survey of the major works in India by various researchers relating to the analysis of the growth, pattern and determinants of public expenditure, and the problems that are encountered with in the analysis.

2.2 International studies on the growth, pattern and determinants of public expenditure

The Classicists viewed the massive growth of public expenditure with a disfavor. The classical economists developed ambiguous arguments to justify the role of public expenditure. The arguments of the classical economists were aimed at restraining government interference in the private sector because the government was viewed

with apprehension and fear. They advocated that the government should restrict its activities to 'justice, police and arms' which clearly indicates that the duty of the government is to protect the citizens from foreign aggression and internal disorder. Hence, the government expenditure was treated as waste, and that the money transferred from the people to the government could be of far greater utility for the people than for the government. Similarly, the tax that imposed the least burden on its payer was considered to be the best one. The position of the classical economists can be epitomized as 'the less government, the better.' This ideology exploded under the impact of the Great Depression of the 1930s, calling for greater state intervention. Ever since, public expenditure has been growing in its structure and size, particularly to meet the objectives of price stability, full employment, equity and economic growth. The rise in public expenditure has added to the fiscal responsibilities of the government of raising additional revenue from various sources to meet the mounting pressure of public expenditure. Therefore, we shall trace out the process of the growth and pattern of public expenditure as well as the factors that determine such growth.

Adolph Wagner (1883)[1] the famous German economist was among the earliest scholars who studied a long-run relationship

between the level of economic development and the size and structure of public expenditure. Wagner elaborated on his law of increasing expansion of public expenditure and particularly state activities, after studying the public expenditure records of several advanced countries in the nineteenth century. He tried to base his “Law” on the “pressure for social progress and resulting changes in the relative spheres of private and public economy, especially compulsory public economy.” Historical facts on public expenditure have certainly substantiated his law, although war and its aftermath have pushed up public expenditure more than social progress. Today, the view that there is a long-run tendency for public expenditure to grow relative to national /state income has become widely accepted as a stylized fact in public finance which needs a thorough empirical scrutiny.

Adolph Wagner perhaps anticipated the rise in public expenditure as a result of the development of modern industrial society which would give rise to increasing political pressure for social progress, and the increased allowance for social consideration would lead to a continual expansion of public expenditure.

Wagner was basically interested in explaining the share of public expenditure in the GNP. That might be the reason why he did not state his ideas in the form of a law. The statistics of public

expenditures throughout modern times demonstrate such persistent increase as to justify Wagner's statement of this fact as a "law". It is not clear whether Wagner was referring to the growth of public expenditure in terms of the ratio of public expenditure to GNP, i.e. the relative growth in public expenditure, or to the absolute size of public expenditure. Based on the empirical analysis of the growth of public expenditure for a number of European countries during the nineteenth century, Wagner concluded that for growing economies, the share of all major government expenditure increases. There are two reasons that the study offers for such a massive increase in public expenditure. Firstly, the demand for services provided by the government such as education and health are highly income elastic. Secondly, in the process of economic development taking place in the economy, the public sector assumes greater role in checking the monopoly tendencies of the private sector.

To sum up, it can be argued that to Wagner, the prevailing level of public expenditures reflect the requirement of a given historical situation and the changes in public expenditures reflect the underlying changes in economic structure and development. Further the justification for increased public expenditure was no doubt conceived in terms of objective criteria such as population growth or

social overhead needs. It can be argued that Wagner's model derived its strength from the organic theory of the state and the proof of the existence of the law is historical evidence in between countries. Wagner's model, while containing many insights to the problem, suffers from several inconsistencies and contradictions.

First, the organic theory of the state asserts that state is assumed to behave as if it were an individual existing and making decisions independently of the members of the society. This assumption of the model no doubt forces the problems of social choices to recede to the background. In a modern welfare state, the decision as regards to a desirable level of public expenditure is bound to be dependent on the problems of social choice. Further it can be argued that the assumption of organic theory of state may not be applicable in the same manner to different societies. Second, the historical evidence, which Wagner had chosen to substantiate his law, is inadequate. To that extent, it can be claimed that Wagner's law is deficient as it concerns itself only with the secular trend of public expenditure. It does not take into account the other aspects of public expenditure, such as the time pattern of expenditure growth. Third, Wagner's ideas are evolutionary in nature without specifying the government share at different levels of development or the time needed

for the attainment of this government share in the economic development. Last, Wagner concentrated on the demand side of public expenditure and played down the importance of revenue as a constraint of public spending. If the growth of public expenditure will be viewed in isolation from the revenue generating capacity of the state then, the assumed role of the public expenditure as a 'stabilizer' remains questionable.

In order to overcome some of the deficiencies of Wagner's study, Keynes (1936)[2] in his 'General Theory', tried to provide a theoretical basis for the growth of public expenditure programmes in the short run. He considered public expenditure as a tool for altering the degree of utilization of all resources in the economy. The great contribution of the General Theory was to restore the economics of public expenditure to the mainstream economics. This restoration was accomplished, not by drawing attention to the problems of resource allocation and the general equilibrium aspects of the public sector, but by attention to the role of public expenditure in stabilizing the economy. Keynes, of course, was not much concerned with the efficient allocation of resources in the public sector. His concern was with the employment of resources, and with the role of public expenditure in influencing the level of aggregate demand. No doubt

this approach was a great contribution, both to theory and practice, but it had the effect of pushing the problems of the size and composition of public expenditure to a subsidiary position. Unlike, Wagner analysis, Keynesian analysis of public expenditure suffers from certain drawbacks. Firstly, Keynesian analysis had demonstrated little concern for the determinants of public expenditure. Secondly, it has neglected the long run tendencies of public expenditure whose behaviour in the macroeconomic context is no longer judged in isolation but always in conjunction with the pursuit of the several policy objectives. And lastly, it has failed to explain the observed pattern and level of public expenditure and changes in those expenditures overtime.

Strayer (1949)[3] in his study of public expenditure policy in the United States tried to relate the relative growth and patterns of public expenditure to the needs for government services, technological development and the rise of urban concentration of population. By relating the level of public expenditure to the above-mentioned three variables, the study concluded that there exists a direct and proportional relationship between them. By using the empirical data for United States in post war period, the study tried to substantiate the above functional relationship.

Fabricant (1952)[4] is considered to be the forerunner in the empirical work on growth, pattern and determinants of public expenditure. His analysis was mainly concerned with state and local level public expenditure of the United States. In analyzing the inter-state differentials in the level of public expenditure, he suggested three independent variables (commonly known as troika) namely, per capita income, population density and per cent of population living in urban places (i.e. urbanization). By using these three variables in a multiple regression model, he tried to establish the functional relationship between them. The regression model used by him runs in terms of the following equation:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3$$

where,

Y = per capita expenditure

X_1 = state per capita personal income

X_2 = density of population

X_3 = degree of urbanization

With the help of the above regression model, Fabricant succeeded in explaining 72 percent variation in the inter-state per capita operating expenditures and 29 to 85 per cent of the variation in expenditure for the various expenditure functions.

This model assumes that the relationship among the variables is additive. That is, the impact of the predictor variables upon per capita expenditures is found by adding the separate effects of the individual factors. An additive model implies that the change in per capita expenditure resulting from a unit change in one of the predictor variables is the same, no matter what the level of the two other predictors might be. For example, the model assumes that a state with a high level of per capita personal income would incur the same increase in per capita expenditures as urbanization increases by a given amount as would a state at a much lower level of per capita income. The validity of such an assumption is open to question. The state with the higher per capita income would most likely incur a larger increase in per capita expenditure. What is needed in such a situation is a joint regression model that determines the change in per capita expenditure for any combination of predictor variables rather than the separate effect of each one. Fabricant obtained an R^2 of .72 i.e., the model explained 72 per cent of the variability in state per capita expenditure. The model could have improved its predictive ability had it taken into consideration additional predictor variables.

The study by Samuelson (1954)[5] on the growth of public expenditure took to a higher level the normative orientation of public

expenditure. His model concerns with the determination of the optimal level of public expenditure that implicitly takes into consideration the growth and pattern of public expenditure. The model in determining the optimal level of public expenditure accepts inter personal comparison of utility based on value judgement and concludes that, it is the society's intensities of desire for pure public goods that will have a positive impact on the level and the size of public expenditure. Though the model provides an insight into the growth and pattern of public expenditure, it suffers from serious limitations. First, the social welfare function (intensities of desire for social goods) based on value judgement may not reveal a true ordering of preferences for various public expenditure programmes through economic analysis because in that case, it becomes a political decision and the economist has no say to the problem. Secondly, the allocative efficiency of public expenditure programmes may not be compatible with the welfare objectives, the moment we assume an ethical judgement that will dictate the level of public expenditure to be undertaken in an economy. Lastly, the model is based on a theoretical underpinnings and its application to the empirical world remains questionable.

In an attempt to study the growth, pattern and particularly the determinants of state and local level public expenditure and their inter-

state variations in the United States, Fisher (1961)[6] adopted a multiple regression model. By following a procedure similar to that used by Fabricant, Fisher tried to establish a functional relationship between the absolute level of public expenditure and the absolute level of a number of other variables such as per capita expenditure, state per capita personal income, population density and the degree of urbanization. The study made use of the following multiple regression model:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3$$

where, Y = per capita expenditure

X_1 = State per capita personal income

X_2 = population density

X_3 = degree of urbanization

Based on the derived coefficients from the above estimating equation the study asserts the existence of an inverse correlation between the level of public expenditure and population density (X_2) and the existence of a positive correlation between public expenditure and the degree of urbanization (X_3) and per capita income (X_1). The study states that the amount of variation explained by these three factors is less for the year 1957 than it was for the year 1942, the year for which Fabricant had performed a similar analysis. Further, it states

that variations in population density, degree of urbanization and per capita income explain a considerable amount of the variation in per capita state and local governmental expenditure among the states and the degree to which these variables explain differences in expenditure for particular functions varies considerably. Lastly, the study explains a high proportion of the variations in expenditure for police and fire protection but a very low proportion of the variations in expenditure for public welfare. Although the study relies on a multiple regression model to get a better picture of the importance of population density and the degree of urbanization, the importance of these factors no doubt, can sometimes be overlooked because of the greater importance of the per capita income variable. The analysis of course tells us nothing about the desirable levels of expenditures.

The study by Peacock and Wiseman (1961)[7] was an attempt to cover the deficiencies of the Wagner's law regarding trends and patterns of public expenditure. They did not fully accept the analysis of Wagner as it concerns with the secular growth of public expenditure only. They believe that apart from the secular trend of public expenditures there are other aspects of the development of public expenditure, which are equally significant such as the time pattern of public expenditure growth. Their displacement hypothesis regards

public expenditure as being clearly determined by revenue. On the other hand, Wagner concentrates on the demand side of public expenditure and plays down the importance of revenue as a constraint of public spending. While discarding Wagner's organic theory of the state, they make the following assumptions about the nature of the state: (1) decisions about public expenditure are taken politically, and so can be influenced through the ballot box (2) political choices about the use of resources differ from choices made through the market system, and (3) citizens can have ideas about desirable public expenditure, which are quite different from and perhaps incompatible with their ideas about tolerable burdens of taxation.

On the basis of these assumptions, Peacock and Wiseman developed a hypothesis using time series data on public expenditure for the British economy, which is generally called the 'displacement effect'. They put forward the notion that during the period of social upheavals like war the public expenditure is displaced from the old level and never returns to the pre-war level. According to them, social upheavals like war displace public expenditure through two effects. The first is the 'inspection effect', which means that at the time of crisis, methods of raising revenue formerly, though intolerable, become possible, and acceptance of new tax levels remains even when the

disturbance has disappeared. At the same time, social upheavals bring about an increased number of obligations on the part of the government both as the result of functions assumed in war times and as a result of social ideas. Wars often force the attention of government and people to the problems of which they were formerly less conscious. The second is the 'concentration process', which means that public expenditure particularly on transportation, and communication is centralised through government's larger involvement.

From their explanation, it appears that displacement effect occurs due to the outcome of the interplay of three factors, viz., (a) of a persistent disequilibrium in the public sectors, (b) of a limit to taxation, and (c) of public expenditures determined by tax revenues.

Peacock and Wiseman hypothesis, while containing many insights suffers from several drawbacks. First, although it throws some light on the growth of public expenditure at various levels of crises and thereafter, the experiences of most of the countries negate the hypothesis. Secondly, their hypothesis could not explain satisfactorily why the level of taxation is more influential in determining the growth and patterns of public expenditure. Thirdly, the increases in public expenditure of the 1960's and 1970's do not fit at all easily into their hypothesis of social disturbance. Fourthly, their theory is unrealistic as

it ignores the special characteristics of public expenditure by treating the government as if it were an individual. Lastly, some studies have interpreted their findings as a contradiction to the displacement thesis, since it is found that after some postwar adjustments civilian public expenditure in many instances return to the pre-war trend determined by the underlying developmental situation.

Oman (1962)[8] tried to overcome the weaknesses of the earlier studies by using a relatively improved model with higher explanatory power for explaining the determinants of the State and local government expenditures in the United States for the year 1960. The model takes into account per capita income, percentage of urban population, population density, rate of population growth and federal aid to the function (if applicable) and all other federal aid as independent variables and growth of public expenditure as the dependent variable. The coefficient of multiple determinants R^2 indicates the proportion of the variance of the dependent variable explained by the independent variables. The study states that three variables, per capita income, total federal aid, and the percent increase in population accounts for 68 percent of the variance in general expenditure growth and the rest three variables explain 63 percent of the variance in the public expenditure. In order to assess the relative

importance of the independent variables as determinants of expenditures, he computed the β-coefficients where, per capita income ranked first in six functions and federal aid ranked first in three cases out of nine functions listed in the analysis. The analysis shows that federal aid has the effect of stimulating those functions to which it has been directed. It is also found that expenditure on some functions would increase through federal aid to other functions.

Kurnow (1963)[9] in his study of the determinants of state and local expenditures in United States, made an attempt to improve the explanatory power of the equations by selecting better regression models. He preferred an exponential model to the simple linear model used by Fabricant and Fisher, in order to capture the interaction among the independent variables. By applying his exponential model to the same set of database, as was used by Fabricant and Fisher, Kurnow tried to prove the superiority of the model over that of Fabricant and Fisher. The study claims that the exponential model as regards to the determinant analysis is more adequate on a priori grounds as it is able to account for more of the variability in per capita state and local expenditures than the results shown either by Fabricant or by Fisher. The study of Kurnow relies on a model that determines the change in per capita expenditure for any combination of predicator variables

rather than the separate effects of each one of them. Such a joint regression model is given by the equation:

$$Y = aX_1^{b1} X_2^{b2} X_3^{b3}$$

where,

Y = per capita expenditure

X_1 = state per capita personal income

X_2 = density of population

X_3 = degree of urbanization

He proved the superiority of the joint regression model by a comparison of the coefficients of determination (R^2) resulting from the use of the two models (Exponential Model and Simple Regression Model). Fabricant obtained an R^2 of .72 for the additive model while the joint regression model of this study resulted in a significantly R^2 of .88. Based on the result of the estimating equations the study states that for every 10 percent increase in the respective predicator variables, there is an increase in per capita expenditure at the rate of 5.6 per cent, 2.2 percent and 2.6 percent respectively. We must point out here that such a joint regression model may give rise to severe inter-correlations among the predicator variables. Therefore, conceivably a multi-equation model might yield results superior to the ones attained in this study.

Sacks and Harris (1964)[10] made an attempt to study the determinants of state and local expenditure in the United States for the year 1960. The main purpose of their study was to compare Fabricant's and Fisher's results with a similar analysis by using additional variables of federal and state aids in the estimating equation and to provide higher explanatory power to the analysis on the determinants of public expenditure. In order to assess the impact of these two additional variables, their study made use of regression and correlation techniques in a stepwise fashion. The first step in their analysis included only the three basic factors, viz., population density, percentage of urban population and per capita income. Then in the second step, per capita federal aid for the particular public expenditure function was included in each regression. As a third step, per capita state aid for each function was included with each expenditure variable. And, lastly, the equations were fitted including both state and federal aid. Their analysis shows that when federal aid is taken into account, the negative and non-significant relationship between income and public welfare spending as reported by the earlier studies becomes positive and significant. They claim it as an improvement upon the original analysis. Further the study claims that population density, percentage of urban population and state aid are not so spectacular in

explaining the determinants of public expenditure, they are nevertheless very considerable. Based on their statistical results, the study asserts that the federal aid and the state aid remain the major determining factors of public expenditure. Although the addition of these two variables has enhanced the explanatory power of the equation in the model, the statistical procedures used in the analysis is questionable as it overstates the importance of the aid variable as a major determining factor of public expenditure.

Using a some what different functional classification of public expenditure, Fisher (1964)[11], made an attempt to study the inter-state variation in State and local government expenditure in United States. His study takes in to account seven sets of both economic and socio-political variables for the purpose. The economic variables that the study takes in to account are (i) percent of families below $2000 level of income for the year 1959; (ii) the yield of representative tax system for the year 1960 as per cent of United States National Income Average; (iii) population per square kilometre for the year 1960; (iv) per cent of population in urban places for the year 1960; (v) per cent increase in population over the years 1950-1960. The socio-political variables that the study includes are (i) two party competition and (ii) per cent of population over the age of 25 with less than 5 years

schooling for the year 1960. The most important finding of the analysis is the high degree of negative relation between the levels of expenditure and per cent of low-income families in the state. The finding suggests that political resistance to increased government expenditure and the accompanying higher taxes is greater among low-income persons. Further, by using the multiple-partial coefficients of the estimated equation the study finds the demographic factor to be more important than would be expected by looking at the beta coefficients alone. The study concludes that the yield of a representative tax system is a useful measure of state fiscal capacity.

Although Fisher has reported the results of the standard tests of statistical significance, it may be mentioned here that there are problems involved in taking the fifty States as a sample from a normal universe. It is doubtful that the results explaining the pattern of governmental expenditure can be extended to other parts of the world.

In an attempt to identify the determinants of local government expenditures in the central cities and municipalities, Kee (1965)[12] used the method of multiple regression analysis to describe the relationship between each dependent variable and a set of selected independent variables for the year 1960. The study reveals that per capita local expenditures in the central cities are highly associated with the

variables reflecting the allocation of functional responsibilities among the different layers of State and local governments. Among these structural variables the ratio of local expenditures to total State and local expenditures are of main importance in explaining total per capita expenditures. The subsequent analysis reveals that two sets of dummy variables indicating different layers of government in providing public education and/or public welfare are of great significance in determining the variations in the levels of total per capita municipal expenditure. Further the study states that the second major variable influencing the central city's expenditure variation is the State payments to local governments, especially the State grants-in-aid. The two variables, i.e., the expenditure allocation variable and State aid, taken together explain 70.6 per cent of the variations in the total municipal expenditure. In the case of 29 central cities, the same two variables account for 85.2 per cent of the total municipal expenditure variations. To conclude, the study stresses on the fact that expenditure analysis of central cities, for that matter of any local community, cannot be adequately undertaken without considering the distribution of responsibilities among the various governmental units.

Adam (1965)[13] made an attempt to study the determinants of public expenditure in the United States by establishing a functional

relationship between the selected per capita aggregate expenditures of all local governments and the quantity of public services consumed. By taking into account the available data for the year 1957, he carried out a multi-variate analysis to substantiate the above functional relationship. The study preferred to use the following explanatory variables viz., (i) population density per square mile; (ii) per cent of the urban population; (iii) per capita hotel; (iv) motel and camping receipts (socio-economic environment); (v) geographical region; (vi) percent of the houses built (physical environment); (vii) level and distribution of income (income and wealth); (viii) per cent of the foreign-born population; (ix) percentage of the population which is non-white (individual characteristics); (x) number of political/economic jurisdictions, and (xi) percentage of the population which is "immigrant" (political or institutional).

The study claims to have a reasonable success in explaining the variation in per capita expenditure by using a multi-variate analysis to the above sets of variables. The result of the analysis states that socio-economic environment is the predominant factor in explaining the variations in all the expenditure function except two expenditure functions, i.e., street maintenance and general control. The study further reveals that the second important variable that affects the level

of per capita expenditure is the percentage of immigrant population (political or institutional factor). Based on the above findings, the study concludes: (i) that the continuing changes in the social and economic environment as measured by density and urbanization might have given rise to continued and predictable pressure for more public services and (ii) that the changing demographic composition of most American communities brings with it changing preferences for public services. Lastly, the study suggests the desirability of introducing age distribution and religious background as the expenditure determinant variables in future research.

The studies reviewed above emphasize the relationship between the absolute level of government expenditures and the absolute level of a number of other variables, the most common of which are per capita income, population density and degree of urbanization. Such cross-sectional analyses no doubt have gone far in the direction of pointing out significant relationships, which might have helped in explaining some of the variation among states in the magnitude of per capita government expenditure and/or aggregate public expenditure. But, the problem that seems to have been overlooked in these cross-sectional analyses involves the determination of those factors influencing changes in the level of state and local governmental expenditures. To

put it differently, what portion of the variation in changes in governmental expenditures can be explained by changes in the level of selected independent variables.

In order to overcome some of the deficiencies of the earlier studies, Bahl and Saunders (1965)[14] made an attempt to study the determinants of changes in state and local government expenditure in the United States for the years 1957 to 1960. With the help of multiple correlations technique the study makes an attempt to explain the inter-state variations in the changes in both per capita general expenditures and per capita expenditures by function. The study tries to relate per capita governmental expenditure being the dependent variable to a set of five independent variables. The independent variables selected by the study are: changes in per capita personal income (X_1), changes in population density (X_2), changes in urban population (X_3), changes in per capita federal grants to states (X_4) and changes in public school enrolment (X_5). Using these variables, the correlation analysis carried out by them exhibits that only the federal aid variable is a significant factor in explaining inter-state variation when 48 coterminous states are taken into consideration. But the same factor is found to be inconsequential when a similar analysis is undertaken for 15 high-income high-density states. Although this study manages to explain a

lesser proportion of the variation in expenditure changes than other studies have explained of expenditure levels, the study maintains that the incremental analysis, i.e., the analysis of change, raises some questions as to the validity of the conclusions drawn from cross-sectional and non-longitudinal techniques. Further, the conclusions of the study suggest a fruitful area for further research.

In order to improve upon the model of Bahl and Saunders, the study of Morss (1966)[15] takes into consideration per capita State and local taxes as an additional variable to analyze the determinants of public expenditure in the United States. By using a similar technique as used by Bahl and Saunders, the study of Morss concludes that this particular variable alone explains 72 per cent of the inter-state variation in total per capita State and local expenditures. Further, the study maintains that for the purpose of prediction, certain variables like tax receipts, aid payments, budget deficits and lagged values of the dependent variable may be used as predictor variables in order to ascertain the determinants of public expenditure.

The study of Booms (1966)[16], employs the multiple regression analysis to ascertain the socio-economic determinants of per capita public expenditures for Ohio and Michigan cities in the United States for the years 1962 and 1963. His study is based on a hypothesis that the

form of city government (manager or mayor) has an important effect on the levels of per capita public expenditure for the common functions of local government. Further, the study assumes that the city-manager form of government is more efficient than the mayor-council form of government. The independent variables that the study makes use of are: (i) percentage of families earning below $3,000; (ii) percentage of families earning over $10,000; (iii) per capita inter-governmental transfers (state aid) and (iv) the form of government (for which the study uses a dummy variable). The study has provided some evidences for the acceptance of the hypothesis that expenditure levels per capita for local public goods vary according to the form of government under which the city operates. The study further shows that per capita public expenditures in manager operated cities appear to be lower in relation to mayor directed cities. Although the statistical results provided by the study are suggestive, it exhibits the limitations of not separating precisely the demand and supply side forces in the determination of expenditure levels under various forms of government.

In an attempt to refine his earlier study, Morss (1967)[17], carried out an analysis of the determinants of public expenditure in the United States by including the level of taxation as an additional explanatory variable, where he argues that generalizations regarding

the relative advantages of the two models cannot be made and the explanatory power of the two models should be the criterion to prefer one model to the other. In order to find the statistical significance of this additional variable on the level of public expenditure, he carried out a simple linear regression analysis. His results show that this additional variable has contributed substantially to the explanation of inter-state differences in state and local government expenditures, where the reported variation in the level of public expenditure is stated to be 72 percent by this particular variable alone. In a welfare state, the usefulness of this variable in the empirical analyses on determinants of government expenditures is questionable because the level of taxation is determined by the level of public expenditure and not vice-versa.

Baumol (1967)[18] tried to explain the growth of public expenditure with the help of the 'productivity lag' hypothesis where he maintains that productivity of the public sector always lags behind the productivity of the private sector. And it is the productivity lag that explains the growth of public expenditure in recent years. The underlying hypothesis according to the study is that labour productivity tends to grow less in the public sector than in the private sector, yet wage costs rise at a similar pace to those in the private sector. As a result, overall productivity rises less rapidly in the public sector than in

the private sector as per capita income growth continues. Public sector expansion takes place at the expense of the private sector. It follows that there will be inherently greater labour intensity in the public sector compared with private sector. It is this causal effect relationship that pushes up the level of public expenditure. This hypothesis has its own drawbacks as in reality it is difficult to find out whether technical barriers opposing innovation in the public sector are higher than in the private sector. Moreover, the underlying working forces within the public sector are so numerous that it is hardly possible to obtain a precise index of quantifying the existence of productivity lag with empirical precision. As a result, the application of the productivity lag hypothesis to determine the level and quantum of public expenditure in the empirical analysis remains questionable.

In order to over come some of the lacunae of the existing literature, Sharkansky (1967)[19], made an attempt to study the determinants of public expenditure in the United States by adding previous year's public expenditure and state's role as the explanatory variables to a sets of other variables which are generally being used by the earlier studies. The study relies on five sets of independent variables for explaining the variations in the level of public expenditure. The independent variables that the study uses are: per

capita personal income, federal grants as a percentage of state government revenue (federal aid), state and local government taxes as a percentage of personal income (tax efforts), the percentage of state and local expenditures spent by state agencies (state role) and previous year's per capita expenditures. By comparing the coefficients of simple correlation the study indicates a positive relationships between a measure of the state role and state spending per capita. Further, the study states that when the measure of state role is included in multiple regression and partial correlation analyses with a measure of previous expenditures, the importance of state role for current expenditures diminishes. Lastly, the study indicates that the other variables such as, federal aid and tax efforts show a positive relationship with each measure of spending, but the relationships are not strong enough to establish the importance of these factors in influencing the total public expenditure. On the basis of the analysis carried out, the study concludes that the incorporation of previous expenditures in analyzing the determinant of current expenditures provides a brilliant demonstration of the stability of government's expenditures.

Horowitz (1968)[20] relied upon a simultaneous equations model to explain the inter-state differences in the per capita state and local government expenditures. The model takes into account the amount of

public services provided and the number of state and local government employees for explaining the inter state differences in per capita state and local level expenditure. The analysis indicates that these two variables taken together explain near about 73 percent of variation in the total public expenditure. Further, when the effects of the other variables are held constant, federal aid emerges as the major determinant of public expenditure.

In an attempt to heighten the explanatory power of the equations by better specification of the regression model, Henderson (1968)[21] included in his analysis, quantities of pure public goods in order to make a useful study on the determinants of public expenditure. In his analysis, he uses a formal model maximizing social welfare (W) subject to constraints set by revenue and achieves in providing a greater insight into the determination of public expenditure. He defines community's social welfare function as:

$$W = (\alpha_0 + \alpha_1 Y + \alpha_2 R + \alpha_3 P)\log G + X$$

where Y, R, G and X are income, revenue from other governments, local government expenditure and income after local taxes respectively, each measured in per capita terms. P is the community's population. The community budget constraint is $T = (G - R)$ where T is its per capita local taxes and charges. Thus,

$$G = \frac{\alpha_0}{\beta} + \frac{\alpha_1}{\beta} Y + \frac{\alpha_2}{\beta} R + \frac{\alpha_3}{\beta} P$$

By using two-stage least squares method, he estimated the parameters for these equations from cross-section country data for the year 1957. The analysis shows that the mean metropolitan county finances a larger portion of their expenditures through debt than the mean non-metropolitan county. The study further reveals that the non-metropolitan county spends a much higher percentage of its marginal income on local government expenditures and the expenditures of the metropolitan county are more responsive to increase in inter-governmental revenues. Further, it states that the coefficients for the population variable are positive for the metropolitan counties and negative for the non-metropolitan counties in determining the level of public expenditure. This only hints that it is possible for the local government services to have a U-shaped average cost curve.

Pryor (1968)[22] made an attempt to examine the determinants of public expenditure in communist and capitalist countries during the last few decades. The broad determinants of public expenditure spelled out by him are: the economic system, the level of economic development and other influences that include what Musgrave calls 'conditioning factors'. In fact, the study takes into account the economic system as

an independent variable but in view of lack of institutional or theoretical evidence, the study pursues an inductive approach instead of testing certain a priori hypotheses. The study compares the seven market economies with the seven centralized economies roughly paired for per capita GNP. He takes the ratio of public expenditures to GNP as a dependent variable. These ratios are compared cross-sectionally and the ratio-income elasticities are estimated for cross-sections and time-series data. For the level of economic development Pryor's time-series analysis of the fourteen countries from 1950 to 1962 shows eleven countries with statistically significant ratio-income elasticities for total public consumption expenditures, excluding the military. From the findings of his analysis he concludes that there is a clear connection between per capita incomes and the share of public consumption expenditure as the economy passes through the transition from agricultural-rural to industrial-urban and that per capita incomes rise from around $200 to $600. That is to put it more precisely, the growth of public expenditure is bound to be linked up with the growth of per capita income i.e. the level of economic development. Further, the study states that once this transition is attained in the economy, the relation of public expenditures and incomes 'appears more random.' As regards to the economic system variable, Pryor finds that public

expenditure is relatively higher in centrally planned economies for education, research and development, and non-military security, excluding traffic control. The economic system is not significant for defence, welfare, and health; nor does the elasticity of the ratio of expenditures to incomes for any type of expenditure; vary systematically with the economic system between 1950 and 1962. In fact, in many cases, the variation among countries within the same economic system exceeds that between the two systems as the study repots. Pryor concludes that (1) the problem of policy making with regard to public consumption expenditures are quite similar in all nations regardless of economic system and (2) public finance institutions which appear different in countries may actually act in very similar ways. Although the study of Pryor provides an insight into the intricacies of public expenditure, it suffers from certain limitations. First, it can be argued that the sets of economic and non-economic variables that the study takes in to consideration are highly inter related making a relationship between them and public expenditure very complex. Second, it may be mentioned here that the influential factors of public expenditure are often country specific and as such their influence on public expenditure may be unique in each situation and may result in each country having its own pattern of evolution of

public expenditure. As a result the model remains elusive in its universal application.

Musgrave's (1969)[23], study on the determinants of public expenditure in three major countries namely, the United Kingdom, the United States and Germany makes use of three categories of variables pertaining to economic, conditioning and social forces. His study exhibits the existence of a strong positive relationship between the growth of public expenditure and the above mentioned three categories of variables which made him to conclude that per capita income, changes in technology, demographic change, social and cultural values and political structure positively affect the level of public expenditure. The main limitations of the study is that neither it draws the clear-cut dividing lines between these categories of economic, conditioning and social forces nor are they completely independent of each other. In such type of study, there is a problem of severe multi-collinearity that one may find in the analysis of a time series data.

Lall (1969)[24], in his effort to study the determinants of public expenditures of 46 developing countries relied mainly on simple regression analysis by taking the data for the years 1962-64. The study divides the countries into three income groups: (i) per capita GNP of up to $124; (ii) per capita GNP of $125 to $249 and (iii) per capita

GNP of $250 to $675. The study makes use of two sets of regressions for each group of countries separately and in combination, the first with total expenditure and various categories of expenditure expressed as percentages of GDP, the second with various categories of expenditure expressed as percentages of total expenditure. By using a simple regression analysis, Lall tried to test the hypothesis that a relationship exists between per capita income and the size and pattern of government expenditures. The analysis shows that there does not exist any significant relationship between per capita G.N.P. and total government expenditure expressed as a percentage of G.D.P. for any group or combination of groups of countries. Further, the study exhibits that there is no significant relationship between per capita G.N.P. and total current expenditure for any group or combination of groups of countries. On the basis of these findings, the study concludes that per capita income seems to influence government expenditure on some items but on larger categories, it does not exert any influence at all. Therefore, the study recommends that dummy variables for certain non-economic factors along with other indices of development may be used as explanatory variables for expenditure determinant analysis.

Weicher (1970)[25] made an attempt to improve upon the earlier studies on the determinants of state and local government expenditures

by taking into account demographic and socio-economic factors known as tastes and service conditions. The study analyzes per capita expenditure of 206 central cities of Standard Metropolitan Statistical Areas in the United States for the year 1960. The study uses the following independent variables for the purpose of expenditure analysis: (i) size of population of the central city and the rate of growth of population (ii) inter-governmental revenues (per capita revenue received by the municipal government from other governments (iii) fiscal capacity (median family income and percentage of persons working 26 weeks) (iv) metropolitan political fragmentation (ratio of central city population to population of the urbanized area), (v) tastes and (vi) service conditions. The study claims that the inclusion of taste and service condition variables has broadened the usual analysis of local government expenditures to identify several variables, which have important effects on individual local public services. In particular, the study finds a significant effect of ethnic composition of the city on most of the public expenditure programmes. Further the result of his study shows that some variables while not generally significant, still have larger effects in particular cases; for example, slum housing requires substantially increased fire protection expenditures but has no effect on other services where it might have thought to be important on

a priori reasoning. Finally, his study suggests that for further fruitful research into local government expenditures the approach should be based on the investigation of particular service categories, by trying to isolate variables, which might help to explain expenditures on a number of services.

Booms and Teh-wei Hu (1971)[26] made an attempt to study the determinants of public expenditure on education. In their study they tried to generalize the analysis for aggregative purposes by considering both socio-economic and institutional variables. They consider two-stage least squares regression techniques for analytical purposes. The study is based on the data collected for the year 1960 for 50 States of the United States. The study reveals that the price variable i.e., the nominal tax rate has a negative impact on the demand for public education expenditure whereas federal aid has a direct and positive impact on the supply of public funds available for public education expenditure. Further the study suggests an empirical analysis on a disaggregated basis over the many government functions so as to get a deeper knowledge and understanding of the total public expenditure process.

Goffman and Mahar (1971)[27] in their detailed analysis of expenditure determinants for six Caribbean countries demonstrated that

although income, prices and population are found to be determining the public expenditure level, there are a large unexplained variation in the time pattern of public expenditure growth in these countries. Of course, the study does not provide any statistical or economic explanation to the observed large unexplained variation in the time pattern public expenditure growth. Further, the study finds that in addition to the above explanatory variables mentioned above, the displacement effect, the impact of developed countries, domestic political philosophy and demonstration effect play a crucial role in determining public expenditure growth.

The study of G.H. Peters (1971)[28] on the growth of public expenditure, assigns numerous factors for the growing share of economic activity undertaken by the public sector. The study asserts that as the general standard of living improves, public expenditure tends to increase. This argument appears to have particular weight in respect of education, health, housing, and road provision, which display a high-income elasticity. The study further argues that there is always a tendency on the part of the public activities to be concentrated in a range of activities, the demand for which rises as the general standard of living improves. The above study is largely based on a

normative approach and therefore has got a limited application in the real world.

After spelling out the major flaw of the earlier determinant studies which tried to explain public expenditure in terms of factors largely associated with demand side of the problem, Burkhead and Miner (1971)[29] in their study of public expenditure made an attempt to show theoretically that demand aspect alone is incapable of explaining the determinants of public expenditure and as such argued that both demand and supply (or costs) of public sector services jointly determine the level and quantum of public expenditure. The study argues that the standard approaches applied to the estimation of industrial or sectoral production or cost functions can also be applied to the public sector for estimating the cost function and/or supply function of the public sector. According to them, if public sector outputs are quantifiable it would be possible to relate, ex post, observed measures of quantities of similar outputs by different governmental units to observed measures of inputs used and, thereby, to estimate production coefficients. Given these coefficients and prices of inputs, cost curves could be derived. As an alternative, cost curves could be estimated directly by cross-section or time-series analysis of variations in expenditures in relation to variations in quantity of output,

taking into account output quality and other determinants of cost such as differential factor prices. The major drawback of this study is that it has not been able to estimate a systematic functional relationship between inputs and outputs or between expenditures and outputs. As long as public service outputs are measured in terms of indicators of performance and not in direct physical units the underlying production functions will remain elusive.

A.R. Prest (1973)[30] in his study on public expenditure argues that the growth of public expenditure is affected by three sets of variables, viz. the growth of population, the emergence of strong local opinions and the emergence of strong world opinions. He maintains that a rapid rate of growth of population will set in motion a causal chain process. As a result, the rate of growth of government expenditure as a whole is likely to be faster than that of population. But the experience of some countries of the world suggests that a population growth around 3 percent per annum, by no means explains the great increase in public expenditure in these countries. Further, the study argues that the emergence of strong local opinion affects the level of public expenditure to a very great extent. With the emergence of strong local opinions, the study observes that there is always a greater demand for improvements in living standards, which entail

higher level of public expenditure. But the related question that arises here is that, how far the growth of, say, education or health expenditures in any given country is due to a government's desire to placate local opinion or to its wish to conform with or emulate practices in other countries remains unanswered by the study. Lastly, the study argues that world opinion positively affects the level of public expenditure in a country through a demonstration effect. We may be tempted to point out here that although the study tries to substantiate its findings by taking the budgetary history of Sri Lanka, India and Pakistan in the 1960's, these cases may not be fully representative as these countries share a common platform for their various economic agenda and were at a formative stage of economic development at that particular point of time. Further, the budgetary history of some developed countries during the same time period negates this proposition.

Ubogu (1983)[31] made use of an econometric analysis in order to study the political economy of government expenditure in Nigeria. The main objective of the study was to ascertain the trend and variations in the aggregate as well as their composition of government spending and to determine the factors responsible for the growth of public expenditure. An analysis of trend and composition of government

spending indicates a continuous increase in government spending on each function during the period covered by the study. The tremendous increase in public expenditure on various functions has been attributed by the study to increases in government revenue from the oil sector and the number of states created in the nation which as a consequence have to be provided with social, economic and welfare services in addition to general administration. Further, the study contends that the factors which influence public expenditure arise from political, social and economic considerations. These factors are: changes in the level of domestic revenue and foreign aid, changes in ideology, international demonstration effect, changes in per capita income and urban population, rapid growth in dependent population (children) and changes in the level of monetisation of the economy. The study uses a simple trend and multiple regression analysis in order to examine the changes that have occurred not only in total government spending but also in the components. The results of the multiple regression analysis establish an inverse relationship between educational spending and either literacy rate or per capita income. The same relationship exists between health expenditure and the above mentioned variables. As regards economic services, the study finds that public expenditure on this head is positively related to literacy rate and the degree of

monetisation of the economy but inversely related to the degree of urbanization and per capita income. On the other hand, the study finds a positive and significant relationship between defence spending and natural resource endowment. Finally, the study reports that in all the regression equations, the expenditure function is found to be positive and significantly related to total spending.

Most of the comparative studies on the determinants of public expenditure that we have reviewed above stress on a functional relationship between economic development and total national current expenditure among high income and low income countries. The basic premise of these studies is that citizen's tastes and preferences as inferred from economic and demographic variables, are the primary factors that influence expenditure decision-making. Such a perspective, however, ignores the institutional mechanism i.e., political structures, processes and values as well as fiscal policies in representative democracies that facilitate or interfere with the transformation of individual and group wants into different types of government action. Based on the above observations, Solano (1983)[32] tried to study the determinants of public expenditure by considering certain institutional factors such as economic development, federal or unitary form of government and tax centralization along with selected demographic

variables. The study reveals that institutional variables are mainly responsible for the wide variation in the public expenditure levels among high-income democracies. Therefore the study suggests that in order to assess more accurately the impact of political and fiscal variables, expenditures should be so disaggregated as to correspond to groupings, which are the basis of government decision-making.

Sandford (1984)[33] maintains that a complex of economic, political, psychological, sociological, institutional factors and even to certain extent the statistical influences determines the growth of public expenditure. By taking into account seven sets of variables which run in terms of administrative rearrangements, technical factors, changes in attitude to public spending, changes in the nature of publicly provided goods, the growth of public sector employment, the inherent characteristics of politicians and bureaucrats and institutional factors, Sanford tried to study the public expenditure patterns of O.E.C.D. countries. Based on the findings, the study concludes that all the explanatory variables have got a positive impact in determining the size, structure and patterns of public expenditure in these countries.

Lewis and Rice (1985)[34], in their study on public expenditure argue that it is the combined influence of elite preferences, demand of the pressure groups and the preferences of the masses that determines

the level of public expenditure. The study finds that the domestic demand generated by the key socio-economic groups – the aged, the young and the economically disadvantaged lead to significant increases in the size of public expenditure. The study also finds that with regard to the international arena, demand from diverse foreign and domestic groups triggers a military build-up or a trade intervention, both of which act to expand the public expenditure.

In order to identify and empirically assess the economic, monetary, financial, and institutional/political factors associated with the growth of public expenditure, Mann and Schulthess (1986)[35] made an attempt to study the behaviour of Argentine public expenditures for the period 1930-1977. Using multiple regression techniques and functional and economic classifications of government spending, explanations are sought regarding the constancy of the secular overall expenditure to GDP ratio and with respect to the changing composition of total outlays. The study uses the following regression equation:

$$\log GE_i/Y = \log a + b_1 \log Y/P + b_2 \log (M+Y)/Y + b_3 \log T_t/Y + b_4 \log T_P/T_t + b_5 \log MS/Y + b_6 \log \Delta IP + b_7 D_1 + U$$

where,

GE_i/Y = total or categorical government expenditure as a

percentage of GDP

Y/P = real GDP per capita

$(M+Y)/Y$ = foreign trade coefficient

T_t/Y = total tax revenues/GDP

T_P/T_t = share of personal income taxes in total tax revenues

MS/Y = money supply/GDP; MS is defined as M_1 (currency plus demand deposits)

ΔIP = inflation rate

D_1 = president elected by popular vote or not

Based on the findings, the study lands up with some interesting results. The study finds that real per capita GDP and deficit financing of spending are positively correlated with the expenditure/output ratio whereas, the real financing (tax revenues), conservative and non elected government have got a tendency to pull back the expenditure/output ratio. The study admits that no variable emerges as statistically significant for all categories of expenditure as the importance of a variable depends a great deal on how expenditure is disaggregated. Further, the study uses the consistently positive signs on the real per capita GDP variable in the analysis to corroborate the hypothesis that the demand for more and better quality public goods and services grows as economic growth takes place thereby giving rise

to an increasing pressure on the level of public expenditure. Lastly, the study argues that the inability to channel greater tax resources into public coffers has been one of the main limiting factors on public expenditure growth in Argentina.

Abizadeh and Yousefi (1988)[36] examined empirically the secular growth of federal government expenditure in Canada using both political and economic variables. Their empirical model runs in terms of the following equations:

$$ER_t = \alpha\,(OP_t)^{\beta 1}\,(DR_t)^{\beta 2}\,(U_{t-1})^{\beta 3}\,(PF_t)^{\beta 4}\,(Y_{t-1})^{\beta 5}\,(LFGR_t)^{\beta 6}\;\mu \qquad \text{……..(1)}$$

Or

$$\ln ER_t = \ln\alpha + \beta_1 \ln(OP_t) + \beta_2 \ln(DR_t) + \beta_3 \ln(U_{t-1}) + \beta_4 \ln(PF_t) + \beta_5 \ln(Y_{t-1}) + \beta_6 \ln(LFGR_t) + \varepsilon \qquad \text{……..……..(2)}$$

where,

ER = government expenditure ratio
OP = openness, defined as the ratio of exports plus imports to GNP
DR = dependency ratio
U = rate of unemployment
PF = political factor index
Y_t = real GNP growth rate
LFGR = ratio of the civilian labour force employed by the government to the total labour force
μ and ε = residuals

Using a time series national data for Canada and employing the ordinary least squares method (OLS), they tried to estimate the second equation. The broad conclusions that emerge from their statistical analysis are as follows: (a) Political and economic factors are found to be significant in determining the growth of public expenditure in Canada. (b) Among the economic variables, internationally induced economic changes, dependency ratio, rate of unemployment and the growth in real income are found to be poorly related to the growth of public expenditure. And lastly, the political variables are reported to be largely responsible for the tremendous growth in public expenditure in Canada.

Joulfaian and Mookerjee (1990)[37] made an attempt to empirically gauge the government revenue-expenditure nexus for a state. The study is based on a hypothesis that the level of expenditure is always a linear function of the level of taxation and to that extent, there exists a causal relationship between state revenues and expenditures. Using data for Massachusetts in the United States the study employs vector auto-regressions (VARs) to investigate the directions of the relationship between these two sets of variables. The findings of the study indicate that revenues drive state government expenditures. Moreover, the study finds little evidence of permanent causal effects of

federal grants on state expenditures. Finally, federal grants are found to have an insignificant effect on state expenditures.

The study of determinants of public expenditure by Odedokun (1993)[38] is based on flow-of-funds annual panel data from 15 less developed countries for varying periods that fall between 1970's and the middle of the 1980's. The study tries to identify the factors that determine the various components of public expenditure account of the flow-of-funds data viz., saving, investment and net lending (in relation to the GDP). The study makes use of nine determining factors, viz., economic growth, real interest rate, domestic credit availability, devaluation of exchange rate, openness of the economy, population size, per capita income, share of the central revenue in the GDP and the world economic growth. The study concludes that each of the postulated factors has an economically and statically significant effect on the level of public expenditure.

The study of Bosch and Pandiello (1995)[39] on determinants of public expenditure tried to test a number of hypotheses concerning the political and fiscal behaviour of the local authorities in relation to public expenditure. The main objective of their study is to measure the extent to which local expenditure gets influenced by political and fiscal behaviour of the local authorities. By taking a sample of 105 Spanish

municipalities with a population above 50,000, the study tries to employ an ordinary least squares regression analysis. The study uses the following regression model to establish a functional relationship between a set of independent and dependent variables:

$$E = E (ID, VG, EP, FE, CD, RD, FC, VT)$$

where,

E = municipal per capita expenditure

ID = dummy variable of an ideological nature that took the value '0' when the party or coalition in municipal government was of the right or centre and '1' if it was the left

VG = percentage of votes obtained by the municipal governing party in the local elections

EP = percentage of electoral participation in the local Elections held in the municipality

FE = municipal fiscal effort measured by the ratio of the nominal rate that each municipality applies over the maximum rate that could be applied according to the size of the municipality

CD = dummy variable that took the value '0' when ideological Concordance exists between central and municipal government and '1' if the opposite was true

RD = dummy variable that took the value '0' when ideological Concordance exists between regional and municipal government and '1' if the opposite was true

FC = the financial liabilities by interest and mortgages of outstanding debts that the municipal government must service annually

VT = the percentage represented by the municipal Individual taxes most visible or noticeable by the contributors in the total resources of the municipality. Concretely, the VT variable was measured as the

percentage of total municipal resources coming from Property Tax, Business Tax and Motor Vehicles Tax.

The results show that fiscal factors are more influential on municipal expenditure than the political factors. The test supports three of the several hypotheses, viz., a) municipalities financed to a greater extent by visible individual taxes spend relatively less b) municipalities with greater financial liabilities inherited from the past tend to spend relatively more c) municipalities governed by political parties without an absolute majority in the last elections spend relatively more. Although the study makes use of a large number of explanatory variables, it miserably fails to verify whether the municipal fiscal effort, the ideological factor, the electoral participation, the political concordance between the party in power at the municipal level and the upper levels of government (regional and central) have got any influence in determining the level of municipal expenditure.

The study on the size and structure of public expenditure by Myles (1995)[40] shows that public expenditure still plays an important role in the mixed economies of the major industrialized countries. The study displays the pattern of public expenditure as a percentage of nominal GNP over the period 1978-93 for seven of the major industrialized countries of North America, Europe and Asia. Based on

the analysis, Myles concludes that the size of the public sector is the only major determining factor of the size of public expenditure in these economies. The major implication of the study clearly justifies the claim that the public expenditure is significant in the economies of the industrialized countries and the mixed economies of these countries as characterized by substantial government involvement. They are far from being free market with minimal government intervention. The size of public expenditure alone is justification for the study of how it should best choose its means of revenue collection. The study further shows that social security spending is the largest component of public expenditure followed by purchases of goods and services. Interest on public debt is also a significant item of public expenditure. A similar breakdown of public expenditure and income for the United Kingdom shows that the UK spends more on goods and services but less on subsidies. The social security item in Japan is equivalent in relative size to the transfers in the UK. In the United States the study reveals that the major items of public expenditure for Federal Government are income support and social security, and defence. In contrast, the major item for State and Local Government is education followed by income support and social security. Other than these, the most significant items

are the net interest paid by the Federal Government and transportation and civilian safety paid for by State and Local Government.

Ahmed, Javed and Lodhi (2001)[41] in their study of the determinants of public expenditure employed four explanatory variables to ascertain the growth and pattern of public expenditure in some selected developing countries. In order to establish a relationship between these explanatory variables and the dependent variable they used a simultaneous equation technique. Further, they used the same technique to ascertain the trends of current expenditure and its components (such as defence, education, health and general administration) of these selected developing countries. The selected explanatory variables in their study remained confined to (i) per capita current revenue, (ii) per capita current expenditure, (iii) per capita gross national product and (iv) per capita foreign grant. Their study uses data of selected developing countries whose per capita income ranges from 250 USA dollar to 1800 USA dollar. They give the reason for keeping the range of per capita so wide so as to bring the maximum number of developing countries under the purview of their study. The study uses the following simultaneous equations technique:

$$PCCURE = \alpha_0 + \alpha_1 GNPPCP + \alpha_2 PCCUEX + \varepsilon_1 \quad \text{.....(1)}$$

$$PCCUEX = \beta_0 + \beta_1 GNPPCP + \beta_2 PCCURE + \beta_3 PCGRAN + \varepsilon_2 \quad \ldots\ldots\ldots(2)$$

where,
PCCURE = per capita current revenue
PCCUEX = per capita current expenditure
GNPPPCP = per capita gross national product
PCGRAN = per capita foreign grant

The results of these equations show that all variables are significant at 99 per cent level of confidence. Further their results show that both current revenue and current expenditure are determined by each other i.e., expenditure is not only determined by revenue but revenue is also influenced by expenditure. This particular result of the study only supports the hypothesis of Peacock and Wiseman according to which expenditure relates to revenue. Moreover the study finds that grant from other countries influences the trend of public expenditure in developing countries. Result of the study shows that this particular variable has positive sign and significant at 99 per cent level of confidence. This particular finding made them to assert that increase in the flow of grant from other countries influence positively the public expenditures of developing countries and may act as a displacement effect in the public expenditure of developing countries. Lastly, their

result suggests that in developing countries an increase in per capita current revenue increases per capita current expenditure on health, education, defence and other services. Although the study brings into focus the new dimensions to the problem, the comparability of the result of various expenditure categories for numerous countries remains questionable.

In an attempt to reinstate Wagner's hypothesis, Islam (2001)[42] carried out an empirical analysis as regards to the growth of public expenditure in the United States by using annual time series data for the period 1929 to 1996. The study of Islam was an attempt to re-examine Wagner's hypothesis of an expanding government sector with the progress of the economy by using advanced econometric techniques such as co-integration and exogeneity tests. The study tries to interpret Wagner's Law as predicting an increasing relative share of the public sector (g) in the total economy as per capita real income (y) grows. The study argues that the two testable implications which arise from this relationship are: (a) the growth in the share of the public sector (g) in GDP has a long-run equilibrium relationship with the progress of the economy as measured by real GDP per capita (y); and (b) the causal linkage runs from y to g. Since (a) implies a long-run equilibrium relationship, the hypothesis has to be tested preferably

within the context of a particular country over a long time period. More formally, the study attempts to present the relationship given in (b) in the following mathematical form: $g = f(y)$ ……..(1)

Using a log-linear functional form and using t as the time subscript and adding a random error term w, equation (1) runs in the form of: $g_t = ay_t^b w_t$ …….(2)

Taking logarithms on both sides and using ln to indicate the logarithmic transformation of the variables, equation (2) takes the following form: $\ln g_t = \ln a + b \ln y_t + \ln w_t$ ……..(3)

The study strongly argues that equation (3) is the empirically testable form of the long-run relationship proposed by Wagner. This is a constant elasticity formulation of the general equation given by equation (1).

The long-run equilibrium relation is given by the following co-integrating equation:

LSGTN = 0.369 + 0.418 LGNPRPC

where, LSGTN = ln (SGTN) i.e., the relative size of the public sector g in Equation (1) and ln the natural logarithm

and LGNPRPC = ln (GNPRPC) i.e., the real GNP per capita and is used as a proxy for the progress of the

economy over time as represented by y in Equation (1) and ln the natural logarithm.

On the basis of Johansen-Juselius co-integration and exogeneity tests, the study claims to have found strong evidence of a long run equilibrium relationship between per capita real income and the relative size of government. The study finds the elasticity coefficient associated with per capita real income to be greater than zero as hypothesized by Wagner's law. The study further claims to have got a causal linkage flows from real income per capita to relative size of government from the causality/exogeneity test. Since this study uses different methodology, different definitions and measurements of the variables, the empirical results are quite mixed, thus leaving the door open for further empirical tests on this hypothesis.

2.3 Review of the studies on the growth, pattern and determinants of Public expenditure undertaken at the national level

In this section, an attempt is made to review some of the major studies carried out by various researchers on the growth, pattern and determinants of public expenditure in India.

Dar (1964)[43] made an attempt to study the growth in government expenditures in India for the year 1951-52 to 1958-59. The study of

Dar was an attempt to relate the level of government expenditures to two sets of independent variables, viz., changes in population growth and changes in general price index. The study finds that these two explanatory variables have got a positive impact on the level of government expenditures. Further, the study observes that the rate of growth of per capita expenditure becomes less rapid than the rate of increase of total expenditures as the population multiplies in a geometric mean.

By employing five sets of explanatory variables, Bhargava (1967)[44] made an attempt to analyze the growth of public expenditure in India. The explanatory variables that the study uses are: the rise in price index, the increase in national income, the increase in defence expenditure, provision of economic and social overheads and social welfare objectives. The study finds a positive correlation between the growth of public expenditure and the independent variables employed. But the study does not provide any economic or statistical justification to the selection of the explanatory variables used.

Gupta (1967)[45] in his study on the growth of public expenditure tried to examine the displacement hypothesis. The study asserts that the recognition of displacement of public expenditure can be arrived either from the shift in constant or from slope coefficient or both. After

testing the constant term and slope coefficients separately, Gupta observes that once public expenditure is shifted to higher level, due to whatever reasons, it never comes back to the previous level. And this type of ratchet effect occurs due to habituation of people to new tax levels and/or a changed favourable attitude toward public expenditure. Although the study of Gupta is an attempt to testify displacement effect, it does not provide an insight to the intricacies of public expenditure growth in India.

The study of Venkataraman (1968)[46] and Reddy (1970)[47] on the growth of public expenditure, was an attempt to relate the growth of public expenditure to the welfare objectives of the state. Both the studies conclude that it is the societal needs and aspiration, which is alone responsible for the growth of public expenditure. Further, both the studies assert that the removal of permanent influences like population growth and price change from the empirical analysis does not affect the secular growth of public expenditure. In essence, both the studies are an attempt to substantiate Wagner's hypothesis.

In another study, Reddy (1972)[48] made an attempt to investigate the growth of public expenditure in India between 1872 and 1968. The study analyzes the growth of public expenditure in both types of situations – peace-time as well as the times of major social

disturbances like wars. The study finds that government expenditure has grown at a faster rate than community output. Even after the removal of permanent influences like population growth and price changes, the secular growth of public expenditure is not affected at all. By using the time pattern of expenditure growth, the study suggests that increase or decrease in community output has no relevance whatsoever on the growth of public expenditure. Moreover the study contends that the displacement effect is found clearly in the case of India. The displacement effect produced under the impact of the World Wars disappeared after the War while the displacement effect produced after Independence (particularly after 1951) is still in force. Finally, the study shows that national income and developmental expenditure exhibit a low positive correlation up to the commencement of World War II and a very high positive correlation in the period after Independence.

Zahir (1972)[49] made an attempt to study the growth and trends of public expenditure of the Central and State Governments for the period 1951-52 to 1965-66. According to the study, the most important cause of the rapid growth of public expenditure in India since 1950-51 is the increasing expenses incurred in the execution of development and the provision of social services. Other important causes are the increase in

states' expenditure on civil administration including security services, hike in the salaries of government employees, debt servicing and extravagant spending on the part of the government.

Sarma, Parekh and Singh (1974)[50] used a two-stage model to study the determinants of urban-local expenditures in Gujarat for the period 1968-69. In the first stage of their model, they tried to postulate a functional relationship between the total expenditures of the municipal bodies as dependent variable and population and the grants as independent variables. They maintain that population represents the demand for local services, while the availability of state government grants influences the level of total expenditure of local bodies. In the second stage of their analysis, they made an attempt to estimate the expected expenditures. And, finally they tried to use the estimates of the expected expenditure as an independent variable in addition to area in square kilometres, density of population per square kilometre, percentage of non-agriculture workers to the total workers, compound growth rate of urban population over 1961-71 to explain the variations in the expenditures on the specific items. Their study finds that population and area are better explanatory variables than the other variables used in the study. Further, between these two, population is more important as its coefficient being reported to be significant at 1

per cent level in all cases of specific items of expenditures. The study further adds that expenditures on general administration, on public health and conveniences, on public institutions and on others are inversely though not significantly, related to area.

The study of Desai (1976)[51] made an attempt to identify the determinants of inter-state variations in state government expenditure and to quantify their statistical significance. The study employs a multiple regression model for establishing a possible functional relationship between per capita state expenditures and per capita state income, population density, urbanisation and federal aid. Based on the data for the year 1960-61, the study finds that density as a factor affecting per capita expenditures of the states is not at all significant as the simple correlation coefficient between the two works out to be at .07 and the corresponding F of .028 is extremely low. The study further states that the relationship between per capita expenditures and per capita state income and urbanisation are extremely significant. According to the study, these two factors together account for a little over 62 percent of the variance among States in per capita expenditures.

Further, in the second stage of his analysis, by dropping the variable of density of population from the basic model, Desai tried to

include another variable namely, ratio of per capita state expenditures to per capita state income – as an index of state's political philosophy. The study concludes that per capita state income and political philosophy of a state as measured by the ratio of per capita state government expenditure to per capita state income are the major determinants of inter-state government expenditure differentials in India in 1960-61.

Rao and Rao (1977)[52] in their study on public expenditure relied on an econometric analysis to analyze inter-municipal expenditure variations among seventeen major municipalities having population over 50,000. Their analysis states that the basic variables such as population density and population growth rates alone are not capable of explaining the variations in municipal expenditures. And as such the study makes use of these two variables along with some other well defined physical factors to explain the inter-municipal expenditure variations. The study finds that the population density and growth of population have insignificant influences on the per capita total expenditure, where as the physical factors have got significant influences on per capita total expenditure. The study further reports that with respect to per capita public health, sanitation and convenience

expenditure the influence of growth rate of population and density of population is insignificant.

Sharma (1977),[53] tried to analyse the determinants of per capita revenue expenditure by size of cities in Rajasthan for the year 1968-69. The study considers certain independent variables for the analyses. They are health and sanitation, street lighting, public safety, recreation, general administration, revenue collection and general repairs. The study claims that all the seven independent variables mentioned above explain 82 percent of variation in public expenditure at 0.05 level of significance. Further, the author claims that a comparison of the results with similar studies undertaken abroad shows that the result of this study are fairly similar to the results obtained by the studies of Bahl and Fabricant. Lastly, the study exhibits total per capita expenditure to be higher in large and small urban centres than in medium size centres.

Murthy (1981)[54] in his study on public expenditure attempted to test for validity of the Wagner's law in the Indian economy for the period 1960-1976 by employing the appropriate quantitative measure, viz., the ratio income elasticity. Moreover, the study tried to examine empirically whether the Wagner's law is applicable in the Indian economy for the same sample period, when the total government expenditure is dis-aggregated into government consumption

expenditure and non-resources absorbing expenditures. The study makes use of the following functional relationship:

$$G_i/N = \alpha_i + \beta_i Y/N + \mu_i$$

where,

G_i = real government expenditure of the i^{th} component

N = population

Y = gross domestic product in real terms

β_i = income elasticity (estimate) of the i^{th} component

μ_i = disturbance term

The findings of the study show that even after adjusting for changes in prices and population, the percentage increase in government expenditure has exceeded the percentage increase in gross domestic product. Moreover the study contends that the estimates of positive ratio-income elasticities for both the total government expenditure and its components provide the statistical evidence confirming the validity of the Wagner's law of public expenditure in India. Lastly the study observes that the growth of the public sector in India during the period under observation is due to the growth of both government consumption expenditure and non-resource absorbing expenditure.

Pillai (1981),[55] undertook a study of the political economy of taxation and public expenditure of the Indian States where he made an

attempt to study the determinants of expenditure by taking into account five political indices in addition to the other usual economic variables of the previous studies. The political indices that he takes into consideration are: political change in each State, number of governments that rule the State in a span of 5 years, average longevity of ministries, turnover of ministries, turnover of political parties or coalition and turnover of parties excluding the one that stayed in power less than six months. The study comes to the conclusion that the nature of Indian political parties and processor, the over-riding influence of the federal government and the paramount position of the bureaucracy have weakened the effect of political change on the determinants of public expenditure of most of the States.

Rao (1981),[56] in his study of the determinants of public expenditure and taxation in the context of four Indian States, viz., Kerala, Karnatak, Orissa and West Bengal, made an attempt to analyse the impact of ideological leanings and stability of political parties in power on the level of public expenditure and taxation. The data used by Rao ranged between 1951-52 to 1971-72 for Orissa and West Bengal, and 1957-58 to 1971-72 for Kerala and Karnataka. The independent variables included in his analysis are primary sector contribution, per capita income, consumer price index and political

parties in power. The effect of various explanatory variables mentioned above on the States' non-plan revenue expenditures was estimated by the multivariate least squares regression method. To determine the parameters, Rao employed the double log regression model of the form:

$$\log Y = \log a + b_1 \log X_1 + b_2 \log X_2 + b_3 \log X_3 + b_4 D + C_1 W_1 \ldots\ldots\ldots\ldots + d_1 Z_1 + \ldots\ldots\ldots\ldots + d_t Z_t + \varepsilon$$

where,

Y = non-plan revenue expenditure
X_1 = per cent of primary sector income,
X_2 = per capita income at 1960-61 prices,
X_3 = consumer price index for the working class,
D = deficit variable
W_1 to W_j = dummy variables representing the political parties in power; taking value one for observation in the 'j'th form of government and zero in others,
Z_1 to Z_t = dummy variables representing the plan period, taking value one for observation in 't'th plan and zero in others
$\log a$, b_1 to b_4, C_1 to C_j, d_1 to d_t = parameters to be estimated, and
ε = stochastic error term.

His analysis shows that the ideological leanings of the parties in power do not affect significantly the level of expenditures in the States but intend to create imaginary 'output differentiation'. Further, the study finds that less stable governments have tended to increase significantly higher levels of public expenditure particularly on social and economic services. The finding further demonstrates that party's

ideological leanings do not have any significant influence on tax revenue of the States.

Murthy (1982)[57], in another study attempted to examine empirically the major determinants of government consumption expenditures for the years 1960-76. His study is based on a Nerlove-type partial-adjustment model. The independent variables that the study considers are: gross domestic product, tax received and population. After adjusting the changes in population, the study specifies the following functional relationship in double logarithmic form to facilitate empirical estimation:

$$\log (G/N) = \beta_1 + \beta_2 \log (Y/N) + \beta_3 \log (T/Y) + \beta_4 \log (G/N)_{t-1} + \mu$$

where,

G = Government consumption expenditure
Y = Gross Domestic Product
T = Tax received
N = Population
β_2, β_3, and β_4 = Regression Coefficient Estimates
μ = Stochastic error term.

The study finds that government expenditure is dynamic and is always being affected by such economic variables as gross domestic product and lagged government consumption expenditure. Further the study states that the government consumption function in India is

endogenous and is an increasing function of gross states domestic product.

In his study of fiscal economics of Assam for a period of twenty eight years from 1951-52 to 1978-79, Bhuyan (1984)[58] made an attempt to analyze the growth of public expenditure sector-wise along with major trends and fluctuations. The results of the study exhibit a wide variation in per capita public expenditure among various categories. Further, it states that the per capita expenditure on human capital formation has increased in a massive way during the period 1951-52 to 1978-79, whereas the increase in the case of physical capital formation was not so much impressive during the same period. Based on the findings, the study concludes that Assam is having a lop-sided development in so far as the fact that greater stress has been laid on human capital formation and much lesser stress has been laid on physical capital formation. Further it concludes that public expenditure in Assam does not display any sense of policy direction; rather it exhibits all patch-works undertaken to meet certain ends, which crop up due to exigency of circumstances.

Dutta (1985)[59] conducted an empirical study on public expenditure by attempting to trace the relationships between the theory of public expenditure and the behaviour of a local government and also

its relevance to the current expenditure policy of the Government of West Bengal. The period covered is the Plan period spreading over a period of twenty-three years from 1951-52 to 1973-74. In order to measure the impact of some variables on public expenditure, the study confined it self to the application of the following equations:

$$G = a + b_1 X_1 \qquad \text{……..(1)}$$

$$G = a + b_2 X_2 \qquad \text{……..(2)}$$

$$G = a + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + b_6 X_6 \qquad \text{…….(3)}$$

where G denotes public expenditure, X_1, X_2, X_3, X_4, X_5 and X_6 denote per capita income, degree of urbanization, financial transfers from the Federal Government, debt services on Revenue Account, debt services on both Accounts and per capita revenue on both accounts respectively. The results of the regression analysis show that there is a positive correlation between the level of public expenditure and per capita income in West Bengal. This only strengthens Wagner's law of public expenditure. Moreover, the results of the regression analysis show that the three determinants viz., per capita income, urbanization and financial transfers from the Centre, influence positively the level and the pattern of public expenditure. However, the results of the analysis show that in some cases, clear-cut substantial relations are

established while in others insignificant relations are observed and this accounts for the lack of any firm pronouncement.

The study lists the broad trends that emerge from the regression analysis as follows: (i) public revenue expenditure relies most on the financial transfers from the Centre, while public expenditure on capital account relies less on per capita income than revenue expenditure does, (ii) public expenditure on both accounts depends very much on the same source i.e., Central transfers and (iii) both developmental and non-developmental public expenditures are influenced most by the three independent variables viz., degree of urbanization, per capita income and per capita revenue.

The limitations of the study are however constituted by a lack of an analysis of relationship between public expenditure and equity, between election manifestos and expenditure policy. Another weakness of the study is that it does not consider inter-State, inter-sector and inter-regional comparisons and also fails to analyse the pricing policies of one or two public enterprises. As such, the study does not focus a clearer view of the role of public expenditure in economic development. Lastly, the study fails to consider the technological, social, political and cultural determinants of public expenditure.

Singh (1988)[60] tried to analyse the factors that determine the increase in public expenditure in India. In his study, Singh noted the important determinants of public expenditure viz., citizen preference, political system, chance events, societal attitudes and income redistribution. However, the study admits that since it is difficult to measure the size of government, it is impossible to quantify many of the variables that determine public expenditure.

Bhat and Patnaik (1991)[61] in their study on public expenditure took into account the stability factor, i.e., less stable governments tended to increase significantly the levels of public expenditure particularly on social and economic services. For analyzing the political economy of public expenditure determinants, the cross section data for 22 states of India for the year 1985-86 are used. Their study examines the determinants of public expenditure and their variability across the states and assesses the impact of those determinants of public expenditure on state welfare variables. The economic variables that the study takes into account along with the political variable (D) are: per capita total expenditure (Y_1), per capita expenditure on education (Y_2), per capita expenditure on health (Y_3), per capita expenditure on social housing and welfare (Y_4), per capita expenditure on administrative services (Y_5), per capita expenditure on

economic services (Y_6), per capita income (PCI), primary sector contribution (PSC), literacy rate (LR), density of population (DP), percentage of urban population in total population (UP), and percentage of scheduled caste and scheduled tribe in total population (SCT). In order to examine the determinants of their variability across political States, the study adopts the following multiple linear regression models:

$$Y_i = K_0 + K_1PCI + K_2PSC + K_3LR + K_4DP + K_5UP + K_6SCT$$

and

$$Y_i = B_0 + B_1PCI + B_2PSC + B_3LR + B_4DP + B_5UP + B_6SCT + B_7D$$

where i = 1,2,….6

The study argues that in view of the variability in the explanatory variables across different political States, it is felt necessary to assess the impact of such variability assuming

$$Y_i = \hat{a}_0 + \hat{a}_1 PCI + \hat{a}_2 PSC....(1)$$

but $PCI = \hat{B}, D....(2)$

then $PSC = \hat{\theta} D....(3)$

$$Y_1 = \hat{a}_0 + \hat{a}_1 \hat{B}_1 D + \hat{a}_2 \hat{\theta} D....(4)$$

The $\hat{a}_1, \hat{a}\hat{B}_1$ values indicate the impact of PCI on Y_i in two different States. Similarly the $\hat{a}_2\hat{\theta}$, gives the impact on variability in PSC due to change in political scene on Y_i. The study covers the year

1985-86 with the cross-section data for all 22 States. The results of the study show that per capita income, primary sector contribution, literacy rate, and percentage of scheduled caste and scheduled tribe in total population have a positive influence and density of population has a negative influence on per capita total expenditure. One per cent increase in literacy rate as well as density of population will lead to an increase by 3.2 per cent and a decrease by 0.15 per cent of per capita expenditure on education. However, the main determinants of per capita expenditure on health are per capita income, literacy rate and proportion of scheduled caste and scheduled tribe in total population. Similarly, the literacy rate, density of population and the percentage of scheduled caste and scheduled tribe in total population are the main factors affecting per capita expenditure on social welfare and housing. Further the study finds that density of population and percentage of scheduled caste and scheduled tribe in total population mainly influence per capita expenditure on administrative services. Similarly, primary sector contribution, density of population and proportion of scheduled caste and scheduled tribe in total population are the main factors influencing per capita expenditure on economic services. In addition, the Congress government seems to spend lesser amounts on per capita total expenditure, per capita expenditure on education and

economic services than that of non-Congress government. But the policies related to health, social welfare and housing and administrative services are one and the same in both the governments.

The study of Bhat and Varalakshmi (1994)[62] was an attempt to examine the impact of political and socio-economic factors on each item of public expenditure across the Indian States for the years 1969-70, 1980-81 and 1988-89. With this objective, their study employed a log-linear multiple regression model by taking into account ten explanatory variables namely, per capita tax revenue, per capita grants-in-aid, per capita debts, primary sector contribution, literacy rate, density of population, urban population, percentage of scheduled caste/scheduled tribe in total population, per capita income and political variable. The results of their study indicate that with regard to socio-economic factors, there is a difference in the determinants of each item of State expenditure at different point of time. The study further asserts that except for the year 1969-70, political variable is one of the major determinants of public expenditure in Indian States.

Bhat (1997)[63] made an attempt to examine the main factors governing public expenditure and tax revenue of India during 1960-61 to 1990-91. The study was an attempt to test the hypothesis that the changes in political party in power i.e., from Congress regime to non-

Congress regime has a positive influence on the level of public expenditure but not on the level of taxation. To test the hypothesis, the study uses the following log-linear multiple regression equations:

$$\text{Log } Y_{1t} = a_0 + a_1 \log PD_{t-1} + a_2 \log TR_{t-1} + a_3 \log PI_{t-1} + a_4 \log DO_{t-1} + a_5 \log DR_t + a_6 \log DP_t + a_7 \log CPI_t + a_8 \log UP_{t-1} + a_9 \log SCST_t + a_{10} \log PSC_t + a_{11} \log UP_t + a_{12} \log MST_t + a_{13} \log D_t + U_t \quad \text{.....(1)}$$

and

$$\text{Log } Y_{2t} = b_0 + b_1 \log PE_{t-1} + b_2 \log PD_{t-1} + b_3 \log PI_t + b_4 \log DO_t + b_5 \log DR_t + b_6 \log DP_t + b_7 \log CPI_t + b_8 \log UR_t + b_9 \log SCST_t + b_{10} \log PSC_t + b_{11} \log UP_t + b_{12} \log MST_t + b_{13} \log D_t + V_t \quad \text{.....(2)}$$

where

Y_1 = percentage of government expenditure to gross national product
Y_2 = percentage of tax revenue to gross national product
PD = per capita debt
TR = per capita tax revenue
PI = per capita income
DO = degree of openness of the economy
DR = dependency ratio
DP = density of population
CPI = consumer price index
UR = unemployment rate
SCST = percentage of scheduled caste/scheduled tribe in total population
PSC = primary sectoral contribution
UP = percentage of urban population to total population
MS = percentage of money supply to gross national and

PE = per capita public expenditure
D = dummy variable i.e., '0' for the Congress regime and '1' for non-Congress regime
U & V = random error terms, and
t = year.

The analysis reveals that the size of public expenditure of the Central Government of India is positively influenced by the degree of openness and unemployment rate of the lagged one year and negatively determined by the density of population, primary sectoral contribution and urbanization. Variables such as per capita public expenditure of the t-1 year, per capita debt of the t-1 year, degree of openness of the economy, percentage of Scheduled Caste and Scheduled Tribe in total population is having a positive influence and per capita income and dependency ratio are having a negative influence on the size of tax revenue. Further, changes in political party in power exhibit significant influence only on the size of public expenditure but not on the size of tax revenue. The study maintains that politicians are using public expenditure as an instrument by introducing populist measures to capture the vote bank. In the meanwhile, they may not be able to use tax revenue as a weapon to capture the vote bank because tax concessions will be difficult due to mounting pressure of public expenditure over a period of time and substantial raising of tax revenue creates displeasure among the citizens which will result in losing vote

bank. However, the results of the present study are limited to the extent of sampling limitations.

Singh (1997)[64] in his time series study of public expenditure made an attempt to validate the Wagner's law of increasing public expenditure for the Indian economy. The study uses time series data for Indian economy covering the period 1960-61 to 1992-93. The empirical results show Wagner's law to be operative with respect to total expenditure of the Central Government, current expenditure and gross capital formation. The study maintains that the validity of Wagner's law has had far reaching impact on the long-run economic stability and external borrowings. Since proportionately with the level of economic development, financing these expenditures has always been the major source of problems for the economies of the developing countries and India is no exception to this state of affairs.

Naresh (1997)[65] made an attempt to study the determinants of total expenditure of a local body viz., Municipal Corporation of Delhi in India by employing constrained maximization approach of consumer behaviour theory. The study makes use of a behavioural model and a reduced form single equation has been derived for purposes of estimation. This model combines the elements of bureaucracy, median voter solution and utility maximization approach. The study shows that

decisions regarding public expenditure are the final outcomes of a complex behaviour arising out of an interaction among bureaucrats, ruling political party and the interest groups. The results of the study indicate that bureaucracy has no direct impact on the growth of the level of aggregate expenditure. Moreover, the study notes that the political parties do take into account the local 'needs' and their decision has a positive relationship with the level of public expenditure. In addition, all the revenue variables also have a positive influence. Fiscal transfers do not have a stimulative effect on public expenditure as the value of coefficient is much less than unity. Thus the study concludes that the decision of the political parties as well as all the revenue variables have a positive relationship with the level of public expenditure.

2.4 Summary of the Findings

The studies on the growth, pattern and determinants of public expenditure that we have reviewed above no doubt use a large number of explanatory variables with different sets of models in order to find out the factors which determine the growth and pattern of public expenditure. The exercise has been carried both at the international level and at the national level. It is observed that almost all the studies at the international level take into consideration a number of variables

that determine both the growth and pattern of public expenditure. For instance, the most usual variables being used and found statistically significant are per capita income, demographic factor, degree of openness and degree of urbanisation. Similarly, changes in technology, societal and cultural values favourably affect the level of government expenditure. Those studies that include federal grants to State as explanatory variable stress on the federal grants as the only factor which significantly affect changes in State and local per capita expenditure by subscribing to the proposition that the amount of expenditures demanded is related to the amount of federal aid received. Administrative re-arrangement is also found making for increased public expenditure in many studies. Moreover, it is observed that the economic growth permits the generation of the revenues necessary to finance a larger public sector.

Further, the findings of the studies reviewed above at the national level show that changes in population growth and the general price index are responsible for the growth of public expenditure in India. As far as political factor is concerned, political philosophy of a State is found to be one of the major determinants of inter-State government expenditure differential. And, the changes in political party in power exhibit significant influence on the size of public

expenditure. Moreover, less stable governments tend to push up the level of public expenditure compared to more stable governments.

Thus we may conclude that the broad determinants of public expenditure that emerges from the review of various studies are increased allowance for social consideration, political ideology, social upheavals, interest groups/pressure groups, stability of government, economic infrastructure, per capita income, adjustment of income distribution, reduction of regional disparities, public capital formation, agricultural income, consumer price index, imports, besides some economic-political factors such curtailment of non-development expenditure and decentralization of expenditure decisions. The choice from among these variables as it is understood from the various studies depends upon the availability of data and their amenability to various kinds of adjustment.

2.5 Concluding Remarks

The studies reviewed above have made a substantial contribution in identifying some important variables that affect the growth and pattern of public expenditure. But, the influences of the determinants indicated by different studies differ significantly across countries and in a country over time.

But it is surprising that, in many of the studies that we have reviewed above, no attempt has been made by the researchers to specify the reasons for a selection of the variables, either on theoretical or statistical grounds. Keeping these problems in mind, an attempt is made in the next Chapter (Chapter III) to give an analytical account of the major conceptual and empirical issues relating to the growth, pattern and determinants of public expenditure.

2.6 References

1. Wagner, Adolph (1883): Finanzwissenschaft, Part I, Third Edition, Leipzig, pp.4-16, 69-76 in Musgrave, Richard A. (1969): *Fiscal Systems,* Yale University Press, London, p.73

– Bird, R.M. (1971): 'Wagner's Law of Expanding State Activity, *Public Finance,* XXVI(1), pp.1-26

2. Keynes, J.M. (1936): *The General Theory of Employment, Interest and Money,* Harcourt, Brace, & World, New York

3. Strayer, Paul J. (1949): 'Public Expenditure Policy', *American Economic Review,* Vol. XXXIX, No.1, January, pp.383-404

4. Fabricant, Solomon (1952): *The Trend of Government Activity in the United States Since 1900,* National Bureau of Economic Research, Inc., New York, pp.112-139

5. Samuelson, P.A. (1954): 'The Pure Theory of Public Expenditure', *Review of Economics and Statistics,* XXXVI, November, pp.387-389

6. Fisher, Glenn (1961): 'Determinants of State and Local Government Expenditure: a Preliminary analysis,' *National Tax Journal,* Vol. XIV, No.4, pp.349-355

7. Peacock and Wiseman (1961): *The Growth of Public Expenditure in the United Kingdom,* Princeton University Press, Princeton

8. Osman, J.W. (1962): 'The Dual Impact Aid on State and Local Government Expenditure,' *National Tax Journal,* XV, No. 4

9. Kurnow, E. (1963): 'Determinants of State and Local Expenditures Re-examined,' *National Tax Journal,* Vol. XVI, No.3, pp.252-255

10. Sacks, S and Harris, R. (1964): 'The determinants of State and Local Government Expenditure and Inter-Governmental Flow and funds,' *National Tax Journal*, XXIV, No.1, pp.75-82

11. Fisher, Glenn (1964): 'Inter-State Variations in State and Local Government Expenditure,' *National Tax Journal,* Vol. XVII, No.1, pp.57-73

12. Kee, W.S. (1965): 'City Expenditures and Metropolitan Areas: Analysis of Intergovernmental Fiscal System,' *The Journal of Finance,* XX, No.3, pp.511-12

13. Adam, R.F. (1965): 'On the Variation in the Consumption of Public Services,' *Review of Economics and Statistics,* 47, pp.400-403

14. Bahl, Roy W. and Saunders, Robert J. (1965): 'Determinants of Changes in State and Local Government Expenditures,' *National Tax Journal,* Vol. XVIII, pp.50-57

15. Morss, E.R. (1966): 'Some Thoughts on the Determinants of State and Local Expenditures,' *National Tax Journal,* Vol. XIX, pp.94-103

16. Booms, B.H. (1966): 'City Government Form and Public Expenditure level,' *National Tax Journal,* XIX, pp.189-90

17. Morss, E.R., Fredland, E.J. and Hymans, S.H. (1967): 'Fluctuations in State Expenditures: An Econometric Analysis,' *Southern Economic Journal,* Vol. XXXIII, No.4

18. Baumol, W.J. (1967): 'Macroeconomics of Unbalanced Growth: The Anatomy of Urban Crisis,' *American Economic Review,* LVIII(3), June, pp.412-426

19. Sharkansky, I. (1967): 'Some More Thoughts About the Determinants of Government Expenditures,' *National Tax Journal,* Vol. XX, No.2, pp.171-179

20. Horowitz, A.R. (1968): 'A Simultaneous Equation Approach to the Problem of Explaining Inter-State Difference in State and Local Expenditure,' *Southern Journal of Economics,* 34(3), No.1, pp.151-152

21. Henderson, J.M. (1968): 'The Local Government Expenditures: A Social Welfare Analysis,' *Review of Economics and Statistics,*

22. Pryor, F.L. (1968): *Public Expenditures in Communist and Capitalist Countries,* Homewood III, Richard D. Irwin, pp.51, 285-287

23. Musgrave, Richard A. (1969): *Fiscal Systems,* New Haven: Yale University Press, pp. 92-110

24. Lall, S. (1969): 'A Note on Government Expenditures in Developing Countries,' *The Economic Journal,* No. 79, pp.414-416

25. Weicher, J.C. (1970): 'Determinants of Central City Expenditures: Some Overlooked Factors and Problems,' *National Tax Journal,* XXIII, pp.379-94

26. Booms, B.H. and Hu Teh, W. (1971): 'Towards a Positive Theory of State and Public Expenditure,' *Public Finance International Quarterly Journal,* XXVI/XXVI, pp.432-35

27. Goffman, I.J, and Mahar, D.J. (1971): 'The Growth of Public Expenditures in Selected Developing Nations: Six Caribbean Countries, 1940-65,' *Public Finance,* XXVI(1), pp.57-74

28. Peters, G.H. (1971): *Private and Public Finance,* Fontana/Collins, London, pp.7-8, 148-150

29. Burkhead, Jessse and Miner, Jerry (1971): *Public Expenditure,* Macmillan, London, pp.317-318

30. Prest, A.R. (1973): *Public Finance in Underdeveloped Countries,* Vikas Publishing House Pvt. Ltd, Delhi -6, pp.14-31, 111-123

31. Ubogu, Roland E. (1983): 'The Political Economy of Government Expenditure in Nigeria: An Econometric Analysis,' *Artha Vijnana,* June V 25 N 2, pp.173-195

32. Solano, P.L. (1983): 'Institutional Explanation of Public Expenditure Among High Income Democracies,' *Public Finance International Quarterly Journal,* XXXVIII No.1, pp.440-45

33. Sandford, C. (1984): 'Reasons for Growth in Government Spending,' *Economics of Public Finance,* 3rd Edition, University of Bath, UK, Pergamon Press, New York, pp.39-44

34. Michael, S. and Lewis-Beck and Rice, T.W. (1985): 'Government Growth in the United States,' *Journal of Politics,* 47, No.1-2, p.26

35. Mann, Arthur J. and Schulthess, Walter E. (1986): 'Long-run Expenditure Constraints in Argentina,' *Public Finance Quarterly,* Vol.14 No.1, January, pp.28-47

36. Abizadeh, Sohrab and Yousefi, Mahmood (1988): 'Growth of Government Expenditure: The Case of Canada,' *Public Finance Quarterly,* Vol. 16, No.1, January, pp. 78-100

37. Joulfaian, David and Mookerjee, Rajen (1990): 'The Government Revenue-Expenditure Nexus: Evidence from a State,' *Public Finance Quarterly,* Vol. 18, No.1, January, pp.92-103

38. Odedokun, M.O. (1993): 'An Econometric Analysis of Sectoral Financial and Expenditure Flows in LDCs: Evidence from Flow of Funds Data,' *Indian Economic Review,* XVIII, No.1, pp.22-23

39. Bosch, Nuria and Pandiello, Javier Suarez (1995): 'Seven Hypotheses About Public Choice and Local Spending (A Test

for Spanish Municipalities),' *Public Finance,* Vol. 50(1), pp.36-50

40. Myles, Gareth D. (1995): *Public Economics,* Cambridge University Press, Cambridge, pp.11-16

41. Ahmed, Qazi Masood, Sohali Javed and Akhtar Lodhi (2001): 'The Determinants of Public Expenditure: A Simultaneous Approach – An Experience from Selected Developing Countries,' *The Indian Economic Journal,* Vol. 48, April-June 2000-01, Bangalore 560 004, pp.58-64

42. Islam, Anisul M. (2001): 'Wagner's law revisited: cointegration and exogeneity tests for the USA,' *Applied Economics Letters,* No. 8, pp. 509-515

43. Dar Usha (1964): *Public Expenditure Control,* Chaitanya Publishing House, Alahabad, pp.37-49

44. Bhargava, R.N. (1967*): The Theory and Working of Union Finance in India,* Chaitanya Publishing House, Allahabad, pp.10-12

45. Gupta, Shibshankar P. (1967): 'Public Expenditure and Economic Growth - A Time Series Analysis', *Public Finance,* XXII(4), pp.423-471

46. Venkataraman, K. (1968): *States' Finances in India,* George Allen and Unwin Ltd., London, pp.148-166

47. Reddy, K.N. (1970): 'Growth of Government Expenditure and National Income in India, 1872-1966,' *Public Finance,* XXV (1), pp.81-96

48. Reddy, Kaipa Narayana (1972): *The Growth of Public Expenditure in India,* Sterling Publishers (P) Ltd., New Delhi-16, pp.1-11

49. Zahir, Mohammad (1972): *Public Expenditure and Income Distribution in India,* Associated Publishing House, New Delhi, pp. vii, viii, ix, 48-51, 71-73

50. Sarma, A., Parek, K.M. and Singh, L.T.: Determinants of Urban Local Expenditure: An Exploration in Gujarat Context, Anvesak, 4 No.2, 1974, pp.172-173

51. Desai, S.A. (1976): 'Determinants of Inter-State Government Expenditure Differentials in India,' *Indian Journal of Economics,* LVI, pp.435-42

52. Rao, S.R and Rao, M.N. (1977): 'Inter Municipal Expenditure Variation: An Econometric Analysis,' *The Indian Journal of Economics,* LVII, pp.343-357

53. Sharma, G.D. (1977): 'City Size and Local Expenditure Pattern: A Study of Urban Centres in Rajasthan,' *Indian Dissertation Abstracts,* pp.29-30

54. Murthy, N.R.V. (1981): 'Wagner's Law of Public Expenditures: An Empirical Investigation of the Indian Economy Using the Appropriate Measure for a Valid Test,' *The Indian Economic Journal,* Vol. 28, Jan-March 1981, No.3, pp.86-92

55. Pillai, V. (1981): 'Fiscal Policy and Political Change in a Democratic Society: The Case of Indian States,' *The Indian Journal of Economics,* LXI, pp.501-502

56. Rao M. Govinda (1981): *Political Economy of Tax and Expenditure Determination,* Allied Publishers Pvt. Ltd., New Delhi- 110 064, pp.59-131

57. Murthy, N.R.V. (1982): 'Endogenous Government Consumption Expenditure: Some Econometric Evidence for the Indian Economy,' *The Indian Economic Journal,* 30, No.1, pp.74-76

58. Bhuyan, Prafulla Kumar (1984): *Regional Fiscal Economics of Assam,* Chugh Publications, Allahabad, pp.6-21, 209-226

59. Dutta, Sibani (1985): *Public Expenditure and Economic Development,* Ashish Publishing House, New Delhi-110 026, pp.v-vi

60. Singh, Mahendra Pratap (1988): *Economics of Government Expenditure Growth,* Reliance Publishing House, N. Delhi 110 008, pp.20-22

61. Bhat, Sham K. and Patnaik, Uma Shankar (1991): 'Political Economy of Public Expenditure Determination in Indian States,' *Indian Journal of Economics,* Vol.LXXI, Issue No.283, April, 1991, pp. 419-431

62. Bhat, Sham K. and Varalakshmi, S. (1994): 'The Impact of political Economy on Public Expenditure in Indian States,' *The Indian Journal of Economics,* LXXIV, Part IV, No. 295, pp.407-415

63. Bhat, Sham K. (1997): 'Political Economy of Public Expenditure and Tax Revenue in India,' *The Indian Economic Journal,* Vol. No. 44, No.1, pp.108-119

64. Singh, Gulab (1997): 'Wagner's Law – A Time Series Evidence from the Indian Economy,' *The Indian Journal of Economics,* No. 306, Vol. LXXVII, January, pp. 349-356

65. Naresh, Gautam (1997): 'Expenditure Function of A Local Body in India : Estimates of Response Parameters of Municipal Corporation of Delhi,' *The Indian Journal of Economics,* No.308, Vol. LXXVIII, July, pp.79-98

CHAPTER III

METHODOLOGY

3.1 Introduction

The studies on the growth, pattern and determinants of public expenditure as reviewed in the last chapter have several weaknesses in them. Further, we have pointed out in the previous chapter that the major accent of each study has been on providing higher and higher degree of explanation rather than on attempts at the larger purposes of prediction, understanding and deriving policy implications. Moreover, we have observed that most of the studies on the growth and pattern of public expenditure are merely theoretical exercises and the limitation of these studies can be ascertained in terms of their failure to translate these theoretical underpinnings into empirical foundations. In addition, we may be tempted to mention here that in most of the studies on the determinants of public expenditure, the choice of variables has been largely inductive i.e., on the basis of additional explanation provided by the variables rather than on the basis of *a priori* reasoning. As such, these studies have provided spurious explanation to their model adding very little to the

understanding of the growth, pattern and determinants of public expenditure. Keeping these limitations in mind, an attempt is made in this chapter to provide the conceptual clarification and methodological orientation to this study on the growth, pattern and determinants of public expenditure in Meghalaya. We would like to add here that the driving force in the growth and pattern of public expenditure is the determinants of public expenditure but not conversely. Therefore an attempt is made in this chapter to develop an alternative econometric model to measure the determinants of public expenditure. Because, we believe that the terms growth, pattern and determinant are inter-dependent with each other and are hard to define and distinguish.

This chapter, which forms the core of our study, is divided into two main sections. In Section I, an attempt is made to develop an alternative econometric model by taking into account the inherent difficulties encountered with in the earlier studies reviewed by us. Section II of this chapter is an attempt to present the theoretical underpinnings of the model to justify the determinant variables used in the model. For the sake of convenience, we have sub-divided this section into five sub-sections.

3.2 Econometric Model for the determination of Public Expenditure

From the existing empirical studies that we have seen in the previous chapter it is clear that the determinants of public expenditure are not purely deterministic in the sense that some are geo-political, others are socio-political and only a few are economic variables. Another instance that is found from the available literature, that the estimating equation for both public expenditure and revenue i.e., the demand for and supply of public expenditure is the same. In that case the factors, that is, the explanatory variables for the estimate of the dependent variable public expenditure or revenue (Rao)[1] would amount to mostly additive equality of public expenditure and revenue.

It may be mentioned that, while dwelling on the growth and pattern of public expenditure, the adequacy of tax receipts or collection could have been discussed in the same stretch, yet we know that tax efforts are simply a matter of economic policy to mobilize internal resources so as to meet the quantum of public expenditure. Therefore, it appears that these two are to be studied separately, one as demand for public expenditure and the other as supply of public expenditure.

The causes of the rise in public expenditure are considered to be due to:

(1) increased allowance for social consideration

(2) political ideology

(3) social upheavals

(4) interest groups, pressure groups

(5) stability of government, which cannot be a vector of known quantities.

The other economic factors are:

(6) economic infrastructure, may be the degree of industrialization

(7) per capita income

(8) adjustment of income distribution

(9) reduction of regional disparities – probably by way of creating employment and adjustment of income distribution

(10) public capital formation

(11) agricultural income

(12) consumer price index

(13) imports.

In addition to these, there are economic-political factors such as:

(14) curtailment of non-development expenditure and

(15) decentralization of expenditure decisions.

Rao[2] adopted the following model to estimate the demand for public expenditure and also the revenue function as,

$$X = f(Y)$$

and more specifically

$$Public\ Expenditure = f(percent\ of\ income\ of\ primary\ sector, per\ capita\ income)$$

$$Revenue = f(percent\ of\ income\ of\ primary\ sector, per\ capita\ income)$$

The above model was further improved to include consumer price index (*CPI*) and party in power (R_i) and particular plan period (P_j); thus the model could be written as

$$E/R = f(Y_P, Y_C, CPI, R_i, P_j)$$

which is a double log-linear estimating equation

where, E = public expenditure

R = revenue

Y_p = per cent of income of primary sector

Y_c = per capita income

CPI = consumer price index

R_i and P_j = dummy variables.

Later on instead of percentage of primary sector income, the percent of primary sector income population was taken. No explanation is given for this change although the latter is a demographic variable.

Further, Rao[3] took the following variables into consideration:

a) Gross cropped area per capita

b) Percentage of area under food crops

c) Percent of irrigated area

d) Motor vehicles per 100 population

e) Percent of heavy vehicles

f) Road length per 100 population

g) Percent of surfaced road

h) Percent of factory workers

i) Hospital beds per 100 population

j) Per capita electricity consumption

k) Enrolment of schools per 1000 population

l) Percent of high school enrolment

m) Enrolment in university per 1000 population

n) Co-operative membership per 1000 population.

Now we would like to point out certain hidden statistical inadequacy of a model of this type:

The case of dummy variable: in the above model there is not just one but two dummy variables. Where there is more than one dummy variable, it could happen that the variance-covariance matrix may not have the property of linear independence thus the matrix cannot be inverted to estimate the parameters of the model. This situation, according to Bez[4] is called a dummy variable trap.

In this case, we do not minimize the importance of social or political variables but these might give us ambiguous empirical analysis. At best one most important dummy variable and the rest could be considered as one single trend variable.

Regarding the variables relating to gross cropped area per capita, percentage of area under food crop and percentage of irrigated area are inter-related and therefore, the problem of multi-collinearity is inherent.

Therefore, instead of considering all these three inter-related variables we suggest only one variable viz., area under crop as an explanatory variable.

When coming to the independent variables on transport infrastructure, the percentage of heavy vehicles as a variable is redundant when we take motor vehicles per 100 people. We would suggest here again two variables viz., motor vehicles for passenger transport and for goods transport separately. Moreover, instead of per 100 population we can take per 1000 population.

Another independent variable viz., the road length per 100 population may be applicable to urban population. Since public expenditure is estimated for the entire State we can take kilometres of road per 100 Km^2.

The variable percentage of factory workers of course indicates the degree of industrialization. Yet when the earlier studies opined that the increasing trend of public expenditure might be due to adjustment of income distribution and removal of regional disparities, therefore, a single variable employment would probably take care of both. Moreover, in the State like Meghalaya, which is backward industrially, apart from a few saw mills, one cement factory and most others are servicing and utility

services, therefore, employment alone would be sufficient as one of the explanatory variables.

We have two other important explanatory variables viz., hospital beds per 1000 population and doctors per 1000 population instead of 100 population as considered by the earlier researchers. This will be more meaningful for our analysis of an underdeveloped State like Meghalaya with low density of population.

Regarding the educational variable, it is strongly believed that instead of taking enrolment in schools and percent of high school enrolment and enrolment in the University per 1000 population, we took enrolment at school level and enrolment at post-school level as two additional explanatory variables.

Ultimately our model will be of the following form:

$$Y = a_0 + a_1 NSDP + a_2 Y_C + a_3 CPI + a_4 CrA + a_5 PVeh + a_6 GVeh + a_7 RL + a_8 Emp + a_9 HB + a_{10} Doct + a_{11} SP + a_{12} SPS + a_{13} t \quad \text{.....(1)}$$

where,

Y = Public expenditure/Revenue

$NSDP$ = net state domestic product

Y_C = per capita income

CPI = consumer price index

CrA = area under crop

$PVeh$ = passenger vehicles per 1000 population

$GVeh$ = goods vehicles per 1000 population

RL = road length per 100 Km^2

Emp = employment

HB = hospital beds per 1000 population

$Doct$ = doctors per 1000 population

SP = enrolment at schools

SPS = enrolment at post school level

t = trend variable

At this juncture, we are tempted to make certain observations. When the number of explanatory variables is large, the total variance is distributed over all the estimates of the parameters. In addition, it is sometimes worth examining among the variables which one is having a

significant influence on public expenditure and also those variables which have assumed negative sign could be dropped and then re-analyze public expenditure with only those explanatory variables that have positive strong influence. While considering the large number of variables there could be sure fitting indicated by R^2 but for prognosis purposes, it is the estimates of the parameters, which are more important whether they possess efficiency, consistency besides being Best Linear Unbiased Estimate (BLUE).

The choice of the explanatory variables is based on certain considerations. The net state domestic product (*NSDP*) is a new variable being introduced in the study which, the earlier studies did not take into consideration. We maintain a notion that net state domestic product is an indicator of the health of the State economy and could be regarded as a resultant effect of public expenditure. We have taken per capita income (*Yc*) which is considered as an important explanatory variable by many of the earlier studies. Further, it is believed that the level of taxation is an indicator of affluence and as such per capita income can be considered as an important variable. Moreover, if we accept some sort of value judgment, then the empiricists may insist on re-distribution of income as

one of the explanatory variables. In such a situation, probably instead of per capita income, the size (distribution) of income may be more consistent with the objective. In that case the percentage of people in high, medium and low-income groups may be included as explanatory variables instead of per capita income. Hence net state domestic product would reflect per capita income. Moreover, Williamson[5] concluded that there is a positive correlation between per capita income and public expenditure.

The use of consumer price index (*CPI*) as one of the explanatory variables in our model needs a little bit of explanation. We believe that the changes in prices no doubt cause changes in the cost of providing public services. Any upward pressure in general prices pushes up both the material cost and wages and salaries particularly in the organized sector. As a result the cost of providing public services goes up. The inclusion of this variable in the model arises due to the fact that a substantial portion of the State's expenditures are constituted by wages and salaries which may reasonably be presumed to increase proportionately with consumer price index.

In Meghalaya, although agriculture still plays a predominant role in the State economy, yet it is so backward that the State is incapable of

producing food crops in sufficient quantity for its own requirements. Therefore, instead of the quantum of food import, we have taken cropped area (*CrA*) as an important explanatory variable.

We took the liberty in expressing our reservations as regards to the selection of the independent variables on transport infrastructure for the purpose. Our contention is that the percentage of heavy vehicles per 100 population used by the earlier studies as an explanatory variable may be appropriate for States having higher per capita income and higher state domestic product. For a backward State like Meghalaya with low per capita income and low level of state domestic product, the use of this particular explanatory variable in the analysis may mislead our overall result. Based on this argument, we suggest the use of two additional variables viz., motor vehicles for passenger transport (*PVeh*) and for goods transport (*GVeh*) per 1000 population.

Further, we noted that the road length (*RL*) per 100 population in the urban areas may not represent actual dimension of the public investment outlays that are made under this head as this variable may give a partial picture as public expenditure is estimated for the whole state for

the purpose. This tempted us to take kilometres of road per 100 Km^2 as another explanatory variable.

In a State like Meghalaya, which is backward industrially, apart from a few saw mills, one cement factory and most others are servicing and utility services, therefore, employment (*Emp*) alone would be sufficient as one of the explanatory variables.

It may be noted that we would like to include another variable sensing the idea of Rizzo[7] who showed that public expenditure has a growth tendency due to decentralization of expenditure decisions. That is, we would like to add the annual budgets of the district councils and other local authorities as one of the explanatory variables. The block level economic decisions are attenuated by observed disparities and inequalities of economic progress of the localities with respect to State economic progress. Due to non-availability of data, we have dropped this variable from our empirical analysis.

Lastly, the trend variable would answer for pressure groups, party in power, stability of the government or the respective planning periods.

3.3 Theoretical justification to the econometric model and its feasibility

In this section, an attempt is made to justify the selection of the explanatory variables in the model of the type by providing a proper theoretical justification and providing a vent to the alternative determinant models and their feasibilities. This section is divided into four sub-sections. Sub-section 3.3.a discusses in detail the mathematical and logistic explanations to the selection of the explanatory variables in the model. In Sub-section 3.3.b, an attempt is made to develop an alternative public expenditure determinant model in terms of public revenue and the inherent weaknesses experienced in this type of the model. Sub-section 3.3.c is an attempt to discuss in detail the determinants of public expenditure from variance and co-variance analysis. And, lastly, Sub-section 3.3.d tries to integrate the confluence analysis to the determinant analysis of public expenditure.

3.3.a. Mathematical and logistic explanations to the selection of the explanatory variables

By taking into account the independent variables that are spelt out in equation (1), we first use a simple linear multi-regression model, then observe the variance-covariance matrix. Then we try to screen the variables with covariance greater than 0.5 and mark those variables with positive signs with the dependent variables, retain these as the prime variables in the model. We reject those variables whose covariance is having negative sign and less than 0.5 with the dependent variables. In order to ensure the freedom from multi-collinearity of the co-variances among the independent variables, we reject one of those that has weaker covariance with dependent variable but having more than 0.7 with the other variable concerned. Having done this we can be sure of dropping some of the independent variables from the equation.

Regarding the trend variable, we can make another arrangement, say we adopt a model simply as

$$Y_t = f(Y_{t-1}, t) \qquad \text{.....(2)}$$

having the public expenditure variable with one period lag, to give the full impact to the trend variable be it planning period, party in power or others.

Next we shall compute the estimated dependent variable, then use this variable as a dependent variable in the regression equation. For example,

$$\hat{Y} = \hat{a}_0 + \hat{a}_1 Y_{t-1} + \hat{a}_2 t \qquad \text{.....(3)}$$

The estimated equation will be

$$\hat{Y}_t = \hat{Y}_t - \hat{a}_2 t \qquad \text{.....(4)}$$

this means that we exclude the trend effect or the effect of social variables, and then we restart the model

$$\hat{Y}_t = f(X_i) \qquad \text{.....(5)}$$

where *Xi* represents all the independent variables excluding the trend. This will then be a model purely of all the economic variables, which can be determined outside the system.

However, it must be pointed out that from the heads of expenditure under public expenditure some more economic variables may be included

and later some of them could be screened out by examining the variance-covariance matrix as said earlier.

Let us do another sophisticated empirical exercise by considering the model as,

$$Y_t = f(t, X_i) \qquad \text{……(6)}$$

where, t = trend variable, X_i = other variables specified above. $(_{i} = _{1,2,\ldots n})$

If we take the total derivative

$$dy = \frac{\delta y}{\delta t} dx_1 + \ldots\ldots\ldots + \frac{\delta y}{\delta x_n} dx_n \qquad \text{.....(7)}$$

the particular term $\frac{\delta y}{\delta t} dt$, we may estimate from

$\hat{a}_2 t$

say

$$\hat{a}_2 t = \hat{Y}_t - \hat{a}_0 - \hat{a}_1 Y_{t-1} \approx \frac{\delta y}{\delta t} dt \qquad \text{.....(8)}$$

where

$$\frac{\delta y}{\delta t} = \hat{a}_2$$

that is, the partial derivative with respect to trend variable when the effect of other variables remains constant. For estimating public expenditure we can then use another model

$$\frac{dy}{dt} = a_0 + \frac{\delta y}{\delta x_1}\frac{dx_1}{dt} + \frac{\delta y}{\delta x_2}\frac{dx_2}{dt} + \ldots\ldots\ldots \qquad \ldots\ldots\ldots\ldots\ldots\ldots(9)$$

we can find the estimates of δt.

We can also estimate the demand for public expenditure from the model (7) by making the following arrangement of data:

(a) $dy,\ dt,\ dx_1 \ldots\ldots\ldots\ldots dx_n$

these are the 1st linear difference equation.

Data

Y

$Y_2 = Y_2 - Y_1 = dY_1$

$Y_3 = Y_3 - Y_2 = dY_2$

$Y_4 = Y_4 - Y_3 = dY_3$ etc.

……..

t

$t_2 = t_2 - t_1 = dt_1$

$t_3 = t_3 - t_2 = dt_2$

$t_4 = t_4 - t_3 = dt_3$

similarly,

X_i

$X_1 = X_2 - X_1 = dX_1$

$X_2 = X_3 - X_2 = dX_2$

$X_3 = X_4 - X_3 = dX_3$ etc.

Then the equation (7) would exactly appear as

$$dy = a_o + a_1 dx_1 + a_2 dx_2 + \ldots\ldots\ldots\ldots + U \qquad \ldots\ldots\ldots\ldots\ldots(10)$$

where

$$a_i = \frac{\delta y}{\delta x_i}$$

that is, the regression coefficient.

The term U will be considered as usual a normal variable with

$$\left.\begin{array}{l} \xi(Ui) = \sigma \\ \xi(Ui)^2 = \sigma^2 \\ \xi(Ui) \neq 0 \quad \text{for } i \neq j \end{array}\right] \qquad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(11)$$

Now in this case we can compare the results of (10) with the result of the empirical equation of public expenditure after removing the trend effect

$$Y - \{\hat{Y}_t - (\hat{a}_0 - \hat{a}_1 Y_{t-1})\} = Y^* \qquad \text{.....(12)}$$

where Y, the public expenditure variable is free from the trend effect; it is denoted as Y^* and the model will be

$$Y^* = a^*_o + a^*_1 x_1 + a^*_2 x_2 + \text{.....} + a^*_n x_n + U \qquad \text{.....(13)}$$

Here x_i = independent variables other than the trend. All other assumptions would hold for this model regarding the disturbance term.

Regarding the equality of public expenditure and public revenue, we have some doubts though Rao has shown as such. The reason is that, when we take the time series data, there is always a chunk of external resource in the quantum of public expenditure. This is also the case of Meghalaya.

Further we can think of the decomposition of public expenditure into the sectoral level by using a model of the type: the share of public expenditure given the revenue of that sector

$$Public\ Exp_i = \frac{\Theta_j (Public\ Exp_j / R_i)^{r'}}{\sum \Theta_i (Public\ Exp_i / R_i)^{r}} \qquad \text{.....(14)}$$

let Θ = distribution parameter

R_i = revenue of the i^{th} sector

r' and r = parameters

Here we can assume that Θ is the expediency coefficient of any particular sector also " r " might vary over time. If we take the sectors which are predominant in the economy yet include all other sectors – e.g. Agriculture, Industry, Transport, Electricity and Other Services. But we have to think further about the feasibility of this model.

The model (14) is not feasible for the following reasons:

(1) The data are not available in a way. We need to analyze the overall analytical feature of the public expenditure.

(2) We need a frame of reference of the type which, we might call it inter-sectoral linkage of public expenditure.

(3) Further the analysis will be of probability type rather than econometric type.

(4) The empirical analysis will be the answer to the question which sector or sectors are positively contributing to the change in public expenditure of a concerned sector or in other words, a change in public expenditure of one or two other sectors might influence the public expenditure of the particular sector analyzed. Now here is a structural problem since sometimes sectors are clubbed together as general service, economic service, etc. This is sectoral division swayed away from the traditional sectoral definitions.

Let us suppose we have a data lay-out as:

	PE_1	PE_2	PE_3	PE_4	
PE_1	Θ_{11}	Θ_{12}	Θ_{13}	Θ_{14}	$\Theta_{1.}$
PE_2		Θ_{22}	Θ_{23}	Θ_{24}	$\Theta_{2.}$
PE_3			Θ_{33}	Θ_{34}	$\Theta_{3.}$
PE_4				Θ_{44}	$\Theta_{4.}$
	$\Theta_{.1}$	$\Theta_{.2}$	$\Theta_{.3}$	$\Theta_{.4}$	$\Theta_{..}$

for the four traditional sectors. In economic analysis, time is one of the most important factors to study the change over time even without

including the t-variable in econometric analysis of time series data as we propose to do.

We now assume that

(1) $\Theta_{1.}$ is functionally related to $\Theta_{.1}$ and so on

$$\left.\begin{array}{l} \Theta_{1.} \ \alpha \ \Theta_{.1} \\ \Theta_{2.} \ \alpha \ \Theta_{.2} \\ \Theta_{3.} \ \alpha \ \Theta_{.3} \\ \Theta_{4.} \ \alpha \ \Theta_{.4} \end{array}\right] \qquad \text{……..(15)}$$

(2) Also Θij is functionally related to Θij and so on

$$\left.\begin{array}{l} \Theta_1 j = f(\Theta ij) \\ \Theta_2 j = f(\Theta ij) \\ \Theta_3 j = f(\Theta ij) \\ \Theta_4 j = f(\Theta ij) \end{array}\right] \qquad \text{…….(16)}$$

(3) And the overall joint change averaging over the sectors we can take

$$\Theta_{i.} = f(\Theta.j) \qquad \text{……...(17)}$$

Here we can analyze public expenditure for each sector through inter-sectoral model of the type above. (Bez)[8]

3.3.b. Determinants of Public Expenditure in terms of public revenue

We may look at public expenditure analysis via revenue or tax. We assume that public expenditure depends alone on internal revenue of the economy and not on other sources. Here along the line of thinking is analogous to analyzing demand for public expenditure. In this respect we may pay regard to what Baumol[9] had maintained on identification of the determinants of public expenditure. If we think revenue/tax as supply function for public expenditure and public expenditure as demand function, then

$$\left.\begin{aligned} PE &= f(R) \\ R &= \phi(x_1, \ldots\ldots\ldots\ldots x_n) \end{aligned}\right\} \quad \ldots\ldots\ldots\ldots(18)$$

R is another function though it may be conceptually a concomitant variable of public expenditure but it cannot be mathematically analyzed.

For example, $PE = f(R)$

$$= f\,[\phi(x_i)] \quad \ldots\ldots\ldots\ldots\ldots(19)$$

Mathematically speaking

$$\left.\begin{aligned} R &= f(E) \\ = E &= f(R) \end{aligned}\right\} \quad \text{....(20)}$$

but mathematically it is not acceptable yet it does not matter if we use two independent equations even if the exogenous variables are almost the same. Rather it is a paradox of Economics why public expenditure and revenue cannot be isolated from each other econometrically. According to probability theory, both public expenditure and revenue have two distinct universe, each has its own character of distribution. Public expenditure probability function may be uni-modal or bi-modal and so is public revenue probability function. Therefore, we cannot actually write a model for estimation as

$$PE/R = f(x_i) \quad \text{.....(21)}$$

this would be utterly wrong; nor the public expenditure is always equal to revenue. In that case no borrowing from within or outside the economy would occur. Revenue has many constraints in a democratic political set up. Burkhead and Miner[10] have noted some difficulty in actually determining the determinants of public expenditure. They gave the following methodological problems:

(1) The statistical difficulty of identification and

(2) Methodological problem of specification of determination of public expenditures derived from collective nature of public sector decisions.

It is theoretically difficult to identify the supply equation when the important influencing variable of demand can be specified. In simple words, the problem of identification becomes apparently one of policy specifications. Suppose there is a common important variable which is the important variable in the public expenditure demand function as well as in revenue function or supply function. Of course identification is a technical problem which we might tackle in a different context. The researcher has the freedom to choose independent variables for the determination of public expenditure and in a simultaneous equation set up the researcher has to be careful as to choose that variable as specific dependent variable which might reflect the objective of econometric investigation.

We may now attempt to make some theoretical expositions regarding the nature of public expenditure with that of revenue via some other functions, which have some fundamental link with revenue and demand. This exercise is purely theoretical and may not be appropriate to

use for empirical analysis due to the nature of data and the way it is maintained.

Let us consider a demand function or say public expenditure function,

$$E_{ij} = E_{ij}(R_{ij}) \qquad \text{.....(22)}$$

where E_{ij} = expenditure in the *ith* sector using not only the revenue generated by that sector but also by the other sectors of the economy about which we have no specific information.

The plausible only constraint when no other external factor is expected to come is the restraint imposed by the policy makers upon the revenues to be generated. We need to think of a revenue production function,

$$R_{ij} = R_{ij}(E_{ij}) \qquad \text{.....(23)}$$

Having done this, we think of a utility function,

$$U = U(R_{ij}) \qquad \text{.....(24)}$$

Now, say, we want to minimize the public expenditure E_{ij} subject to $R = R(E)$ and to maximize $U = U(R)$ subject to $r_{ij} E_j = R_{ij}$ .....(25)

Here we need to give some theoretical assumption. In this type of analysis with so many externalities apart from political or other social factors, we shall have to be careful with our assumptions. In order to build an econometric model for the determination of expenditure, we shall try to incorporate as many assumptions as possible that are held to be theoretical feasible. Our looking at this new way of determination of public expenditure is taken from Bez.[11] Here we emphasize that demand for public expenditure is obviously free from the influence of resource mobilization. We have a demand for public expenditure which has to be met from revenue and again revenue is to be rationally derived according to proportion that would be necessary to satisfy public expenditure of not only that sector but also of other sectors, and therefore,

$$\text{maximize } U = U(R) \text{ subject to } R_{ij} = \Sigma e_{ij} R_i \qquad \text{.....(26)}$$

where e_{ij} = the amount of revenue or the fraction of the revenue collected from the j^{th} sector of the economy and contribute the same to the expenditure of i^{th} sector. We assume that all the total of sectoral expenditures amounts to the global expenditure. We then set up a Lagranzian as

$$L = \lambda [e_{ij}(R_i) - R_{ij}] \qquad \text{.....(27)}$$

Once again we are faced with a dilemma which one do we need to maximize and which one need to be minimized. If we maximize revenue we shall have a surplus and if we minimize revenue it is a case of deficit. Also we have other technical difficulties, say, can we at all ascertain what portion of demand is met by that fraction of revenue for and of the specified sector. Moreover, we shall have the relationships, viz., we have public expenditure function, revenue function and utility function.

Somehow if these three relations can be integrated to one simple linear function, then the identification of determinants of public expenditure becomes possible. But it appears to be an impossible task because there may be less number of equations than the number of unknowns to be determined.

3.3.c Determination of Public Expenditure from variance and covariance analysis

Alternatively, it can be argued that the analysis of the determinants of public expenditure can be derived from the variance and co-variance techniques. For this we arrange the data in the following tabular form with time variance inherent so that we shall be able to distinguish the effects of

independent variables for each year's public expenditure. Suppose we arrange the data in the following ways:

Dependent Variable	*Independent Variable* $x_1 \quad x_2 \quad x_3 \ldots\ldots\ldots\ldots x_n$
PE_1	$r_{11} \quad r_{12} \quad r_{13} \ldots\ldots\ldots \ldots r_{1n}$
	$r_{21} \quad r_{22} \quad r_{23} \ldots\ldots\ldots\ldots r_{2n}$
	$r_{31} \quad r_{32} \quad r_{33} \ldots\ldots\ldots\ldots r_{3n}$
	……
PE_t	$r_{t1} \quad r_{t2} \quad r_{t3} \ldots\ldots\ldots\ldots r_{tn}$

We have to assume that PE_1 is more dependent on x_1 say, this may be per capita income or any other independent variable we use in our econometric functions then the $r_{t1}>0$. Similarly for the 2nd independent variable $r_{t2}>0$ we try to impose that is why the public expenditure in any one year should be dependent equally on all the independent variables be of the same magnitude or vary or have no dependence at all on some independent variables. We know that the determination of public expenditure with the applications of econometric functions is an aggregate

or average because the econometric model is for averaged of total amount of value of the variables.

But we cannot find $PE_1 = \hat{PE}_1$ whereas we determine $\Sigma PE = \Sigma \hat{PE}$ with the application of econometric model. We want to find out which particular independent variables are responsible for determining public expenditure. From the above lay out, if we plot the correlation coefficient of the 1st column against the 2nd column of correlation coefficient that will emerge – if it is a perfect straight line then we may assume that x_1 can be replaced by x_2 or vice versa, thus reduction of one independent variable.

Again, if

$$\frac{r_{11}}{r_{12}} = \frac{r_{21}}{r_{22}}$$

then $r_{11}\, r_{22} = r_{12}\, r_{21}$

or $r_{11}\, r_{22} - r_{12}\, r_{21} = 0$ .....(28)

then x_1 may be replaced by x_2.

Instead if we plot the 1st column against column total, then we shall have the joint effect of x_1 against total effect of all the independent

variables. If the variables are equally important as determinants of public expenditure then we shall have a straight line. When we plot all the columns of r_{ij} against the column total, those which are not important then public expenditure estimation for those specific years be noted and dropped from the analysis. Thirdly, if we plot each row of correlation coefficient against the row total we can draw certain conclusion. There will be 30 such graph for a 30-year period, the years in which the lines are not straight lines may be marked. The independent variables may again be identified which lie away from the straight line may be dropped as determinants of public expenditure. Let us now try to give a mathematical account of the concepts used in this type of analysis.

Consider a random variable X

$$X : \{x_1 \;\; x_2 \ldots\ldots\ldots\ldots x_n\} \qquad \ldots\ldots\ldots\ldots\ldots\ldots(29)$$

which is the product of two other independent random variables

$$\left.\begin{array}{l} Y : \{y_1 \;\; y_2 \ldots\ldots\ldots\ldots y_n\} \\ Z : \{z_1 \;\; z_2 \ldots\ldots\ldots\ldots z_n\} \end{array}\right] \qquad \ldots\ldots\ldots\ldots\ldots\ldots(30)$$

such that

$$X_{ij} = f(Y_i, Z_j) \qquad \text{……...(31)}$$

We imagine here that X is our public expenditure, while Y and Z are some independent determinants of public expenditure.

We assume that, $Cov(X_{ij}, Y_i) \neq 0$

and $Cov(X_{ij}, Z_j) \neq 0$ ……..…...(32)

We assume that X_{ij} is the measure of aggregate production function

$$P(Y_i, Z_j) \qquad \text{…...……..….(33)}$$

with $f(x) = \int dF(x)\,dx$ …..……...(34)

where $f(x)$ = probability density function and

$F(x)$ = distribution function

i, j = 1,2,..…n.

We know that X_{ij} = realizable set of X the population space.

We also impose that interaction of Y and Z is such that

$$R(y_1 z_1) \neq R(y_1 z_2) \neq R(y_2 z_2) \text{ etc.} \qquad \text{…...……..(35)}$$

$$\left.\begin{array}{l} \text{and} \quad R(y_1\, z_1) = 1 \\ \text{also} \quad R(y_1\, z_1) = 0 \end{array}\right] \qquad \text{…...…...…(36)}$$

depending on interaction or no interaction.

The function $X_{ij} = f(Y_i\, Z_j)$

is assumed to have a probability distribution such as

$$P(X_{ij} / Y_i\, Z_j) = P(x_{11} / y_{1,}\, Z_{j,}\, X) + P(x_{12} / y_{1,}\, Z_{j,}\, X)$$
$$+ \ldots\ldots\ldots\ldots + P(x_{1n} / y_{1,}\, Z_{j,}\, X)$$
$$P(x_{21} / y_{2,}\, Z_{j,}\, X) + \ldots\ldots\ldots\ldots + P(x_{2n} / y_{2,}\, Z_{j,}\, X)$$
$$+ \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots +$$
$$P(x_{n1} / y_{n,}\, Z_{j,}\, X) + \ldots\ldots\ldots\ldots + P(x_{nn} / y_{n,}\, Z_{j,}\, X)$$

…….……(37)

with $P(x_{ij} / Y_{i,}\, Z_{j,}\, X) = \sum p\, [(x_{ij})^p / Y_{i,}\, Z_{j,}\, X)] = 1$ ……..(38)

where, p may take either 1 or 0 depending on interaction or no interaction.

In which case null element of interaction matrix, the $F(Y_{i,}\, Z_j) = 0$, and for null element $p = 0$.

Consider a general conditional probability function of a sub set x' of X with

$x' : \{ x^m \ x^q \}$ ……...….(39)

where x^m and x^q are 2 different sets of response,

the conditional probability of x^m given X' is

$$P(x^m / X^{'}) = \frac{P(x^m / X^{'})}{P(X^{'} / X)} \quad \text{.....(40)}$$

similarly

$$P(x^q / X^{'}) = \frac{P(x^q / X^{'})}{P(X^{'} / X)} \quad \text{.....(41)}$$

The relations (40) and (41) can be expressed as by rule of inverse probability

$$P(x^m / X^{'}) = \frac{P(x^m / X^{'})P(X^{'})}{P(X^{'} / X)} \quad \text{.....(42)}$$

where $P(X') = P(x^m / X') + P(x^q / X')$ …….(43)

Translating (42) in terms of interaction functions

$$P(x^m / X^{'} = \frac{f^{(m)}(Y_i Z_j)}{f^{(m)}(Y_i Z_j) + f^{(q)}(Y_i Z_j)} = \frac{f^{(m)}(Y_i Z_j)}{f^{(m+q)}(Y_i Z_j)} \quad \text{.....(44)}$$

The rest of the analysis is graphical but not with correlation coefficients but log of observations with lines of row against total of rows and the interpretations can be made as in the case of correlation coefficients.

3.3.d Confluence Analysis

Probably the most straightforward and meaningful analysis to identify the determinants is as put forward by Frisch.[12] Of course, he did it for reduction of numerous independent variables in estimating a dependent variable. Let us take for example,

$$Y = f(x_1, x_2 \ldots\ldots x_n) \qquad \ldots\ldots\ldots\ldots\ldots..(45)$$

The first thing we can do is to see whether $Cov\ (Y, X_i)$ are formidably high specially when we look for positive correlation. Say, if

$$Cov\ (Y, X_1) > Cov\ (Y, X_2) > Cov\ (Y, X_3) \qquad \ldots\ldots\ldots\ldots..(46)$$

then surely X_1 is the predominant independent variable among the three independent variables. We can possibly retain any other variable which is marginally retainable provided that the $Cov\ (X_1, X_2) \neq 1$ say. Or we may find this also graphically when we plot Y against X_1, X_2 and X_3 individually.

3.4 Concluding Remarks

It may be observed from the above discussion that public revenue cannot be taken as a determinant of public expenditure due to the obvious nexus between them. Further, although the variance and co-variance technique can be used in explaining the determinants of public expenditure, we fail to use this technique due to lack of data set that is required to carry out this type of analysis. And as such, we think it imperative to use the econometric model that we have spelt out in Section I of this chapter.

The model presented above (*equation 1*) is of a global nature, but for empirical analysis we need to use a number of combinations of the independent variables according to the results of the empirical findings depending on the availability of data. In the selection and the final retention of the independent variables in our final analysis, we propose to make use of the technique of confluence analysis, which is also used in another statistical methodology known as multi-variate analysis that we have spelt out in the foregoing paragraphs.

3.5 References

1. Rao, M. Govinda (1981): *Political Economy of Tax and Expenditure Determination* (A Case Study of Four Indian States), Allied Publishers Pvt. Ltd., New Delhi, p.41
2. Ibid, pp.52-53
3. Ibid., p.42
4. Bez, K. (1990): *Quantitative Techniques in Economics,* New Delhi, Kalyani Publishers, pp.306-7
5. Williamson, J.G. (1961): *Public Expenditure and Revenue: An International Comparison,* Manchester School of Economic and Social Studies, XXIX (1), January, pp. 43-56
6. Burkhead, Jesse and Miner, Jerry (1971): *Public Expenditure,* The Macmillan Press Ltd., London, pp.304
7. Rizzo, Ilde (1985): 'Regional Disparities and Decentralization as Determinants of Public Sector Expenditure Growth in Italy (1960-81)' in Forte, Francesco and Peacock, Alan (Eds.): *Public Expenditure and Government Growth,* Basil Blackwell, Oxford, U.K., pp.65-81

9. Baumol, William J. (1965): *Economic Theory and Operations Analysis,* Englewood Cliffs, Prentice Hall, pp.221-228

10. Burkhead, Jesse and Miner, Jerry (1971): *Public Expenditure,* The Macmillan Press Ltd., London, pp.310-311

11. Bez, K. (1980): *Reaction Function and Econometric Models,* Research Paper, North Eastern Hill University, Shillong, p.42

12. Frisch, R. (1934): 'Statistical Confluence Analysis by Means of Complete Regression System,' University Institute of Economics, Oslo, pp.5-8 in Hendry, David F. and Morgan, Mary S. (Eds.), *The Foundations of Econometric Analysis,* Cambridge Unversity Press, Cambridge, 1995, pp.271-3

CHAPTER IV

GROWTH AND PATTERN OF PUBLIC EXPENDITURE

4.1 Introduction

In the previous chapter an attempt was made to explore alternative econometric models in conformity with the objectives and hypotheses of our study. It is observed from our discussion thereto that the growth and pattern of public expenditure is determined by a number of economic and non-economic variables. And the selection of suitable explanatory variables in the model was subjected to suitable economic and statistical reasoning. Before examining the growth and pattern of public expenditure, it is thought that it is imperative to have an idea about the actual growth of public expenditure in the State of Meghalaya and the direction in which it has moved over the years. We may mention it here that it is the size and composition of public expenditure that ultimately the community looks to. Underneath the policy controversies regarding public expenditure, vital questions about the actual behaviour of these expenditures await dispassionate analysis.[1] Therefore, this chapter is an attempt in this direction.

In this chapter, an attempt is made to discuss in detail the intricacies of growth and pattern of public expenditure of the State of

Meghalaya in relation to some of the important economic variables. This will provide the necessary overall background to a better analytical and critical evaluation of the structure and composition of public expenditure. The methods of analysis are based on the studies carried out by earlier research scholars.[2]

4.2 Growth of Public Expenditure

In recent years, there has been an enormous growth of public expenditure in Meghalaya. In order to understand the intricacies of the problem of public expenditure in the context of Meghalaya, it is proper to analyse first the trend or the direction in which it has moved. Keeping this in mind, an attempt is made here to discuss the growth of total public expenditure both revenue and capital accounts of the State of Meghalaya from 1972-73 to 2001-02. This will give us the overall picture of the growth of public expenditure in the State during the period of our study. The following Table 4.1 presents the trend of the growth of total public expenditure.

It may be noted from Column 2 of Table 4.1 that total public expenditure grew from Rs. 33.25 crores in 1972-73 to Rs. 1785.15 crores in 2001-02 recording an average annual rate of increase of 175.63 per cent.

Table 4.1 Growth of Total Public Expenditure (Both Revenue and Capital Account) of the State of Meghalaya

Year	State's Total Expen-diture (Rs.Crore)	Net State Domestic Product (Rs.Crore)	Per Capita Expen-diture (In Rs.)	Col. 2 as a Percen-tage of Col. 3
1	2	3	4	5
1972-73	33.25	105.09	319.71	31.64
1973-74	26.86	108.36	251.03	24.79
1974-75	32.69	111.97	297.18	29.20
1975-76	35.44	115.51	313.35	30.68
1976-77	40.95	120.08	352.11	34.10
1977-78	56.18	134.75	470.13	41.69
1978-79	55.29	149.77	449.51	36.92
1979-80	64.19	165.46	505.43	38.79
1980-81	101.94	179.62	784.15	56.75
1981-82	136.57	205.84	1005.67	66.35
1982-83	124.71	227.10	892.70	54.91
1983-84	147.01	263.14	1023.03	55.87
1984-85	178.30	302.27	1206.36	58.99
1985-86	191.93	341.53	1186.22	56.20
1986-87	230.22	386.25	1477.66	59.60
1987-88	264.36	466.86	1654.32	56.63
1988-89	318.05	505.96	1942.88	62.86
1989-90	350.69	659.78	2092.42	53.15
1990-91	405.65	767.35	2311.40	52.86

1991-92	492.29	884.22	2773.46	55.68
1992-93	588.60	978.54	3130.85	60.15
1993-94	909.08	1133.38	4666.74	80.21
1994-95	777.97	1258.04	3855.15	61.84
1995-96	796.42	1380.31	3812.45	57.70
1996-97	813.58	1485.28	3761.35	54.78
1997-98	850.72	1690.42	3791.09	50.33
1998-99	1022.93	2079.25	4397.81	49.20
1999-00	1195.40	2467.13	4974.62	48.45
2000-01	1601.89 (R.E.)	2806.20	6503.82	57.08
2001-02	1785.15 (B.E.)	3267.36	7064.31	54.64

Source :

Budget in Brief, Government of Meghalaya, 1974-75; 1977-78; 1978-79
Budget at a Glance, Government of Meghalaya:: 1984-85 to 2001-2002
Statistical Hand Book, Meghalaya,1976
Estimates of State Domestic Product of Meghalaya, 1980-81 to 1995-96, Government of Meghalaya, Directorate of Economics and Statistics, Meghalaya, Shillong,
State Economy, Government of Meghalaya, Directorate of Economics and Statistics

Column 3 shows the growth of net state domestic product from Rs. 105.09 crores in 1972-73 to Rs. 3267.36 crores in 2001-02 maintaining an average annual rate of increase of 100.30 per cent.

Column 4 of the above Table shows the growth of per capita public expenditure from Rs. 319.71 in 1972-73 to Rs. 7064.31 in 2001-02. In terms of the average annual rate of increase, per capita public expenditure records 70.32 per cent.

Therefore, it may be inferred that the average annual rate of increase of total public expenditure is the highest compared to the average annual rate of increase in net state domestic product or the increase in per capita expenditure. Thus, we find that Government expenditure has grown at a faster rate than the State income, which is in line with Wagner's law of expanding state activity.

Column 5 of the above Table indicates total public expenditure as a percentage of net state domestic product. The figures show that out of the total thirty years of the period under study it is found that only for two years (1973-74 and 1974-75) total public expenditure constitutes less than 30 per cent of the net state domestic product, for eight years (1972-73, 1975-76, 1976-77, 1977-78, 1978-79, 1979-80, 1998-99 and 1999-2000) total public expenditure constitutes between 30 and 50 per cent of the net domestic product while for twenty years (1980-81 to 1997-98 and 2000-01 to 2001-02) total public expenditure constitutes more than 50 per cent of the net state domestic product.

The growth in public expenditure as seen above may be explained by the intensive development efforts made by the government through comprehensive economic planning.[3] Therefore, the former is closely related to the latter. In other words, if the plan is more comprehensive, it tries to develop the sub-sectors of the economy

simultaneously on the one hand and on the other it also centres its attention on exploring the new bases and sources of additional resources.

The factors responsible for expanding public sector activities in the State economy can be explained through two distinct approaches. The first approach relates to the increasing pressure on the demand for public services due to increasing level of money income and population growth, and its subsequent impact on the density of population and urbanization. The growth of population has augmented the problem of providing educational, health and other basic minimum needs services. At the same time, due to the existence of predominant subsistence agriculture sector, the public sector is compelled to make larger investments in infra-structural and other developmental activities in order to reduce the intense pressure on the subsistence sector and provide more employment opportunities elsewhere in the economy. Besides, on account of the steady increase in urbanization process, the responsibility of the government for providing more public utility services has also increased. Many non-exclusive public expenditure programmes, which are also guided by externality conditions, come within the domain of the public sector. For example, administrative,

maintenance of law and order etc., are some of the areas where the services have continuously been expanded.

The second approach is the supply factor. In an economy where the private sector is not well developed, the public sector has to play a double role. On the one side, it has to be directly involved in the production process and on the other side it has to evolve such programmes, which can help to stimulate the private sector in participating in developmental activities. The massive investment in the social and economic overheads has been made continuously in order to increase the productive capacity of the economy either by increasing the skills, organizational capacity or by increasing the capital stock in the economy – a catalyst for achieving high economic growth rate. Thus, both demand and supply factors have made decisive influence on expanding the public sector size in the economy.

We shall now make an attempt to calculate the exponential growth rate of the economic variables presented in the above table by using the following estimating equation:

$$Y = ae^{rt}$$

where, Y = total public expenditure/per capita expenditure or as the case might be, r = the growth rate , t = time factor and *'a'* = constant term.

The least squares estimates of the above equation give the following results:

$$Te = 23.7504^{e0.1468t};\ R^2 = 0.9851$$

$$NSDP = 66.2490^{e0.1261t};\ R^2 = 0.9889$$

$$PCe = 238.9079^{e0.1159t};\ R^2 = 0.9745$$

where, Te = Total Public Expenditure, $NSDP$ = net state domestic product and PCe = Per Capita Expenditure.

It is observed from the above estimating equations that the exponential growth rate of the total public expenditure remains around 14.68 percent during the period covered by our study. Further, the value of R^2 suggests that nearly about 98 per cent variations in the total public expenditure is due to the time factor alone and 2 per cent variations in the total public expenditure remain unexplained by the time factor. By using the similar procedure, we have been able to find the exponential growth rate of net state domestic product, which is 12.61 per cent while that of the per capita expenditure which is 11.59 per cent over the thirty-year period covered by our study. Moreover, the value of R^2 shows that 98 per cent of the variations in net state domestic product and 97 per cent of the variations in the per capita expenditure respectively are explained by the time factor.

It is to be noted that, although, there is a continuous increase in the absolute levels of total public expenditure, net domestic product and per capita expenditure annually during the period of our study, the rates of annual increase vary considerably. Therefore an attempt is being made to calculate the annual trend values of the above three economic variables during the thirty-year period of our study. The trend values have been calculated by fitting simple linear regressions of total public expenditure, net state domestic product and per capita expenditure by employing the method of least squares. The trend values of the above variables are then calculated for each year from the corresponding estimating equations. In the next step, an attempt is being made to delve into the specific economic and related factors other than time factor, which might have contributed to the annual fluctuations.

The following equation which is a simple linear regression type has been used:

$$Y = f(X) = a + b\,X$$

where, Y = total public expenditure/net state domestic product/ per capita expenditure

X = time

'a' and *'b'* = constants.

The trend equation fitted to the data of thirty years reveals the following relationship between Total Expenditure (*TE*) and time:

$$Te = \underset{(79.84)}{-310.44} + \underset{(4.50)}{49.38\,X}$$

$$R^2 = 0.8115$$

It may be observed that the linear relationship explains 81.15 per cent of the variations in total public expenditure. It implies that the linear relationship is a good fit to the data. The figures in parenthesis indicate the standard error of the estimating equations.

The trend equation fitted to the data of thirty years shows the following relationship between net state domestic product (*NSDP*) and time:

$$NSDP = \underset{(154.80)}{-544.90} + \underset{(8.69)}{88.37\,X}$$

$$R^2 = 0.7870$$

It may be seen that the linear relationship explains 78.70 per cent of the variations in net state domestic product. It implies that the linear relationship is a good fit to the data.

The trend equation fitted to the data of thirty years exhibits the following relationship between Per Capita Expenditure (*PCe*) and time:

$$PCe = -944.45 + 205.59\,X$$
$$(260.58) \quad (14.68)$$

$$R^2 = 0.8751$$

It may be observed that the linear relationship explains 87.51 per cent of the variations in per capita expenditure. It implies that the linear relationship is a good fit to the data. The figures in parenthesis indicate the standard error of the estimating equations.

Table 4.2 Regression Analysis of Variance

Variations	Total Public Expenditure	Net State Domestic Product	Per Capita Expenditure
1	2	3	4
Explained Variations (%)	81.15	78.70	87.51
Unexplained Variations (%)	18.85	21.30	12.49
Total Variations	100.00	100.00	100.00
R^2	0.8115	0.7870	0.8751
R	0.9008	0.8871	0.9355
Probable error of r	± 0.02	± 0.03	± 0.02

Note: For finding out the probable error of r, the following formula has been adopted : $0.6745\ (1-r^2)/\sqrt{N}$.

The value of Karl Pearson's co-efficient of correlation (r) and co-efficient of Determination (R^2) are shown in Table 4.2.

The above table shows that about 81 per cent of the total variations in total public expenditures are explained by the time factor

alone. Similarly, 79 per cent of the variations in the net state domestic product and 88 per cent of the variations in per capita expenditure are explained by the time factor alone. This implies that the linear relationships are a good fit to the data. The coefficients of determination show positive regression with high degree of confidence. The coefficients of correlation indicate that the above three variables viz., total public expenditure, net state domestic product and per capita expenditure have positive and are very closely correlated with time. The values of probable error *r* imply that the regressions have nearness of being unbiased and best linear estimators.

The aggregative picture about the growth of total public expenditure may not provide us a clear picture about direction in which it has moved over the years and we believe that for a better understanding of the dynamics of growth of public expenditure, a dis-aggregative view is essential for determining the actual behaviour of public expenditure in Meghalaya. This is what has been set out in the following paragraphs.

4.2.a Growth of Revenue Expenditure

It may be mentioned here that the expenditure on the revenue account is divided mainly into development expenditure and non-development expenditure. The development expenditure is further sub-

divided into expenditure on economic development and expenditure on social and community services. Expenditure on economic development consists of expenditure on agriculture and allied activities, rural development, special areas programme, irrigation and flood control, energy, industry and mineral, transport, science, technology and environment and the general economic services. On the other hand, non-development expenditure consists of expenditure on general services such as organs of the state, administrative services, collection of taxes (fiscal services), debt services, pension and miscellaneous general services.

The growth of public expenditure on the revenue account of the State of Meghalaya for the period 1972-73 to 2001-2002 is shown in Table 4.3 below.

Table 4.3 Growth of Revenue Expenditure of the Government of Meghalaya

Year	Revenue Expen-diture (Rs. Cr.)	Total Expen-diture (Rs. Cr.)	Net State Domestic Product (Rs. Cr.)	Col. 2 as % of Col. 3	Col. 2 as % of Col. 4
1	2	3	4	5	6
1972-73	18.18	33.25	105.09	54.68	17.30
1973-74	19.55	26.86	108.36	72.78	18.04
1974-75	25.03	32.69	111.97	76.57	22.35

1975-76	27.36	35.44	115.51	77.20	23.69
1976-77	30.11	40.95	120.08	73.53	25.07
1977-78	41.22	56.18	134.75	73.37	30.59
1978-79	40.40	55.29	149.77	73.07	26.97
1979-80	45.95	64.19	165.46	71.58	27.77
1980-81	59.82	101.94	179.62	58.68	33.30
1981-82	74.28	136.57	205.84	54.39	36.09
1982-83	85.03	124.71	227.10	68.18	37.44
1983-84	99.72	147.01	263.14	67.83	37.90
1984-85	116.82	178.30	302.27	65.52	38.65
1985-86	134.98	191.93	341.53	70.33	39.52
1986-87	156.43	230.22	386.25	67.95	40.50
1987-88	189.61	264.36	466.86	71.72	40.61
1988-89	224.58	318.05	505.96	70.60	44.39
1989-90	258.78	350.69	659.78	73.79	39.22
1990-91	310.77	405.65	767.35	76.61	40.50
1991-92	368.05	492.29	884.22	74.76	41.62
1992-93	410.29	588.60	978.54	69.71	41.93
1993-94	482.85	909.08	1133.38	53.11	42.60
1994-95	456.95	777.97	1258.04	58.74	36.32

1995-96	580.40	796.42	1380.31	72.88	42.05
1996-97	616.95	813.58	1485.28	75.83	41.54
1997-98	685.11	850.72	1690.42	80.53	40.53
1998-99	815.44	1022.93	2079.25	79.72	39.22
1999-00	927.79	1195.40	2467.13	77.61	37.61
2000-01 (R.E.)	1192.86	1601.89	2806.20	74.47	42.51
2001-02 (B.E.)	1354.83	1785.15	3267.36	75.89	41.47

Source :
Budget at a Glance, Government of Meghalaya: 1984-85; 1986-87; 1989-90; 1994-95; 1998-99; 2000-01; 2001-2002.
Statistical Hand Book, Meghalaya,1976
Budget in Brief, Government of Meghalaya, 1978-79

The trend shows that revenue expenditures which were Rs 18.18 crores in the year 1972-73, rose to Rs 1354.83 crores in the year 2001-02 thus recording an average annual rate of increase of 245.08 per cent. This increase of revenue expenditures of the State government during the same period of time was caused by the higher additional expenditures under general services, social and community services which have increased significantly over these years, with a view to achieving the five year plan objectives of poverty alleviation with special emphasis on employment generation and provision of minimum basic needs like health care, education, drinking water, rural roads and energy.

Column 5 of Table 4.3 shows revenue expenditure as a percentage to total public expenditure. It is found that only for five years revenue expenditure constitutes less than 60 per cent of the total public expenditure, only five years less than 70 per cent of the total public expenditure and the rest of the period of our study, i.e., for twenty years, it is found that revenue expenditure constitutes more than 70 per cent of total public expenditure.

Column 6 of Table 4.3 shows revenue expenditure as a percentage of net state domestic product. It is found that out of the total thirty years of our study, only two years witness revenue expenditure less than 20 per cent of the net state domestic product, while sixteen years show that revenue expenditure constitutes more than 20 per cent of the net state domestic product, while twelve years show that revenue expenditure constitutes more than 40 per cent of the net state domestic product. According to Martin and Lewis, "the Governments of countries making a special development effort will find themselves spending between 19 and 22 per cent of Gross National Product."[4] Since in the State of Meghalaya we find the share of public expenditure in the State income is very high, we can infer that the State has been making effort to develop the economy.

The exponential growth rate of the revenue expenditures has been calculated by using the similar formula $Y = ae^{rt}$ as used earlier in this chapter.

The least squares estimate of the above equation is:

$$Re = 15.8125e^{0.1499t};\ R^2 = 0.9957$$

where, Re = revenue expenditures.

As calculated earlier, the least squares estimates of the above equation for total public expenditure and net state domestic product are:

$$Te = 23.7504^{e0.1468t};\ R^2 = 0.9851$$

$$NSDP = 66.2490^{e0.1261t};\ R^2 = 0.9889$$

It is clearly seen from the above equation that the annual compound rate of growth of total revenue expenditure during the period of our study is approximately 14.99 per cent. Further, it is evident from the value of R^2 that 99 percent variations in revenue expenditure is explained by time factor alone. While comparing the growth rate of revenue expenditure with the growth rates of total public expenditure and the net state domestic product which record 14.68 per cent and 12.61 per cent respectively, it is found that the growth rate of revenue expenditure shows the highest.

It is to be noted that, although, there is a continuous increase in the absolute levels of revenue expenditures annually during the period

1972-73 to 2001-02, the rates of annual increase vary considerably. Therefore an attempt is being made to calculate the annual trend values of revenue expenditures during the thirty-year period of our study. The trend values have been calculated by fitting simple linear regressions of revenue expenditures by employing the method of least squares. The trend values of revenue expenditures are then calculated for each year from the corresponding estimating equations. In the next step, an attempt is being made to find out the specific economic and related factors other than time factor, which might have contributed to the annual fluctuations.

The equation expressing revenue expenditures as a function of time is taken to be of the simple linear regression type:

$$Y = f(X) = a + b\,X$$

where, Y = total revenue expenditures,

X = time

'a' and *'b'* = constants.

The relevant annual data for the period 1972-73 to 2001-02 are fitted and the estimating equation gives the following values:

$$Re = \underset{(62.51)}{-242.03} + \underset{(3.52)}{36.80\,X}$$

$$R^2 = 0.7959$$

where, Re = revenue expenditures.

The figures in parenthesis indicate the standard error of the estimating equations.

It is found that about 80 per cent of the total variations in revenue expenditures are explained by the time factor alone. This implies that the linear relationship is a good fit to the data. The value of Karl Pearson's co-efficient of correlation (*r*) and co-efficient of Determination (R^2) are shown below in Table 4.4

Table 4.4 Regression Analysis of Variance

Variations	Revenue Expenditure
1	2
Explained Variations (%)	79.59
Unexplained Variations (%)	20.41
Total Variations	100.00
R^2	0.7959
R	0.8921
Probable error of r	± 0.03

Note: For finding out the probable error of r, the following formula has been adopted :
$.6745\ (1-r^2)/\sqrt{N}$.

Since $r = 0.89$, it implies that the two variables revenue expenditure and time are positively very closely correlated with each other. The probable error of $r \pm 0.03$ indicates that the regression has nearness of being unbiased and best linear estimator.

4.2.b Growth of Capital Expenditure

We shall now analyse public expenditure on capital account of the State Government of Meghalaya. This exercise is important from the point of view of planning for development of the State. It has become an effective fiscal instrument for the transfer of resources even though the effect is realised only after a considerably long period of time due to the inherent long gestation period. However from the study of the pattern of capital expenditure, a general idea of the total magnitude of flow of resources can be had. Because of its sheer magnitude, capital expenditure assumes a great deal of significance. Moreover, the projects financed by capital expenditure depend on their gestation period and accordingly they can be quick yielding or slow yielding in terms of economic benefits. Besides, capital expenditure acquires deep implications in terms of its impact on the revenue budget of the State. Therefore it is a firm belief that a well thought out policy of capital expenditure forms the foundation of economic development in a under-developed State like Meghalaya. The following Table 4.5 shows the trends of capital expenditures of the State Government for the period 1972-73 to 2001-02. Table 4.5 clearly portrays the extent to which the growth in capital expenditures of the State Government has taken place in the last thirty years.

Table 4.5 Growth of Capital Expenditures of the Government of Meghalaya

Year	Capital Expen-diture	Total Expen-diture	Net State Domestic Product	Col. 2 as % of Col. 3	Col. 2 as % of Col. 4
1	2	3	4	5	6
1972-73	15.07	33.25	105.09	45.32	14.34
1973-74	7.31	26.86	108.36	27.22	6.75
1974-75	7.66	32.69	111.97	23.43	6.84
1975-76	8.09	35.44	115.51	22.83	7.00
1976-77	10.84	40.95	120.08	26.47	9.03
1977-78	14.96	56.18	134.75	26.63	11.10
1978-79	14.89	55.29	149.77	26.93	9.94
1979-80	18.24	64.19	165.46	28.42	11.02
1980-81	42.12	101.94	179.62	41.32	23.45
1981-82	62.29	136.57	205.84	45.61	30.26
1982-83	39.69	124.71	227.10	31.83	17.48
1983-84	47.30	147.01	263.14	32.17	17.98
1984-85	61.48	178.30	302.27	34.48	20.34
1985-86	56.95	191.93	341.53	29.67	16.67
1986-87	73.79	230.22	386.25	32.05	19.10
1987-88	74.75	264.36	466.86	28.28	16.01
1988-89	93.47	318.05	505.96	29.39	18.47
1989-90	91.92	350.69	659.78	26.11	13.93
1990-91	94.87	405.65	767.35	23.39	12.36
1991-92	124.24	492.29	884.22	25.24	14.05
1992-93	178.31	588.60	978.54	30.29	18.22
1993-94	426.23	909.08	1133.38	46.89	37.61

1994-95	339.24	777.97	1258.04	43.61	26.97
1995-96	216.02	796.42	1380.31	27.12	15.65
1996-97	196.62	813.58	1485.28	24.17	13.24
1997-98	165.61	850.72	1690.42	19.47	9.80
1998-99	207.49	1022.93	2079.25	20.28	9.98
1999-00	267.61	1195.40	2467.13	22.39	10.85
2000-01	409.03 (R.E.)	1601.89 (R.E.)	2806.20	25.53	14.58
2001-02	430.32 (B.E.)	1785.15 (B.E.)	3267.36	24.11	13.17

Source:
Budget in Brief, Government of Meghalaya, 1974-75; 1977-78; 1978-79; 1982-83; 1984-85;
Budget at a Glance, Government of Meghalaya, 1984-85; 1986-87; 1987-88; 1988-89; 1989-90; 1993-94; 1994-95; 1998-99; 2001-02

From the above Table 4.5, it is clear that capital expenditures have increased during the period of our study.

It may be noted that from 1974-75 onwards there was a consecutive increase, with some fluctuations, in the level of capital expenditure. The major factor in the growth of capital expenditure of the State during the period of our study was the expenditure on debt services, which increased rapidly during these years. This was largely on account of loan financing of unproductive investment in the capital account which brought about the mounting debt burden on the State. In addition to this, increasing expenditures under general services such as public works, printing, stationery, other administrative services and miscellaneous general services and then community services which

include education, art and culture, medical and public health services, housing and urban development and other social and community and services including labour and employment, were also responsible for the continuing increase in capital expenditure during these years.

During the period of our study, there was a phenomenal increase in the capital expenditure from Rs. 15.07 crores in 1972-73 to Rs. 430.32 crores in 2001-02 recording an average annual rate of increase of 91.85 per cent. It may be noted that capital expenditure does follow the same pattern as the revenue expenditure but not at a fast rate as the latter.

In Column 5 of Table 4.5 we have calculated capital expenditure as a percentage of total public expenditure so as to be able to find out the trend of public investment taking place in the State during the period of our study. It may be noted that only for five years (1982-83, 1983-84, 1984-85, 1986-87 and 1992-93) out of the total period of our study that capital expenditure constitutes a little more that 30 per cent of the total expenditure. Again it is seen that only for four years (1972-73, 1981-82, 1993-94 and 1994-95) out of the thirty years of our study that capital expenditure constitutes more than 40 per cent of the total expenditure. The rest of the period, that is, for twenty one years (1973-74 to 1979-80, 1985-86, 1987-88 to 1991-92, 1995-96 to 2001-02) out

of the thirty years of our study, capital expenditure constitutes less than 30 per cent of total expenditure. In spite of the fact that the State has been spending heavily on the construction of roads and bridges, medical and public health facilities, sanitation and water supply schemes, special areas programmes, irrigation and food control measures, industry, mineral and transport, yet capital expenditure shows a declining trend compared to revenue expenditure taking place during the period of our study. This only proves that the State has not been able to pursue public expenditure policies in consonance with the achievement of long term goals and objectives such as self-reliance, industrialization for intensive and extensive use of the rich resources available within the State thus generating more employment and increasing the per capita income of the people of the State.

The same formula $Y = ae^{rt}$ used in revenue expenditure has been used in the calculation of the growth rate of capital expenditure.

The least squares estimate of the equation is found to be:

$$Ce = 7.7176\ e^{0.1391t};\ R^2 = 0.9152$$

where, Ce = Capital expenditures expressed in Rupees crores.

The annual compound rate of growth in capital expenditures during the period of our study is 13.91 percent.

In order to conduct a time series analysis of the capital expenditures of the State Government of Meghalaya, the annual trend values of capital expenditures for the thirty years of our study are fitted and the estimating equation yields the following values:

$$Ce = \underset{(26.75)}{-68.40} + \underset{(1.51)}{12.58\,X}$$

$$R^2 = 0.7133$$

where, *Ce* represents capital expenditures. The figures in the parenthesis indicate the Standard Error of the estimates.

It is seen that about 71 per cent of the total variations in capital expenditures are explained by time factor alone. This implies that the equation is quite a good fit to the data. The computed values of co-efficient of correlation (r) and the co-efficient of determination (R^2) are shown below in Table 4.6.

In Table 4.6, it is seen that r = 0.84 indicating that the two variables capital expenditure and time have positive and are very closely correlated with each other. Further, it is seen that the probable error of (r) which is ± 0.04 implies that the probable error is the minimum which is <0.05 i.e., it assures 95 per cent level of confidence of being unbiased.

Table 4.6 Regression Analysis of Variance

Variations	Capital Expenditure
1	2
Explained Variations (%)	71.33
Unexplained Variations (%)	28.67
Total Variations	100.00
R^2	0.7133
R	0.8446
Probable error of r	± 0.04

Note: For finding out the probable error of r, the following formula has been adopted : $.6745 (1-r^2)/\sqrt{N}$.

At this juncture of our analysis, we would like to make certain observations. If, it is assumed that revenue expenditure is carried out to maximize the present output and employment and capital expenditure is carried out to maximize the future output and employment then, we may spell out two broad objectives of development, i.e. short-term objective of economic growth and long-term objective of economic growth. Scrutinizing the growth of public expenditure in Meghalaya, it is observed that both revenue and capital expenditures keep on increasing over the years. But it is the increase in revenue expenditure, which is more predominant thus contributing to the explosive cycles of

public expenditure growth in the State. Further, it may be pointed out that the State has been maximizing the short term economic goals and objectives of present output and employment which is not a healthy growth for a backward State like Meghalaya.

4.3 Pattern of Public Expenditure

In this section, an attempt is made to study the pattern of public expenditure in the last thirty years of planning in order to ascertain the direction of changes in the State Government's public expenditure policies.

It is generally believed that public expenditure is an important instrument for realizing the objectives of state policy. The objectives tend to determine the magnitude and pattern of public expenditure. The magnitude and pattern of public expenditure of the constituent States in a federal set-up like India is determined jointly by the policy of the Central government as well as of the State governments. The operation of public expenditure is the result of a series of value judgement arrived at by a group of officials who carry on the administration in the light of the broad decision of the Legislature. The objectives of public expenditure are determined by the existing requirements of the community and the political ideology of the party or parties in power.

Hence, the objectives differ over periods. Yet a general pattern of the objectives of public expenditure can be formulated. These general objectives take the form of provision of a minimum of certain services for the social, economic and physical security of the people, the promotion of the most effective utilization of human and other resources, the stabilization of the economy, among other things. The implementation of these objectives has led to the stupendous growth in public expenditure in the State of Meghalaya. The expansion of public wants, the rise of a modern state with its emphasis on social welfare, the rapid growth of population, the rising prices and the direction of public expenditure towards economic development have all contributed to the explosive growth of public expenditure in the State of Meghalaya.

We shall now examine the trend in revenue expenditure according to sectors viz., general services, social services and economic services since the inception of the State. Some notable changes have taken place in the policy of the State government's revenue expenditure during the period 1972-73 to 2001-02. From Table 4.7 it is evident that the revenue expenditure on the general services of the State increased from Rs. 5.01 crores in 1972-73 to Rs. 510.48 crores in 2001-02.

Table 4.7 Sector-wise Revenue Expenditure

(Rupees in Crore)

Year	General Services	Social Services	Economic Services
1	2	3	4
1972-73	5.01	6.15	7.02
1973-74	4.96	6.62	7.97
1974-75	7.61	7.00	10.42
1975-76	8.98	7.91	10.47
1976-77	8.61	9.00	12.51
1977-78	12.69	13.03	15.49
1978-79	10.72	12.28	17.40
1979-80	11.52	14.29	20.14
1980-81	16.71	19.49	25.62
1981-82	21.94	24.81	27.53
1982-83	28.10	29.07	27.85
1983-84	27.61	37.89	34.22
1984-85	30.78	31.78	44.76
1985-86	38.07	44.30	52.60
1986-87	47.98	48.86	59.58
1987-88	57.60	56.82	75.19
1988-89	68.38	76.61	79.59
1989-90	78.58	94.86	85.33
1990-91	87.58	112.65	110.59
1991-92	102.86	137.55	127.64
1992-93	123.89	145.65	140.75
1993-94	149.04	177.91	155.91
1994-95	158.25	162.50	136.20

1995-96	188.42	209.01	182.96
1996-97	205.62	324.40	186.94
1997-98	197.82	253.64	195.22
1998-99	280.34	299.95	235.15
1999-00	337.44	356.04	234.32
2000-01 (R.E.)	435.00	448.64	309.22
2001-02 (B.E.)	510.48	498.18	346.17

Source:
Budget in Brief, Government of Meghalaya, 1978-79;
Budget at a Glance, Government of Meghalaya:: 1984-85; 1986-87; 1989-90; 1994-95; 1998-99; 2000-01; 2001-02.

The growth rate of the general services on the revenue account is shown by the least squares estimate of the following equation as:

$$Ge = 4.2354e^{0.1578t},\ R^2 = .9939$$

where, *Ge* = general services expenditures on revenue account expressed in Rupees Crores.

It is clearly seen from the above equation that the annual compound rate of growth of the revenue expenditure on general services during the period of our study is approximately 15.78 per cent. With regard to the social services on the revenue account it is found that the expenditures grew from Rs. 6.15 crores in 1972-73 to Rs. 498.18 crores in 2001-02. The growth rate of the revenue expenditure on social services is shown by the least squares estimate of the following equation as:

$$Se = 4.6786e^{0.1593t},\ R^2 = .9922$$

where, *Se* = social services expenditures on revenue account expressed in Rupees Crores. It is clearly seen from the above equation that the annual compound rate of growth of the expenditure on social services of the revenue account during the period of our study is approximately 15.93 per cent. Further, from the above Table it is seen that revenue expenditures on economic services increased from Rs. 7.02 crores in 1972-73 to Rs. 346.17 crores in 2001-02. The growth rate of the revenue expenditure on economic services is shown by the least squares estimate of the following equation as:

$$ECe = 7.0426e^{0.1341t},\ R^2 = .9877$$

where, *ECe* = economic services expenditures on revenue account expressed in Rupees Crores. It is clearly seen from the above equation that the annual compound rate of growth of the revenue expenditure on economic services during the period of our study is approximately 13.41 per cent. The above analysis indicates that the revenue expenditures on social services account for the maximum rate of growth followed by the revenue expenditures on general services and economic services. This only reveals the fact that the Government of Meghalaya is spending a substantial amount on the social sectors of the State such as education and public health measures like water

supply and sanitation so as to improve the literacy rate of the population, which is one of the lowest in the country and also to improve the productivity of the people of the State. We shall now turn our attention to the pattern of capital expenditure according to sectors viz., general services, social services and economic services. The following Table 4.8 gives the trend of the growth of capital expenditure. Some notable changes have taken place in the policy of the State government's capital expenditure during the period of our study. From Table 4.8 it is evident that the capital outlay on general

Table 4.8 Sector-wise Capital Outlay

(Rupees in Crores)

Year	General Services	Social Services	Eco-nomic Services	Percent of Col. 2 to TCO	Percent of Col. 3 to TCO	Percent of Col. 4 to TCO
1	**2**	**3**	**4**	**5**	**6**	**7**
1972-73	0.35	…	2.75	2.32	…	18.25
1973-74	0.27	…	3.21	3.69	…	43.91
1974-75	0.93	1.44	3.72	12.14	18.80	48.56
1975-76	0.46	1.61	5.12	5.69	19.90	63.29
1976-77	0.30	1.49	4.46	2.56	12.72	38.09
1977-78	0.71	2.02	5.99	4.44	12.63	37.44
1978-79	0.70	3.28	8.20	4.70	22.03	55.07

1979-80	0.70	6.95	8.65	3.84	38.10	47.42
1980-81	0.74	10.08	10.28	1.76	23.96	24.41
1981-82	1.52	9.46	12.42	2.44	15.19	19.94
1982-83	2.24	10.17	13.91	5.64	25.62	35.05
1983-84	3.35	15.72	14.54	7.00	32.85	30.39
1984-85	3.04	11.39	16.71	4.94	18.53	27.18
1985-86	2.92	17.80	17.44	5.13	31.26	30.62
1986-87	4.95	22.03	24.34	6.71	29.85	32.99
1987-88	3.72	22.05	27.78	4.98	29.50	37.16
1988-89	6.44	21.48	33.06	6.89	22.98	35.37
1989-90	4.66	23.40	39.49	5.07	25.46	42.96
1990-91	6.32	23.52	45.11	6.66	24.79	47.54
1991-92	6.17	26.80	50.44	4.97	21.57	40.60
1992-93	5.84	31.66	65.08	3.28	17.76	36.50
1993-94	8.72	29.63	66.91	2.05	6.95	15.70
1994-95	5.10	29.07	68.65	1.50	8.57	20.24
1995-96	8.06	35.48	90.61	3.73	16.43	41.95
1996-97	6.08	46.38	72.39	3.09	23.59	36.82
1997-98	4.77	42.49	78.62	2.88	25.66	47.47
1998-99	5.98	50.13	88.39	2.88	24.16	42.60

1999-00	9.46	53.76	101.95	3.54	20.09	38.10
2000-01 (R.E.)	12.97	120.45	125.65	3.17	29.45	30.72
2001-02 (B.E.)	14.49	118.14	132.80	3.37	27.45	30.86

Note: R.E.= Revised Estimate; B.E.= Budget Estimate; TCO= Total Capital Outlay
Source: *Budget a Glance,* Government of Meghalaya:: 1974-75 to 2001-02.

services increased from Rs. 0.35 crores in 1972-73 to Rs. 14.49 crores in 2001-02. The growth rate of the general services on the capital account is shown by the least squares estimate of the following equation as:

$$Ge = 1.0892^{e0.1061t},\ R^2 = 0.7823$$

where, *Ge* = general services expenditures on capital account expressed in Rupees Crores. It is clearly seen from the above equation that the annual compound rate of growth of capital expenditure on general services during the period of our study is approximately 10.61 per cent. With regard to the capital expenditure on social services it is found that the expenditures grew from Rs. 1.44 crores in 1974-75 to Rs. 118.14 crores in 2001-02. The growth rate of the capital expenditure on social services is shown by the least squares estimate of the following equation as: $Se = 4.6786e^{0.1593t},\ R^2 = 0.9922$

where, *Se* = social services expenditures on capital account expressed in Rupees Crores.

It is clearly seen from the above equation that the annual compound rate of growth of the capital expenditure on social services during the period of our study is approximately 15.93 per cent. From the above Table it is seen that capital expenditures on economic services increased from Rs. 2.75 crores in 1972-73 to Rs. 132.80 crores in 2001-02. The growth rate of the capital expenditure on economic services is shown by the least squares estimate of the following equation as:

$$ECe = 7.0426e^{0.1341t},\ R^2 = 0.9877$$

where, *ECe* = economic services expenditures on capital account expressed in Rupees Crores. It is clearly seen from the above equation that the annual compound rate of growth of the capital expenditure on economic service during the period of our study is approximately 13.41 per cent. The above analysis indicates that the capital outlay on social services account for the maximum rate of growth followed by the capital outlay on general services and economic services. This only indicates the fact that the Government of Meghalaya has been making efforts to extend and consolidate the social infrastructure like providing and improving the primary education sector, as well as extending and improving upon the public

health measures so as to increase the productivity of the people of the State.

4.4 Developmental and Non-developmental Expenditure

We shall now carry out an analysis to study the trends in public expenditure under the following two major heads: (1) Developmental expenditure which is further subdivided into (a) Human capital and (b) Physical capital, and (2) Non-developmental expenditure. Developmental expenditures or developmental outlays are grouped under two categories. The first category refers to 'social services' and is concerned with the provision of basic amenities of life to the community. Other expenditure items which are under this head include education, medical and public health and other social services. Education includes both general and technical education. The sub-group items such as 'medical' and 'public health' also include family planning programmes. The other sub-group known as 'other social services' includes housing, labour welfare and other social welfare schemes. Expenditures provided in the budget for crash schemes of rural employment and those for employment promotion programmes are also included in this sub-group. This sub-group also includes such expenditures as the lump-sum provision made in the budget for the special welfare schemes, primary education and rural water supply.

The expenditure on nutrition programme for children is also included here. However, the relief expenditures, say for displaced persons are included here, but expenditures provided for natural calamities appear under the general services.

The second category, which embraces the 'provision for economic services' includes all such expenditures as promote directly or indirectly productive activity within the economy. Outlay on economic services can play an important part in the promotion of development and should have a high claim to the resources available for government consumption purposes.[5] Further sub-division into agriculture, industry, transport and communication and "other economic services" is done according to the type of the economic activity, which affects agriculture, animal husbandry, fisheries, forestry, co-operation and community development. Industry broadly covers both large and small- scale industries, power development, exploitation of mineral resources and trade and export promotion. Transport and communication include roads. "Other economic services" is a residual category, which includes the State's share in small savings. Non-developmental expenditures on revenue account consist of 'administrative services' including district administration,

police, public works etc., charges for collection of taxes and duties, debt servicing charges and pensions, etc.

Table 4.9 reveals the trend of developmental and non-developmental expenditure on revenue account in the State of Meghalaya as plan-wise averages of the thirty-year period covered by our study. The relevant figures for developmental expenditures are extracted from the various budgets papers of the State Government.

Table 4.9 Developmental and Non-developmental Revenue Expenditures of the State of Meghalaya

(Rupees in Crores)

Year	Develop-mental Expen-diture	Non-dev-elop-mental Expen-diture	Total Rev-enue Expen-diture	Col. 2 as a % of Total	Col. 3 as a % of Total
1	**2**	**3**	**4**	**5**	**6**
1972-73	13.17	5.01	18.18	72.44	27.56
1973-74	14.59	4.96	19.55	74.63	25.37
IV Plan Average (1972-73 to 1973-74)	**13.88**	**4.99**	**18.87**	**73.56**	**26.44**
1974-75	17.42	7.61	25.03	69.60	30.40
1975-76	18.38	8.98	27.36	67.18	32.82
1976-77	21.50	8.61	30.11	71.40	28.60
1977-78	28.53	12.69	41.22	69.21	30.79
V Plan Average (1974-75 to 1977-78)	**21.46**	**9.47**	**30.93**	**69.38**	**30.62**
1978-79	29.68	10.73	40.41	73.45	26.55
1979-80	34.43	11.52	45.95	74.93	25.07
1980-81	43.11	16.71	59.82	72.07	27.93
1981-82	52.34	21.94	74.28	70.46	29.54

1982-83	56.92	28.11	85.03	66.94	33.06
1983-84	72.11	27.61	99.72	72.31	27.69
1984-85	86.04	30.78	116.82	73.65	26.35
VI Plan Average (1980-81 to 1984-85)	**62.10**	**25.03**	**87.13**	**71.27**	**28.73**
1985-86	96.90	38.08	134.98	71.79	28.21
1986-87	108.44	47.98	156.42	69.53	30.47
1987-88	132.01	57.60	189.61	69.62	30.38
1988-89	156.20	68.38	224.58	69.55	30.45
1989-90	180.19	78.58	258.77	69.63	30.37
VII Plan Average (1985-86 to 1989-90)	**134.75**	**58.12**	**192.87**	**69.87**	**30.13**
1990-91	223.24	87.58	310.82	71.82	28.18
1991-92	265.19	102.86	368.05	72.05	27.95
1992-93	287.95	122.34	410.29	70.18	29.82
1993-94	335.93	146.92	482.85	69.57	30.43
1994-95	300.46	156.49	456.95	65.75	34.25
1995-96	394.02	186.38	580.40	67.89	32.11
1996-97	413.35	203.60	616.95	67.00	33.00
VIII Plan Average (1992-93 to 1996-97)	**346.34**	**163.15**	**509.49**	**68.08**	**31.92**
1997-98	448.86	236.25	685.11	65.52	34.48
1998-99	535.10	280.34	815.44	65.62	34.38
1999-00	590.35	337.44	927.79	63.63	36.37
2000-01 (R.E.)	757.87	435.00	1192.86	63.53	36.47
2001-02 (B.E.)	844.35	510.48	1354.83	62.32	37.68
IX Plan Average (1997-98 to 2001-02)	**635.31**	**359.90**	995.21	63.84	**36.16**

Note: R.E. = Revised Estimate; B.E. = Budget Estimate

Source : *Budget in Brief*, Government of Meghalaya, 1974-75; 1977-78; 1978-79

Budget at a Glance, Government of Meghalaya:: 1984-85 to 2001-2002

Table 4.9 clearly portrays the trend of the developmental and non-developmental expenditures in Meghalaya from 1972-73 to 2001-02. Throughout the consecutive five-year plans, there has been an increase by leaps and bounds, in both the developmental and non-developmental expenditures in absolute terms in Meghalaya. In terms of plan average of the total expenditure, the Fifth Plan average of the developmental expenditure was 69.35 per cent which was less as compared to the last year of the Fourth Five year Plan which recorded 73.54 per cent. The annual plan average for 1978-79 and 1979-80 was the highest i.e., 74.19 per cent during the period of our study. However, the Sixth Five Year Plan average with 71.09 per cent was a little higher than the Fifth Five Year Plan average. Except for the annual plan average for 1990-91 and 1991-92, the plan averages for the Seventh and Eighth Five Year Plans declined to 70.07 per cent and 68.08 per cent respectively as compared to the earlier five year plan averages. Even in the Ninth Five Year Plan, the plan average of developmental expenditure shows a further declining trend of 63.84 per cent of the total expenditure. On the other hand, the plan average of non-plan expenditures increased during the planning period of our thirty years of study from 26.44 per cent in the Fourth Five Year Plan to 36.16 per cent in the current Ninth Five Year Plan.

It may be pointed out here that, as the developmental expenditures in absolute figures have been pushed up to remarkably high levels during the plan period, so also the non-developmental expenditures on revenue account have witnessed a steady increase. With additional increase in the volume of developmental expenditures, the non-developmental expenditures also tended to increase, mainly on account of increasing burden of administrative machinery of the State to shoulder heavier load of economic activities. However, it is to be noted that with every increase in developmental expenditure, the additional non-developmental expenditures should comparatively decline so as not to pull down the growth efficiency.

If, developmental expenditures on social services are broadly taken to indicate public expenditure on human capital whereas, revenue expenditures on economic and developmental services are broadly taken as an indicator of expenditure on physical capital, then per capita expenditure on human capital, during our period of study, increased from Rs. 59.07 in 1972-73 to Rs. 1728.35 in 1999-2000. Similarly, per capita expenditure on physical capital increased from Rs. 67.49 in 1972-73 to Rs. 1137.45 in 1999-2000. The increase in per capita terms in both human and physical capital has been consistent

throughout the period of our analysis. This can be seen from the data given in Table 4.10.

Table 4.10 Developmental Expenditure and Per Capita Expenditure on Human and Physical Capital

Year	Developmental Expenditures (Rs. Crores)			Per Capita Expenditure (In Rupees)	
	Human Capital	Physical Capital	Total	Human Capital	Physical Capital
1	2	3	4	5	6
1972-73	6.15	7.02	13.17	59.07	67.49
1973-74	6.62	7.97	14.59	61.94	74.50
1974-75	7.00	10.42	17.42	63.62	94.79
1975-76	7.91	10.47	18.38	69.62	92.59
1976-77	9.00	12.51	21.51	77.39	107.58
1977-78	13.03	15.50	28.53	109.03	129.62
1978-79	12.28	17.40	29.68	99.86	141.43
1979-80	14.29	20.14	34.43	112.48	158.60
1980-81	19.49	23.52	43.01	149.92	180.95
1981-82	24.81	27.53	52.34	185.71	206.09
1982-83	29.14	27.78	56.92	208.14	198.45
1983-84	37.89	34.22	72.11	264.96	239.27
1984-85	41.28	44.76	86.04	282.71	306.60
1985-86	44.30	52.60	96.90	297.29	353.05
1986-87	48.86	59.58	108.44	321.44	391.98
1987-88	56.82	75.19	132.01	366.60	485.11
1988-89	76.61	79.59	156.20	484.88	503.75
1989-90	94.86	85.33	180.19	589.21	530.00
1990-91	112.65	110.59	223.24	686.87	674.35

1991-92	137.55	127.64	265.19	775.00	719.18
1992-93	149.15	138.80	287.95	833.23	775.42
1993-94	181.46	154.47	335.93	997.00	848.74
1994-95	165.01	135.45	300.46	887.15	728.22
1995-96	212.28	181.74	394.02	1117.25	956.21
1996-97	227.26	186.09	413.35	1171.44	959.24
1997-98	253.64	195.22	448.86	1281.02	985.96
1998-99	299.95	235.15	535.10	1484.90	1164.11
1999-00	356.04	234.32	590.36	1728.35	1137.45
2000-01 (R.E.)	448.64	309.22	757.86	1903.44	1311.94
2001-02 (B.E.)	498.18	346.17	844.35	2075.74	1442.37

Note: R.E. = Revised Estimate; B.E.= Budget Estimate
Source: *Budget in Brief*, Government of Meghalaya: 1974-75; 1977-78; 1978-79
Budget at a Glance, Government of Meghalaya: 1984-85 to 2001-2002

Table 4.10 shores up the view that the expenditure on human capital increased consistently in a significant way throughout the period of our study. The last year of the Fifth Five Year Plan showed a remarkable increase in per capita human capital expenditure which keeps on mounting till date. All through the period, significant stress was laid more on human capital than on physical capital. It may be pointed out that it is difficult to accept the incompatible fact that in spite of this greater expenditure on human capital, the number of people living below the poverty line is still very high. Again, the lesser

importance being given to physical capital has in no less a way contributed to the poverty of the people of the State.

4.5 Range of Fluctuations

An analysis of the range of fluctuations in expenditures both on revenue and capital accounts of the State Government budgets has been carried out. The ratio of the range or the co-efficient of the scatter is given by:

$$R = \frac{L - S}{L + S}$$

where L is the largest value and S the smallest value in a series. The ratio of the range of annual fluctuations are shown below in Table 4.11.

Table 4.11 Ratio of the Range and Percentage Relative Fluctuation

Sl. No.	Fluctuations in	Ratio of the Range	Percentage Relative Fluctuations	Rank
1	2	3	4	5
1.	Revenue Expenditure	0.9735	97.35	1
2.	Capital Expenditure	0.9666	96.66	2

From the analysis it is seen that fluctuations on revenue expenditure are greater than those on capital expenditure. The ratio of

range in annual fluctuations is recorded by revenue expenditure to be higher than the capital expenditure.

4.6 Income Elasticity of Public Expenditure

An analysis of the income elasticity of public expenditure (both revenue expenditure and capital expenditure) is undertaken because it should respond to the changes in the net state domestic product.

Table 4.12 Total Public Expenditure (Revenue and Capital Account) **Elasticity with respect to Net State Domestic Product of Meghalaya**

Year	**Total Expenditure (Rs. Crores)**	**Net State Domestic Product (NSDP) (Rs. Crores)**	**Total Expenditure Elasticity to NSDP***	**Total Expenditure Elasticity to NSDP****
1	**2**	**3**	**4**	**5**
1972-73	33.25	105.09	0.000	0.000
1973-74	26.86	108.36	–6.189	–6.189
1974-75	32.69	111.97	6.520	0.262
1975-76	35.44	115.51	2.661	0.667
1976-77	40.95	120.08	3.927	1.622
1977-78	56.18	134.75	3.043	2.447
1978-79	55.29	149.77	–0.142	1.560
1979-80	64.19	165.46	1.536	1.622
1980-81	101.94	179.62	6.870	2.914
1981-82	136.57	205.84	2.327	3.240
1982-83	124.71	227.10	–0.840	2.370
1983-84	147.01	263.14	1.127	2.275

1984-85	178.30	302.27	1.431	2.325
1985-86	191.93	341.53	0.588	2.121
1986-87	230.22	386.25	1.524	2.215
1987-88	264.36	466.86	0.711	2.019
1988-89	318.05	505.96	2.424	2.245
1989-90	350.69	659.78	0.338	1.809
1990-91	405.65	767.35	0.961	1.777
1991-92	492.29	884.22	1.403	1.862
1992-93	588.60	978.54	0.173	2.010
1993-94	909.08	1133.38	3.442	2.692
1994-95	777.97	1258.04	–1.311	2.042
1995-96	796.42	1380.31	0.244	1.891
1996-97	813.58	1485.28	0.283	1.787
1997-98	850.72	1690.42	0.331	1.630
1998-99	1022.93	2079.25	0.880	1.585
1999-00	1195.40	2467.13	0.904	1.555
2000-01 (R.E.)	1601.89	2806.20	2.475	1.835
2001-02 (B.E.)	1785.15	3267.36	0.696	1.751

Note : * Calculations are based on Time-point Elasticity

** Calculations are based on Constant-base Elasticity

Source : *Budget in Brief*, Government of Meghalaya, 1974-75; 1977-78; 1978-79; *Budget at a Glance,* Government of Meghalaya:: 1984-85 to 2001-2002

Statistical Hand Book, Meghalaya,1976

Estimates of Net State Domestic Product of Meghalaya, 1980-81 to 1995-96, (p.4), Government of Meghalaya, Directorate of Economics and Statistics, Meghalaya, Shillong, *State Economy* (p.2), Government of Meghalaya, Directorate of Economics and Statistics

So, an attempt is made to compute the elasticities of revenue and capital expenditures with respect to net state domestic product for the entire period of our study. The result of our analysis is presented in Table 4.12.

Table 4.12 gives the income elasticity of total public expenditure. As one might expect, there is considerable variation in the value of the elasticity for public expenditure for the thirty-year period of our study. Two things may be noted from the foregoing analysis.

Firstly, when the time-point elasticity of total public expenditure with respect to net state domestic product is calculated, it is found that the values of the income elasticity of public expenditure are negative for four years viz. 1973-74, 1978-79, 1982-83 and 1994-95 brought about by the decline in the capital outlay during these years. The income elasticity for ten years was less than unity indicating that the growth in total public expenditure is less responsive to the increase in net state domestic product during this period. The rest of the years show income elasticity of public expenditure to be greater than unity signifying that total public expenditure on the whole is responsive to the increase in net state domestic product. This confirms the fact that the growth of public expenditure in the State moves side by side with the growth in net state domestic product. The results that we have

derived from the analysis of the time period elasticity of our study indicate that government policy accounted for a substantial part of the variations in the value of the coefficient for the total public expenditure.

Secondly, the result of the constant-base elasticity of Table 4.12 indicates that public expenditures are highly responsive to changes in net state domestic product. This is evident from the values of the public expenditure elasticity, where it stayed more than unity for almost the entire period of our study except for the initial years of our study viz., 1972-73 to 1975-76 during which the values of elasticity are observed to be negative or less than unity owing to the decline in capital outlay during these years. However, on an average, total expenditures have been growing faster than net state domestic product as evident from the Table. The result only proves our hypothesis that the level of public expenditure responds freely to the rise in the level of net state domestic product.

The constant-base elasticity is calculated by using the traditional method by taking the value of public expenditure of the year 1972-73 as the base. It is a matter of fact that index numbers always increase even if, public expenditure is not increasing in a remarkable way. Consequently, it is expected to have the elasticity of the succeeding

years to rise higher and higher to give the idea of the trend. One advantage of the constant-base elasticity in our opinion is that, in spite of the fact of using the indices, it should have been all the time in the rising pattern rather than declining and rising. This phenomenon may partly be attributed to the spill over effect.

It is a known fact that whenever we have a series of data, the trend is looked after by the empirical regression equation itself. In this case, the constant term of the regression equation may be mentioned which is nothing but a contributor to the consistency of ups and downs in public expenditure. Further it is believed that the consistency in ups and downs might be due to the existence of a strong and positive correlation between public expenditure and the net state domestic product. To corroborate this, a simple linear regression equation has been carried out.

The regression of total public expenditures (*Pe*) on the net state domestic product (*Y*) yields the following result:

$$Pe = 6.2510 + 0.5439\,Y$$

$$R^2 = 0.9771$$

It is found that public expenditures, both revenue and capital, explain nearly about 97.71 per cent of the variations of the net state domestic product of Meghalaya. The computed value of coefficient of

correlation (r) is worked out to be 0.9885, which clearly shows a very significant correlation between public expenditures and net state domestic product. Therefore, our arguments in the foregoing paragraph are largely substantiated by our empirical data.

We have however the feeling that due to the inherent nature of the time-series data, it is possible that the disturbance vector might be auto-correlated. To test this, an estimation of the Durbin-Watson statistic is carried out. The value of the D-W is 1.07. This shows that the suspicion has no ground for support. As a result, the analysis in estimating the above equation is not vitiated by auto-correlated disturbances.

The aggregative picture about the behaviour of the public expenditure may not help us in deriving the specific conclusions as regards to the patterns of its development. So, we thought it imperative to carry out a detailed analysis of the revenue expenditure and capital expenditure separately to examine the direction of changes that has occurred during the last thirty years.

4.7 Revenue Expenditure and Net State Domestic Product

The movements in revenue expenditures relative to movements in net state domestic product are shown in Table 4.13 below. The Table shows only two years, viz., 1972-73 and 1973-74 of revenue

Table 4.13 Revenue Expenditure as a percentage of Net State Domestic Product of Meghalaya

Year	Revenue Expenditure (Rs. Crores)	Net State Domestic Product (NSDP) (Rs. Crores)	Revenue Expenditure as a percentage of NSDP
1	2	3	4
1972-73	18.18	105.09	17.30
1973-74	19.55	108.36	18.04
1974-75	25.03	111.97	22.35
1975-76	27.36	115.51	23.69
1976-77	30.11	120.08	25.07
1977-78	41.22	134.75	30.59
1978-79	40.40	149.77	26.97
1979-80	45.95	165.46	27.77
1980-81	59.82	179.62	33.30
1981-82	74.28	205.84	36.09
1982-83	85.03	227.10	37.44
1983-84	99.72	263.14	37.90
1984-85	116.82	302.27	38.65
1985-86	134.98	341.53	39.52
1986-87	156.43	386.25	40.50
1987-88	189.61	466.86	40.61

1988-89	224.58	505.96	44.39
1989-90	258.78	659.78	39.22
1990-91	310.77	767.35	40.50
1991-92	368.05	884.22	41.62
1992-93	410.29	978.54	41.93
1993-94	482.85	1133.38	42.60
1994-95	456.95	1258.04	36.32
1995-96	580.40	1380.31	42.05
1996-97	616.95	1485.28	41.54
1997-98	685.11	1690.42	40.53
1998-99	815.44	2079.25	39.22
1999-00	927.79	2467.13	37.61
2000-01 (R.E.)	1192.86	2806.20	42.51
2001-02 (B.E.)	1354.83	3267.36	41.47

Source :

Budget in Brief, Government of Meghalaya, 1974-75; 1977-78; 1978-79
Budget at a Glance, Government of Meghalaya: 1984-85 to 2001-2002
Statistical Hand Book, Meghalaya,1976
Estimates of State Domestic Product of Meghalaya, 1980-81 to 1995-96, Government of Meghalaya, Directorate of Economics and Statistics, Meghalaya, Shillong
State Economy, Government of Meghalaya, Directorate of Economics and Statistics
Figures in Columns 2 and 3 are the same as in Table 4.3

expenditures constituting less than 20 per cent of net state domestic product, five years viz., 1974-75 to 1976-77 and 1978-79 to 1979-80 constituting more than 20 per cent, and twelve years showing revenue expenditure constituting more than 30 per cent and eleven years indicating revenue expenditure constituting more than 40 per cent of net state domestic product. As a result, the State has been experiencing an increasing trend of revenue expenditures for the whole period of our analysis. We can therefore infer that there has been a tremendous increase in revenue expenditure with the growth of net state domestic product causing an explosive growth of public expenditure in the State.

4.8 Capital Expenditure and Net State Domestic Product

The movements in capital expenditures relative to movements in net state domestic product are shown in Table 4.14 below. The Table shows only the year 1993-94 witnessing capital expenditure having the highest percentage during the period of our study recording 37.61 per cent of the net state domestic product. For the three years 1980-81, 1984-85 and 1994-95, capital expenditure constitutes more than 20 per cent of the net state domestic product. However, for fifteen years capital expenditure shows that it accounts for less than 20 per cent of

the net state domestic product. Seven years indicate capital expenditure to be less than 10 per cent of the net state domestic product.

Table 4.14 Capital Expenditure as a percentage of Net State Domestic Product of Meghalaya

Year	Capital Expenditure (Rs. Crores)	Net State Domestic Product (NSDP) (Rs. Crores)	Column 2 as a percentage of Col. 3
1	2	3	4
1972-73	15.07	105.09	14.34
1973-74	7.31	108.36	6.75
1974-75	7.66	111.97	6.84
1975-76	8.09	115.51	7.00
1976-77	10.84	120.08	9.03
1977-78	14.96	134.75	11.10
1978-79	14.89	149.77	9.94
1979-80	18.24	165.46	11.02
1980-81	42.12	179.62	23.45
1981-82	62.29	205.84	30.26
1982-83	39.69	227.10	17.48
1983-84	47.30	263.14	17.98
1984-85	61.48	302.27	20.34
1985-86	56.95	341.53	16.67
1986-87	73.79	386.25	19.10
1987-88	74.75	466.86	16.01
1988-89	93.47	505.96	18.47
1989-90	91.92	659.78	13.93
1990-91	94.87	767.35	12.36

1991-92	124.24	884.22	14.05
1992-93	178.31	978.54	18.22
1993-94	426.23	1133.38	37.61
1994-95	339.24	1258.04	26.97
1995-96	216.02	1380.31	15.65
1996-97	196.62	1485.28	13.24
1997-98	165.61	1690.42	9.80
1998-99	207.49	2079.25	9.98
1999-00	267.61	2467.13	10.85
2000-01 (R.E.)	409.03 (R.E.)	2806.20	14.58
2001-02 (B.E.)	430.32 (B.E.)	3267.36	13.17

Source: Same as given in Table 4.13

On the average, for the thirty-year period of our study, capital expenditure accounts for 15.54 per cent of the net state domestic product, which is much less than the revenue expenditure, which accounts for 35.50 per cent of the net state domestic product during the same period of our study. However, to get a better picture of the behaviour of revenue and capital expenditures with respect to net state domestic product, we shall make an attempt to analyze the elasticity of revenue and capital expenditure with respect to net state domestic product.

4.8 Responsiveness of Revenue Expenditure and Capital Expenditure to Net State Domestic Product

An attempt is being made to examine the behaviour of revenue and capital expenditures in relation to changes in net state domestic product at current prices with a view to finding out the responsiveness (or income elasticity) of public expenditure. The calculation of the elasticities of expenditures on revenue account and capital account with respect to net state domestic product for the period 1972-73 to 2001-02 is made by using the following formula:

$$\Delta X/X_1 \div \Delta Y/Y_1 = (\Delta X/\Delta Y)/(X_1/Y_1)$$

where, X_1 denotes revenue expenditure/capital expenditure and Y_1 denotes net state domestic product at current prices in the first period.

That is, the income elasticity of the revenue expenditure/capital expenditure can be found out by using the following formula:

$$e_i = \frac{Percentage\ change\ in\ revenue/capital\ \text{exp}enditures}{Percentage\ change\ in\ net\ state\ domestic\ product}$$

This measure has been calculated by relating changes in actual revenue/capital expenditures to changes in net state domestic product. This differs from the co-efficient of built-in elasticity, which is calculated with respect only to the automatic increase in

revenue/capital expenditures in response to economic growth or increase in net state domestic product. Here, our interest is to examine whether the total relative increase in revenue and capital expenditures is due to economic growth or due to changes in the structure of revenue and capital expenditures.

Below, we shall have Table 4.15, which gives the year-wise elasticity of expenditures on revenue and capital account with respect to net state domestic product.

Table 4.15 reveals that there are negative elasticities on revenue expenditure account for the year 1978-79 and 1994-95. The negative values of income elasticities for the two years, 1978-79 and 1994-95 is due to the decline in the level of revenue expenditure though net state domestic product shows a rising trend as compared to the corresponding years 1977-78 and 1993-94. Further it may be noted that the income elasticities of revenue expenditure exhibit a large positive co-efficient for nine years viz., 1973-74 to 1977-78, 1980-81, 1988-89, 1995-96 and 2000-01 out of the total thirty years of our analysis thereby indicating a greater degree of responsiveness of the State's revenue expenditure to net state domestic product. The greater degree of responsiveness of the State's revenue expenditure to net state domestic product during these years could be explained by the

impressive increase in the expenditure on services for organs of the State, education, housing, agriculture and allied services and other social services, though there was a mild increase in net state domestic product. Similarly, these years witnessed a massive increase in expenditure on agriculture and allied activities, rural development, special areas programme, irrigation and flood control, industry and mineral, transport and general services in order to achieve the plan objectives of different Five Year Plans although there was a slight increase in net state domestic product.

Table 4.15 Revenue and Capital Expenditure Elasticity with respect to Net State Domestic Product of Meghalaya
(Time point Elasticity)

Year	Revenue Expen-diture (Rs. Cr.)	Capital Expen-diture (Rs. Cr)	Net State Domestic Product (NSDP) (Rs. Cr.)	Revenue Expen-diture Elasticity to NSDP	Capital Expen-diture Elasticity to NSDP
1	2	3	4	5	6
1972-73	18.18	15.07	105.09	0.0000	0.0000
1973-74	19.55	7.31	108.36	2.4244	–16.5572
1974-75	25.03	7.66	111.97	8.4176	1.4378
1975-76	27.36	8.09	115.51	2.9458	1.7764

1976-77	30.11	10.84	120.08	2.5382	8.5840
1977-78	41.22	14.96	134.75	3.0194	3.1103
1978-79	40.40	14.89	149.77	–0.1784	–0.0420
1979-80	45.95	18.24	165.46	1.3108	2.1468
1980-81	59.82	42.12	179.62	3.5263	15.2945
1981-82	74.28	62.29	205.84	1.6557	3.2799
1982-83	85.03	39.69	227.10	1.4008	–3.5123
1983-84	99.72	47.30	263.14	1.0889	1.2082
1984-85	116.82	61.48	302.27	1.1532	2.0161
1985-86	134.98	56.95	341.53	1.1967	–0.5672
1986-87	156.43	73.79	386.25	1.2140	2.2590
1987-88	189.61	74.75	466.86	1.0163	0.0623
1988-89	224.58	93.47	505.96	2.2008	0.0838
1989-90	258.78	91.92	659.78	0.5009	–0.0545
1990-91	310.77	94.87	767.35	1.2325	0.1969
1991-92	368.05	124.24	884.22	1.2102	0.0906
1992-93	410.29	178.31	978.54	1.0756	4.0788
1993-94	482.85	426.23	1133.38	1.1179	8.7888
1994-95	456.95	339.24	1258.04	–0.4876	–0.1295
1995-96	580.40	216.02	1380.31	2.7794	–0.1585

1996-97	616.95	196.62	1485.28	0.8289	–0.0404
1997-98	685.11	165.61	1690.42	0.8001	–0.1561
1998-99	815.44	207.49	2079.25	0.8270	1.0995
1999-00	927.79	267.61	2467.13	0.7389	1.5536
2000-01	1192.86 (R.E.)	409.03 (R.E.)	2806.20	2.0793	3.8461
2001-02	1354.83 (B.E.)	430.32 (B.E.)	3267.36	0.8265	0.3168

Note: R.E. = Revised Estimate B.E. = Budget Estimate

Source : *Budget at a Glance,* Government of Meghalaya: 1984-85 to 2001-2002

Source : Statistical Hand Book, Meghalaya,1976

Budget in Brief, Government of Meghalaya, 1978-79

Estimates of State Domestic Product of Meghalaya, 1980-81 to 1995-96, (p.4), Government of Meghalaya, Directorate of Economics and Statistics, Meghalaya, Shillong,

State Economy (p.2), Government of Meghalaya, Directorate of Economics and Statistics

Note: Figures in Column 1 of the above Table 4.15 do not tally with the figures given in Table 4.1 as grants and contributions from the Central Government are excluded.

The negative elasticity on the revenue expenditure account for the year 1978-79 is due to the shrinking in revenue expenditure brought about by a big cut in the expenditure on general services as compared to the previous year. Similarly the year 1994-95 witnesses a negative elasticity on the revenue expenditure account as a result of the trimming in the revenue expenditure due to the reduction in

expenditure on agriculture and allied activities, industry and mineral, transport, general economic services as well as social and community services.

Further, our analysis of capital expenditure elasticity with respect to net state domestic product indicated that initially it was negative (−16.5572) due to the steep decline in capital outlay on social and community services. On the other hand, the negative capital expenditure elasticity (− 3.5123) in the year 1982-83 was due to the decline in public debt. The negative elasticity of capital expenditure in the year 1994-95 was due to the sharp decline in the capital outlay on general services. The negative elasticity of capital expenditure for the years 1978-79, 1985-86, 1989-90, 1995-96, 1996-97, 1997-98 could be accounted for by the fall in the capital outlay on social and community services. On the other hand the very high positive elasticity coefficient (15.2945) of capital expenditure in the year 1980-81 was due to the quantum jump in the capital outlay on social and community services. Anther high positive elasticity coefficient (8.5840) in the year 1976-77 and (8.7888) in the year 1993-94 could be explained by the sharp increase in the capital outlay on the general services. For the rest of the period of our study, the income elasticity of capital expenditure became positive due to greater outlay being incurred by the

government on social and community services as well as the increased capital outlay on the economic services.

However, it may be noted that from the analysis of time-point elasticity, it is not possible to draw any precise conclusion about the trend of the values of elasticity of revenue and capital expenditures due to wide annual fluctuations in the values of the parameters. In order to ascertain the degrees of fluctuation in the values of the parameters as shown by the time-point elasticity, we shall carry out an analysis of constant base elasticity of revenue expenditure and capital expenditure with respect to net state domestic product. The results of the analysis are presented in Table 4.15 below.

Table 4.16 Revenue and Capital Expenditure Elasticity with respect to Net Domestic Product of Meghalaya

(Constant Base Elasticity)

Year	Revenue Expen-diture (Rs. Cr.)	Capital Expen-diture (Rs. Cr.)	Net State Domestic Product (NSDP)	Revenue Expen-diture Elasticity to NSDP	Capital Expen-diture Elasticity to NSDP
1	2	3	4	5	6
1972-73	18.18	15.07	105.09	0.0000	0.0000
1973-74	19.55	7.31	108.36	2.4244	–16.5572
1974-75	25.03	7.66	111.97	5.7527	–7.5070
1975-76	27.36	8.09	115.51	5.0907	–4.6691

1976-77	30.11	10.84	120.08	4.6017	–1.9684
1977-78	41.22	14.96	134.75	4.4909	–0.0259
1978-79	40.40	14.89	149.77	2.8745	–0.4233
1979-80	45.95	18.24	165.46	2.6588	0.3661
1980-81	59.82	42.12	179.62	3.2296	2.5310
1981-82	74.28	62.29	205.84	3.2187	3.2684
1982-83	85.03	39.69	227.10	3.1672	1.4072
1983-84	99.72	47.30	263.14	2.9823	1.4221
1984-85	116.82	61.48	302.27	2.8917	1.6413
1985-86	134.98	56.95	341.53	2.8555	1.2352
1986-87	156.43	73.79	386.25	2.8424	1.4564
1987-88	189.61	74.75	466.86	2.7392	1.1504
1988-89	224.58	93.47	505.96	2.9763	1.3638
1989-90	258.78	91.92	659.78	2.5074	0.9662
1990-91	310.77	94.87	767.35	2.5539	0.8403
1991-92	368.05	124.24	884.22	2.5958	0.9771
1992-93	410.29	178.31	978.54	2.5950	1.3033
1993-94	482.85	426.23	1133.38	2.6121	2.7883
1994-95	456.95	339.24	1258.04	2.1998	1.9607
1995-96	580.40	216.02	1380.31	2.5485	1.0989

1996-97	616.95	196.62	1485.28	2.5078	0.9173
1997-98	685.11	165.61	1690.42	2.4318	0.6622
1998-99	815.44	207.49	2079.25	2.3345	0.6797
1999-00	927.79	267.61	2467.13	2.2261	0.7456
2000-01	1192.86 (R.E.)	409.03 (R.E.)	2806.20	2.5139	1.0171
2001-02	1354.83 (B.E.)	430.32 (B.E.)	3267.36	2.4434	0.9157

Note: - R.E. = Revised Estimate; B.E. = Budget Estimate

- Calculations are based on Table 4.14

From Table 4.16, it is interesting to note that for the whole period of our study the coefficients of constant base elasticity of revenue expenditure are more than unity, thereby exhibiting the relatively elastic nature of revenue expenditures to the State income. This trend conforms to the general theoretical argument that with the gradual commercialisation and modernisation of the State economy, it has become possible for the State Government to increase its level of public expenditure. Further, it may be pointed out that the price revolution has also significantly altered the relative importance of public expenditure in the fiscal structure of the State thereby explaining the above trend to a reasonable extent.

In the case of capital expenditure, it may be noted that the constant base elasticity exhibits negative coefficients of elasticity for the years 1973-74, 1974-75, 1975-76, 1976-77, 1977-78 and 1978-79

due to the decline in the capital outlay on public works, community and social services. For the rest of the period under our study, the coefficients of income elasticity of capital expenditure are positive. However, when compared to revenue expenditure, it may be pointed out that the constant base elasticity indicates that capital expenditure is less responsive to the changes in the net state domestic product. This only shows the trend of public expenditure taking place in the State which clearly indicates that revenue expenditure is being given more importance than capital expenditure thereby depriving the State of achieving long term goals of higher economic growth, higher income and generation of more employment.

A mere observation of elasticity values may not help us in ascertaining the intensity of fluctuations in the public expenditure growth. That is why, we thought it imperative to carry out a graphical representation of the values of elasticity in order to have a better understanding about the range of fluctuations and intensity of fluctuations in public expenditure growth.

Figure 4.1 exhibits the trend of elasticities of public expenditure (revenue and capital). It may be observed from the time point elasticity that the trend is highly fluctuating during the initial period of our study i.e., from the year 1972-73 to the year 1983-84. The years 1974-75 and

1980-81 witnessed an exceptional jump. The big jump in 1974-75 could be explained by the sudden increase in the revenue expenditure on services for organs of the State, agriculture and allied services and the capital outlay on transport and communications. The spurt of public expenditure in the year 1980-81could be explained as a fall out of the social tension that took place in the previous year and as a result the State had to spend a huge amount on the maintenance of law and order. The period between 1983-84 and 1992-93 shows that the trend is stable. The year 1993-94 saw the trend rising very high suddenly. This could be explained by the increase in expenditure on community and social services, administrative services and the big amount on the repayment of loans. From 1995-96 to 2001-02 the trend became quite stable.

Regarding the constant base elasticity, we have taken the base year's 1972-73 value of total public expenditure as the base year to calculate the constant base elasticity. In the year 1973-74, the constant base elasticity witnessed a negative trend due to the fall in public expenditure brought about by a steep decline in capital outlay. Thereafter, the trend started rising upward till the year 1977-78. The following two years i.e., 1978-79 and 1979-80 saw a slight declining trend. It was from the year 1995-96 till 2001-2002 that the constant

base elasticity showed a slow and gradual decline in total expenditure. This could be due to the stringent measures that the Government has been adhering to in the face of severe fiscal crisis.

Figure 4.2 exhibits the trend of elasticities of revenue expenditure. By observing the figure it may be inferred that revenue expenditure of the State is highly responsive to the changes in State income. The time point elasticity indicates a highly fluctuating trend particularly in the initial period of our study i.e., from the year 1972-73 to the year 1980-81. For example, the big jump in revenue expenditure in the year 1974-75 was due to the steep increase in expenditure on general services such as the services for organs of the State. Again the year 1980-81 witnessed an abrupt increase in revenue expenditure on general services such as the administrative services and the community and social services. Thereafter, the trend became stable up to the year 1987-88. The years after 1988-89 saw a slight declining trend and then became stable up to the year 1993-94. Except for the years 1995-96 and 2000-01 which saw a big jump, the period between 1994-95 and 2001-02 witnessed a stable trend. The quantum jump in revenue expenditure in 1995-96 was due to the increase in expenditure on rural development such as the implementation of rural employment schemes. The steep increase in revenue expenditure in the years 1980-

81 and 1995-96 may be attributed to the fact that these were the years of social tension and upheaval. As a result, a part of the revenue expenditure might have been diverted to the forces responsible for the maintenance of law and order. Again the year 2000-01 witnessed the big increase in revenue expenditure on agriculture and allied activities, and the general services such as the administrative services and debt services. On the other hand, the constant base elasticity exhibits a highly fluctuating trend for the initial seven years i.e., from 1972-73 up to the year 1978-79. Thereafter, for the rest of the period, the constant base elasticity shows that the trend is highly stable.

By observing figure 4.3, it may be pointed out that capital expenditure of the State is less responsive to the changes in State income. The time point elasticity shows that trend of capital expenditure is highly fluctuating during the period 1972-73 and 1981-82. This is accounted for by the fluctuations in the capital outlay on public works, agriculture and allied services, industry and minerals. The steep decline in the year 1973-74 was due to the complete absence of capital outlay on community and social services. On the other hand, the steep increase in capital outlay in 1980-81 could be accounted for by a huge expenditure on social and community services such as education, public health, sanitation and water supply. Thereafter,

except for the year 1993-94 which saw a big jump, the period from 1982-83 to 2001-02 witnessed a stable trend. The hike in capital outlay in the year 1993-94 could be explained by the sharp increase in expenditure on public works, transport and communications. On the other hand, the constant base elasticity shows that capital expenditure had a negative downswing and upswing for a period of six years i.e., from 1972-73 up to the year 1978-79. This was accounted for by the fluctuations in the capital outlay on public works, agriculture and allied services, industry and minerals and transport and communications. Thereafter, the period between 1980-81 and 2001-02 witnessed a highly stable trend.

In the case of capital expenditure, it may be noted that the constant base elasticity exhibits negative coefficients of elasticity for the years 1973-74, 1974-75, 1975-76, 1976-77, 1977-78 and 1978-79 due to the decline in the capital outlay on public works, social and community services. For the rest of the period under our study, the coefficients of income elasticity of capital expenditure are positive. However, when compared to revenue expenditure, it may be pointed out that the constant base elasticity indicates that capital expenditure is less responsive to the changes in the net state domestic product. This only shows the trend of public expenditure taking place in the State

which clearly indicates that revenue expenditure is being given more importance than capital expenditure thereby depriving the State of achieving long term goals of higher economic growth, higher income and generation of more employment.

4.10 Summary of the Findings

From the analysis of the average annual growth rate of total public expenditure, net state domestic product and per capita expenditure, it is found that the average annual rate of increase of total public expenditure is the highest compared to the average annual rate of increase in net state domestic product and the increase in per capita expenditure. Thus, we find that Government expenditure has grown at a faster rate than the State income, which is in line with Wagner's law of expanding state activity.

The growth in public expenditure as seen above may be explained by the intensive development efforts made by the government through comprehensive economic planning. The increasing pressure on the demand for public services due to increasing level of money income and population growth, and its subsequent impact on the density of population and urbanization has augmented the problem of providing educational, health and other basic minimum

needs services. At the same time, due to the existence of predominant subsistence agriculture sector, the public sector is compelled to make larger investments in infra-structural and other developmental activities in order to reduce the intense pressure on the subsistence sector and provide more employment opportunities elsewhere in the economy. Again, the public sector has to play a double role. On the one side, it has to be directly involved in the production process and on the other side it has to evolve such programmes, which can help to stimulate the private sector in participating in developmental activities. Thus, both demand and supply factors have made decisive influence on expanding the public sector size in the economy.

The analysis on the revenue account of public expenditure shows an increasing trend during the thirty-year period of our study. This increase of revenue expenditure of the State government is caused by the higher additional expenditures under general services, social and community services which have increased significantly over these years, with a view to achieving the five year plan objectives of poverty alleviation with special emphasis on employment generation and provision of minimum basic needs like health care, education, drinking water, rural roads and energy.

Further the analysis shows that for twenty years, revenue expenditure as a percentage to total public expenditure constitutes more than 70 per cent of total public expenditure. This only shows that the State is maximizing present income and employment at the expense of long term objectives.

However, by taking revenue expenditure as a percentage of net state domestic product, it is found that for sixteen years revenue expenditure constitutes more than 20 per cent of the net state domestic product, while twelve years show that revenue expenditure constitutes more than 40 per cent of the net state domestic product. We can therefore infer that revenue expenditure is highly responsive to the growth in net state domestic product.

The analysis on the capital expenditure as a percentage of total public expenditure enables us to find the trend of public investment taking place in the State during the period of our study. It may be noted that twenty years out of the thirty years of our study, show that capital expenditure constitutes less than 30 per cent of total expenditure. In spite of the fact that the State has been spending heavily on the construction of roads and bridges, medical and public health facilities, sanitation and water supply schemes, special areas programmes, irrigation and food control measures, industry, mineral and transport,

yet capital expenditure shows a declining trend compared to revenue expenditure taking place during the period of our study. This only proves that the State has not been able to pursue policies in consonance with the achievement of long term goals and objectives such as self-reliance, industrialization for intensive and extensive use of the rich resources available within the State thus generating more employment and increasing the per capita income of the people of the State.

By analyzing capital expenditure as a percentage of net state domestic product, it is found that, on an average, for the thirty-year period of our study, capital expenditure accounts for 15.54 per cent of the net state domestic product, which is much less than the revenue expenditure, which accounts for 35.50 per cent of the net state domestic product during the same period of our study. This exhibits the fact that the State has neglected the long term perspective of higher economic growth and generation of employment.

Regarding the pattern of public expenditure in the State of Meghalaya, the sector-wise analysis on revenue expenditure indicates that the revenue expenditures on social services account for the maximum rate of growth followed by the revenue expenditures on general services and economic services. This only reveals the fact that the Government of Meghalaya has been paying more attention to the

social sector such as education, public health measures, water supply and sanitation so as to increase directly or indirectly the productive capacity of the economy.

The analysis on the sector-wise capital account of public expenditure indicates that the capital outlay on social services account for the maximum rate of growth followed by the capital outlay on general services and economic services. This only reveals the fact that the Government of Meghalaya has been making all efforts to extend and consolidate the social infrastructure like providing and improving the primary education sector, as well as extending and improving upon the public health measures so as to improve upon the productivity capacity of the State.

Regarding the trend of the developmental and non-developmental expenditures in Meghalaya from 1972-73 to 2001-02 it may be noted that throughout the consecutive five year plans, there has been an increase by leaps and bounds, in both the developmental and non-developmental expenditures in absolute terms in Meghalaya. It may be pointed out here that, as the developmental expenditures in absolute figures have been pushed up to remarkably high levels during the plan period, so also the non-developmental expenditures on revenue account have witnessed a steady increase. With additional

increase in the volume of developmental expenditures, the non-developmental expenditures also tended to increase, mainly on account of increasing burden of administrative machinery of the State to shoulder heavier load of economic activities. However, it is to be noted that with every increase in developmental expenditure, the additional non-developmental expenditures should comparatively decline so as not to pull down the growth efficiency.

The increase in per capita terms in both human and physical capital has been consistent throughout the period of our analysis. All through the period, significant stress was laid more on human capital than on physical capital. It may be pointed out that it is difficult to accept the unpalatable fact that in spite of this greater expenditure on human capital, the number of people living below the poverty line is still very high. Again, the lesser importance being given to physical capital has in no less a way contributed to the poverty of the people of the State.

The analysis on the income elasticity of total public expenditure exhibits that there is considerable variation in the value of the elasticity for public expenditure for the thirty-year period of our study. When the time-point elasticity of total public expenditure with respect to net state domestic product is calculated, it is found that the values of the

elasticity for public expenditures are of the same amplitude unlike that of revenue expenditures. Correspondingly, the values of the elasticity of total expenditure are reportedly to be relatively greater than those of the values of the elasticity of revenue expenditure. Moreover, the result of the constant-base elasticity indicates that public expenditures are highly responsive to changes in net state domestic product. This is evident from the values of the public expenditure elasticity, where it stayed more than unity for almost the entire period of our study except for the initial years of our study. This is because, on an average, total public expenditures have been growing faster than net state domestic product.

While analysing the elasticity of revenue expenditure to net state domestic product it is found that the greater degree of responsiveness of the State's revenue expenditure to the slight increase in net state domestic product could be explained by the desire to achieve the plan objectives of different Five Year Plans. The negative elasticity on the revenue expenditure account for the year 1978-79 is due to the shrinking in revenue expenditure brought about by a big cut in the expenditure on general services as compared to the previous year. Similarly the year 1994-95 witnesses a negative elasticity on the revenue expenditure account as a result of the trimming in the revenue

expenditure due to the reduction in expenditure on agriculture and allied activities, industry and mineral, transport, general economic services as well as social and community services.

An interesting point may be noted that there is a greater degree of responsiveness of the State's revenue expenditure to net state domestic product covering nine years. This could be explained by the impressive increase in the expenditure on services for organs of the State, education, housing, agriculture and allied services and other social services, though there was a stunted increase in net state domestic product in order to achieve the plan objectives of different Five Year Plans.

In order to measure the wide annual fluctuations in the values of the parameters, an analysis of constant base elasticity of revenue expenditures with respect to net state domestic product has been carried out. The results show that the State has been experiencing an elastic trend of revenue expenditures for the whole period of our analysis. This trend conforms to the general theoretical argument that with the gradual commercialisation and modernisation of the State economy, it has become possible for the State Government to increase its level of public expenditure. Further, it may be pointed out that the price revolution has also significantly altered the relative importance of

public expenditure in the fiscal structure of the State thereby explaining the above trend to a reasonable extent.

Further, our analysis of capital expenditure elasticity with respect to net state domestic product indicated that initially it was negative (−16.5572) due to the steep decline in capital outlay on social and community services. On the other hand, the negative capital expenditure elasticity (− 3.5123) in the year 1982-83 was due to the decline in the repayment of loans taken by the Government. The negative elasticity of capital expenditure in the year 1994-95 was due to the sharp decline in the capital outlay on general services. The negative elasticity of capital expenditure for the years 1978-79, 1985-86, 1989-90, 1995-96, 1996-97, 1997-98 could be accounted for by the fall in the capital outlay on social and community services. On the other hand the very high positive elasticity coefficient (15.2945) of capital expenditure in the year 1980-81 was due to the quantum jump in the capital outlay on social and community services. Anther high positive elasticity coefficient (8.5840) in the year 1976-77 and (8.7888) in the year 1993-94 could be explained by the sharp increase in the capital outlay on the general services. For the rest of the period of our study, the income elasticity of capital expenditure became positive due to greater outlay being incurred by the government on social and

community services as well as the increased capital outlay on the economic services.

However the constant base elasticity of capital expenditure exhibits negative coefficients of elasticity for the years 1973-74, 1974-75, 1975-76, 1976-77, 1977-78 and 1978-79 due to the decline in the capital outlay on public works, social and community services. For the rest of the period under our study, the coefficients of income elasticity of capital expenditure are positive. However, when compared to revenue expenditure, it may be pointed out that the constant base elasticity indicates that capital expenditure is less responsive to the changes in the net state domestic product. This only shows the trend of public expenditure taking place in the State which clearly indicates that revenue expenditure is being given more importance than capital expenditure thereby depriving the State of achieving long term goals of higher economic growth, higher income and generation of more employment.

4.11 Concluding Remarks

Thus, we find that expenditure of the State government of Meghalaya has grown at a very fast rate *vis-à-vis* the growth of the net state domestic product. This only proves our hypothesis that the level

of public expenditure responds freely to the rise in the level of net state domestic product.

Further, as a result of the implementation of certain objectives like the most effective utilisation of the available resources both human and natural, and stabilisation of the economy etc., there has been a stupendous growth in public expenditure in the State of Meghalaya. The swelling of public wants, the rise of a 'modern state' with its stress on social welfare, the rapid growth of population, the direction of public expenditure towards economic development and the rising prices, all these factors have contributed to the significant growth of public expenditure in the State of Meghalaya. We believe all these factors taken together have made the expenditure growth as self-propelling.

Projecting that the observed trend in revenue expenditure will continue in the years to come, certain immediate remedial measures such as the compression of expenditure or augmentation of tax effort trend must be adopted. The former exercise may not be feasible because in a backward State like Meghalaya, the Government will continue to play the catalytic role in the acceleration of the tempo of economic development through its various developmental and non-developmental plan expenditure programmes. However, the

Government is constrained by the availability of resources to effectively carry out several developmental and welfare activities. Resource constraints are reflected in the predominant subsistence agricultural sector, low industrialisation, structural and institutional rigidities, low taxable capacity of the people and so on. But these constraints get gradually minimised with the process of growth and development brought about by the structural and institutional changes taking place in the economy. So the question is, to what extent, the tax structure of Meghalaya responds to these changes which keep on taking place in the process of economic development. This necessitates a more detailed analysis of the structure and composition of the State revenues.

However, financing the revenue expenditure with borrowed funds will only push up the interest liability without creating corresponding sources of revenue. Moreover, the borrowed funds meant for capital spending are not efficiently utilised. This fruitless exercise only adds fuel to the growth of interest liabilities. Such a high growth rate of interest payment cannot be sustained indefinitely.

Thus, the higher growth of revenue expenditure has brought about an explosive cycle of expenditure growth. So, the necessary question that arises at this juncture of our analysis is how to contain the

explosive cycle of expenditure growth? It may be pointed out here that the capacity of the government to spend no doubt depends on the ability and willingness to mobilise adequate tax and non-tax resources for the purpose. And as such expenditure and taxation are considered to wax and wane, i.e., either rise or fall together in a welfare state. Further, it may be mentioned here that it is the size of public expenditure that determines the size of tax revenue of the Government. Under such a scheme of things, the related question that arises is, how far the mobilisation of resources (both tax and non-tax) by the Government has been responsive to the changing patterns of growth of public expenditure? This calls forth for a detailed analysis of the problems and prospects of internal resource mobilisation in the context of the explosive cycles of public expenditure growth in the State, which we intend to carry out in the next chapter.

4.12 References

1. Pryor, L. Frederic (1968): *Public Expenditures in Communist and Capitalist Nations,* George Allen and Unwin Ltd., London, Ch.1, p.199
2. Mishra, B. (1996): *An Economic Study of Buoyancy and Elasticity of Orissa's Tax System,* Utkal University, Bhubaneswar, Unpublished Thesis, Ch. 4
3. Brown, C.V. and Jackson, P.M. (1990): *Public Sector Economics,* Basil Blackwell, Ltd., Oxford, p.154
4. Martin, A.M. and Lewis, W.A. (1956): *Pattern of Public Revenue and Expenditure* Manchester School of Economics and Social Studies, XXIV (3), September, pp.203-244
5. Eshag, Éprime (1983): *Fiscal and monetary policies and problems in developing countries,* Cambridge University Press, p.80

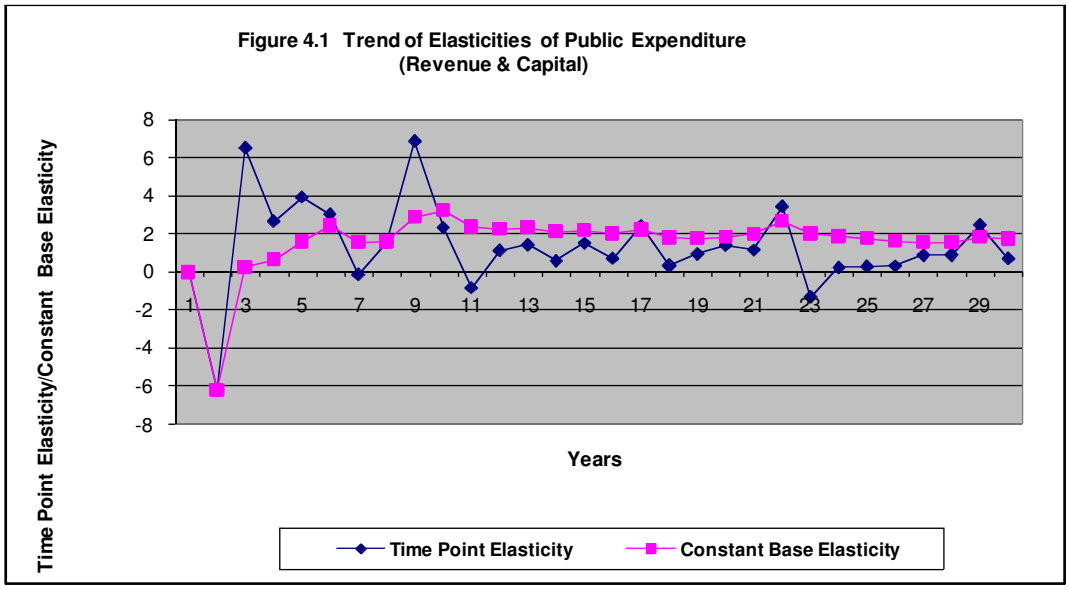


Figure 4.1 Trend of Elasticities of Public Expenditure
(Revenue & Capital)
Time Point Elasticity/Constant Base Elasticity
8
6
4
2
0
-2
-4
-6
-8
1
3
5
7
9
11
13
15
17
19
21
23
25
27
29
Years
Time Point Elasticity
Constant Base Elasticity

Figure 4.2 Trend of Elasticities of Revenue Expenditure

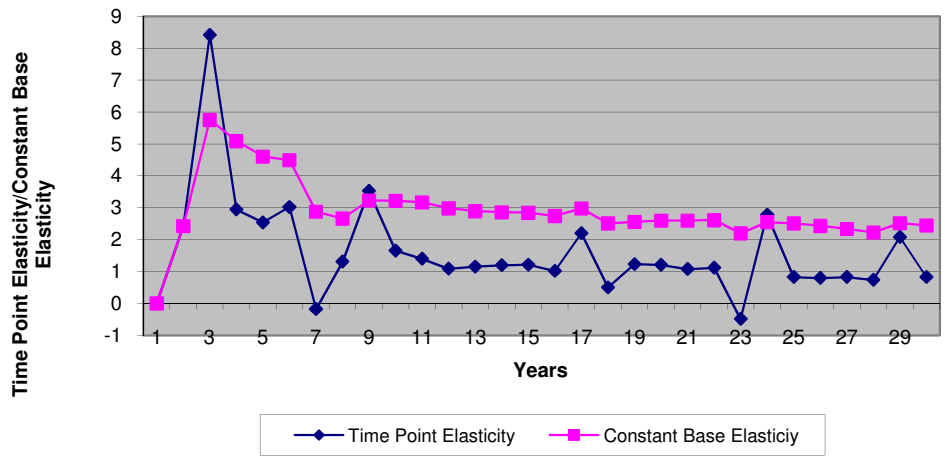
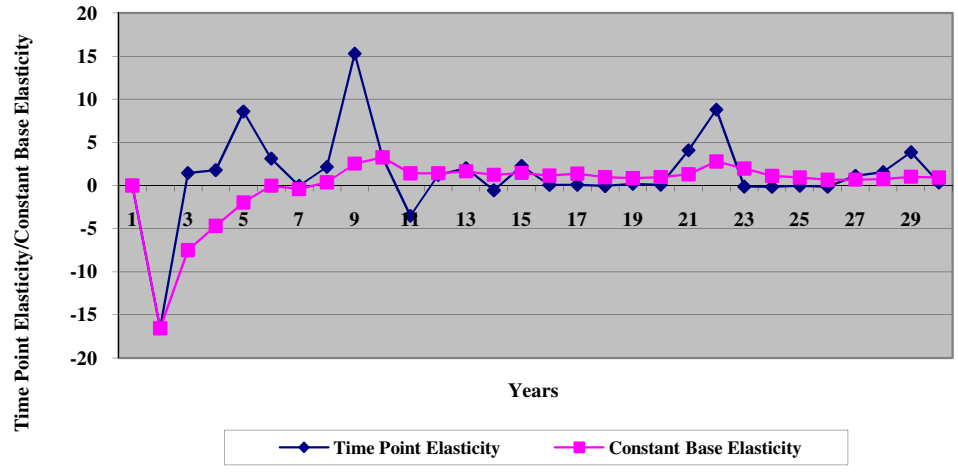


Figure 4.3 Trend of Elasticities of Capital Expenditure



CHAPTER V

PUBLIC EXPENDITURE AND THE PROBLEM OF RESOURCE CONSTRAINT AND PROSPECTS OF INTERNAL RESOURCE MOBILISATION

5.1 Introduction

In the previous chapter, we have analyzed the expenditure policies in terms of the trends and patterns of the Meghalaya's total expenditures and net state domestic product, for a period of three decades covered by our study. And, we found that there has been a tremendous expenditure growth in the State during the last thirty years of our study. This is in line with Wagner's law of increasing state activity as the society progresses. This has necessitated the State Government to increase its tax revenues to a considerable extent. The willingness and capacity of the Government to respond to this need has been an important determinant of its capacity to carry forward development planned programmes. In working out a development plan, a major question that always arises is: how much tax revenue the State can reasonably expect to raise and from what sources this should come. Further, it may be stated that the availability of adequate domestic resources at the disposal of the government always put a limit to the level of public expenditure. No doubt, this calls forth the

institutionalization of tax reform. In other words, tax policy has to be made a part of the instrument of developmental goals. This is so, because, the size of Government's development programme is largely determined among other things, by the administrative capacity of the tax system to mobilize the necessary economic surplus. This policy has to be equally supplemented by such measures which help to keep the recurring and non-productive expenditures at the minimum level thereby making the mobilization of economic surplus, a smooth process.

In an underdeveloped economy like Meghalaya, economic progress requires in the initial stages that higher proportion of this surplus be channeled into productive investment through various measures of taxation. As such, tax structure should be so designed as to prevent consumption from increasing proportionately with income in the earlier stages of development. To accomplish this objective, a major question arises: what should be the economic capacity of taxation? Of course, we may not be able to give a definite answer to this question. As M. Douglas argues: "The elements of taxable capacity prove on closer examination to be so contingent, subjective and variable – to be so much a matter of circumstances of time and place, of institutional arrangements, and public attitudes – that they

defy generalization, and any conclusion expressed in absolute or final terms is bound to misrepresent the very nature of the problem itself."[1] On the other hand, according to F. Due: "The actual effects of taxation as a source of revenue depend upon the type of tax structure, the relationship of marginal to average tax rates, the reaction of the tax payers to the high rate, and the length of the period the high rates are effective, etc."[2]

We may note it here that the tax effort of any State in India depends upon two sets of interdependent factors: first, how effectively the State in question exploits the taxing power assigned to it and tax revenue sources at its disposal and second, the size and types of federal transfer it receives. These factors are interdependent in the sense that excessively large federal transfers to a State may dampen its effort to attain financial self-reliance thus making it increasingly dependent upon the Centre. As a result, for economically weaker States, tax effort is likely to fall below what relative taxable capacity would otherwise have made it possible for the State to attain. How these interdependent factors can make an integrated approach in the Meghalayan context is the subject of this chapter.

However, in the absence of any coherent long-term policy objectives accompanied by non-significant structural changes in

Meghalaya's economy, the resource problem has been a major policy issue.

5.2 Thrust of the Problem

Therefore, an attempt is made in this chapter to examine the problem of resource constraint and the prospects of internal resource mobilization in the State during the last thirty years of planning covered by our study. We shall explain the revenue constraints and the problem of resource mobilization in terms of existing contribution of different taxes (revenue account) by reflecting their share in the net state domestic product and the compositional and structural character of different taxes (revenue account) on the basis of ratios and trends as well.

We believe information on these relationships will be quite useful in making an assessment of the relative tax efforts on the part of the State Government. It will also enable us to draw conclusions regarding the specific directions in which the compositional pattern of taxation has moved. This chapter is divided into two parts:

The first part discusses the various aspects of different taxes of the State Government in detail, including its resource mobilization capacity in the near future. A brief assessment of the shared taxes and

other financial resources and their relative importance has also been made. In the second part of the chapter, we attempt to examine the size and composition of all types of federal transfer to the State in order to determine their magnitude in the overall fiscal armoury of the State. We attempt such an evaluation, albeit in a summary manner. The analytical methods used are based on studies undertaken earlier.[3]

PART - I

5.3 Problem of Internal Resource Mobilization

In this section, we attempt to examine the trends in the revenue yields from different taxes and also their relative place in the system of taxation. An analysis of the overall composition of tax revenue including the shared taxes of the State Government from the year 1972-73 to 2001-02 has also been made.

We intend to study the composition of tax revenues or the relative importance of the specified individual taxes in the tax system in terms of, either the percentage of different taxes in total tax revenue or the ratio of these taxes to net state domestic product.

The first exercise brings out clearly the differences in the pattern of taxation in the State irrespective of the level of total taxation, whereas the second sheds light on the proportion of State income collected through different tax forms. These two aspects of changes are

of course inter-related: a significant change in tax ratio for instance, almost invariably involves, or, is accompanied by a shift in the composition of taxes.

The intention here is, to discuss the changes in the level and composition of taxation separately, with a view to identifying certain factors that are to be considered in any analysis of their inter-relationship. While it does not necessarily imply that the proper policy for the State Government is to increase the share of income channeled into the public sector, it is believed that, an inquiry of this nature besides shedding some light on the underlying forces at work would be found useful in evaluating the actual and potential performances of the State Government in the field of resource mobilization.

Therefore, since there is no clear cut and coherent long term policy objectives in the State of Meghalaya accompanied by the absence of significant structural and institutional changes taking place in the State economy that the problem of resource constraint has become a major economic policy.

5.3.1 Feasible Trends in Tax Effort

Before progressing into the details of the individual tax items of the State and of the shared Central taxes, an examination of their

combined yields *vis-à-vis* total public expenditure and net state domestic product in current prices is essential, because these give an overall idea about the extent to which the State Government has spent and also how much it has been able to divert additional income into the public sector savings. This, no doubt, will exhibit the relative tax effort of the Government. Tables 5.1 and 5.2 will provide us with materials to proceed with our analysis.

The compound growth rates are worked out using the exponential function of the type: $Y = ae^{rt}$,

where, t = time, Y = the dependent variable and r = rate of growth.

Table 5. 1 Tax Revenue/Public Expenditure and Net State Domestic Product of Meghalaya

(Rupees in Crores)

Year	State Own Tax	Total Tax Re-venue	Total Public Expen-diture	Net State Do-mestic Pro-duct*	Column 2 as a % of Column 5	Column 3 as a % of Column 5	Column 2 as a ratio of Column 3	Column 4 as a % of Column 5	Column 2 as a % of Column 4	Column 3 as a % of Column 4
1	2	3	4	5	6	7	8	9	10	11
1972-73	1.21	3.33	33.25	105.09	1.15	3.17	0.36	31.64	3.64	10.02
1973-74	1.55	3.86	26.86	108.36	1.43	3.56	0.40	24.79	5.77	14.37
1974-75	1.95	4.18	32.69	111.97	1.74	3.73	0.47	29.20	5.97	12.79
1975-76	2.18	5.10	35.44	115.51	1.89	4.42	0.43	30.68	6.15	14.39
1976-77	2.48	5.57	40.95	120.08	2.07	4.64	0.45	34.10	6.06	13.60
1977-78	2.58	5.82	56.18	134.75	1.91	4.32	0.44	41.69	4.59	10.36
1978-79	3.39	6.97	55.29	149.77	2.26	4.65	0.49	36.92	6.13	12.61
1979-80	4.04	10.56	64.19	165.46	2.44	6.38	0.38	38.79	6.29	16.45
1980-81	4.88	12.07	101.94	179.62	2.72	6.72	0.40	56.75	4.79	11.84

1981-82	6.20	14.23	136.57	205.84	3.01	6.91	0.44	66.35	4.54	10.42
1982-83	7.37	16.09	124.71	227.10	3.25	7.08	0.46	54.91	5.91	12.90
1983-84	9.50	19.36	147.01	263.14	3.61	7.36	0.49	55.87	6.46	13.17
1984-85	12.24	22.91	178.30	302.27	4.05	7.58	0.53	58.99	6.86	12.85
1985-86	14.93	60.45	191.93	341.53	4.37	17.70	0.25	56.20	7.78	31.50
1986-87	17.74	73.00	230.22	386.25	4.59	18.90	0.24	59.60	7.71	31.71
1987-88	19.61	84.91	264.36	466.86	4.20	18.19	0.23	56.63	7.42	32.12
1988-89	27.72	110.19	318.05	505.96	5.48	21.78	0.25	62.86	8.72	34.65
1989-90	32.26	97.52	350.69	659.78	4.88	14.78	0.33	53.15	9.20	27.81
1990-91	36.01	116.37	405.65	767.35	4.69	15.17	0.31	52.86	8.88	28.69
1991-92	42.54	147.81	492.29	884.22	4.81	16.72	0.29	55.68	8.64	30.02
1992-93	44.18	169.82	588.60	978.54	4.51	17.35	0.26	60.15	7.51	28.85
1993-94	47.93	175.75	909.08	1133.38	4.23	15.51	0.27	80.21	5.27	19.33
1994-95	56.27	200.90	777.97	1258.04	4.47	15.97	0.28	61.84	7.23	25.82
1995-96	66.26	225.97	796.42	1380.31	4.80	16.37	0.29	57.70	8.32	28.37
1996-97	77.37	294.94	813.58	1485.28	5.21	19.86	0.26	54.78	9.51	36.25
1997-98	73.55	360.32	850.72	1690.42	4.35	21.32	0.20	50.33	8.65	42.35
1998-99	88.36	388.91	1022.93	2079.25	4.25	18.70	0.23	49.20	8.64	38.02
1999-00	102.98	444.74	1195.40	2467.13	4.17	18.03	0.23	48.45	8.61	37.20
2000-01	132.48®	296.73	1601.89	2806.20	4.72	10.57	0.45	57.08	8.27	18.52
2001-02	140.45©	323.61	1785.15	3267.36	4.30	9.90	0.43	54.64	7.87	18.13

Note : * = Net State Domestic Product figures are in current prices.

® = Revised Estimate © = Budget Estimate

Source:

Budget in Brief, Government of Meghalaya:: 1974-75; 1977-78; 1978-79; 1982-83; 1983-84

Budget at a Glance, Government of Meghalaya:: 1984-85 to 2001-02

Estimates of State Domestic Product of Meghalaya, 1980-81 to 1995-96, Government of Meghalaya, Directorate of Economics and Statistics, Meghalaya, Shillong,

State Economy, Government of Meghalaya, Directorate of Economics and Statistics

Rate of Growth : Column 2 = $0.1711e^{0.1671t}$, $R^2 = 0.9882$ Column 3 = $0.9657e^{0.1859t}$, $R^2 = 0.9628$

Column 4 = $23.7504^{e0.1468t}$, $R^2 = 0.9851$ Column 5 = $4.1934e^{0.1261t}$, $R^2 = 0.9889$

Table 5.1 gives us year-wise figures of tax revenues, total public expenditure (revenue and capital accounts) and net state domestic product at current prices from 1972-73 to 2001-02. Column 2 of the Table shows the State's own tax revenue since 1972-73 which indicates that during the planning period covering a span of thirty years, State's own tax revenue has increased in absolute terms more than a hundred and sixteen fold, from Rs. 1.21 crores in 1972-73 to Rs. 140.45 crores in 2001-02. Using the familiar growth rate formula, State's own tax revenue has registered a growth rate of 16.71 per cent per annum during the period of our study. This increase of State's own tax revenue over the years was mainly due to large receipts under State's excise duty and sales tax, taxes on vehicles, taxes on electricity, all of which have increased considerably over the years. The increase of these taxes in absolute terms may be ascribed to the extension of the tax base and tax coverage of these taxes and also due to an upward revision of the tax rates during these years.

Column 3 of the Table exhibits the trend of total tax revenue of the State during the thirty years of our study. It is to be noted that the annual compound rate of growth of total tax revenue during the period of our study is approximately 18.59 per cent. Tax revenues show a rising trend throughout the period from 1972-73 to 2001-02, increasing

from Rs. 3.33 crores in 1972-73 to Rs. 323.61 crores in 2001-02, that is, an increase of about ninety seven fold during these years. Since the total tax revenue includes shared taxes, the higher exponential growth rate may be ascribed to the better tax mobilisation efforts made by the Central Government from time to time. Further, higher growth of total taxes indicates the degree of elasticity and buoyancy that are inherent in the shared taxes resulting in a larger devolution of resources from the Centre to the State by way of higher share in the Central taxes.

It may be noted from Column 4 of the above Table 5.1 that total public expenditure grew from Rs. 33.25 crores in 1972-73 to Rs. 1785.15 crores in 2001-02. It is to be noted that the annual compound rate of growth of total public expenditure during the period of our study is approximately 14.68 per cent. The growth in public expenditure as seen earlier may be explained by the intensive development efforts made by the government through comprehensive economic planning. If the plan is more comprehensive, it tries to develop the sub-sectors of the economy simultaneously on the one hand and on the other it also centres its attention on exploring the new bases and sources of additional resources.

Column 5 of the Table presents the net state domestic product (NSDP). The given data is the aggregate of the sector-wise estimates

by industrial origin of the state domestic product at factor cost at current prices. During the thirty-year period of our study, the net state domestic product has increased sixteen-fold from Rs. 105.09 crores in 1972-73 to Rs. 3627.36 crores in 2001-02. The annual compound rate of growth during these years is about 12.61 per cent. This increase in net state domestic product during our period of study may be the result of the relative greater contribution of the secondary and tertiary sectors to the State income. Given the exponential growth rates of State's own taxes and the net state domestic product, it may be observed that the growth rate of State's own taxes has continually outpaced the growth of net state domestic product.

Column 6 of the same Table presents the percentage of State's own tax revenue to the net state domestic product over the years. The percentage of State's own tax revenue to net state domestic product, which was 1.15 per cent in 1972-73, increased slowly over the years and stood at 4.30 per cent in 2001-02. If, we judge the performances of the State's own tax revenue on the basis of its contribution to the net state domestic product, then the performances of the State's own tax revenue presents a poor picture altogether. From this angle, the State's own tax revenue has been increasing at a very slow rate during the period of our study.

Column 7 of the same Table given above shows the percentage of total tax revenue to net state domestic product. It is shown that there existed a continuous increase over the time period. From a mere 3.17 per cent in 1972-73 it increased to 17.17 per cent in 1985-86 and went up further to 21.78 per cent in 1988-89. It gradually came down only to rise again to a level of 21.32 per cent in 1997-98. The trend again came down to 10.57 per cent in 2000-01 and 9.90 per cent in 2001-02. This sharp decline may be explained by the fact that total tax revenue figures for 2000-01 and 2001-02 represent the revised estimate and the budget estimate respectively. Both the figures indicate a drastic fall in the total tax revenue of the State. Further, a sharp fall of shared taxes is also observed in the years 2000-01 and 2001-02. These two factors taken together justify the resultant picture of dismal growth rate of total tax revenue. Except for these two last years of our analysis, this Column shows that during the thirty years of our study, a moderate share in incremental income has been transferred to the public exchequer.

Column 8 of the same Table shows the ratio of the State's own tax revenue to the total tax revenues accruing to the State during these years. The Column shows a distressing feature in that the ratio which was 0.36 in the year 1972-73 remained more or less stagnant over the

years with the ratio of 0.43 in the year 2001-02. The fact of the stagnant ratio between the State's own tax revenue to the State's total tax revenue during the period of our study indicates that the State has not put in extra efforts with the passage of time in raising its own tax revenue in a much more efficient way during the thirty year period of our study and also has not made any sincere effort to tap more resources.

Column 9 of the above Table indicates total public expenditure as a percentage of net state domestic product. The figures show that out of the total thirty years of the period under study it is found that only two years (1973-74 and 1974-75) revealing total public expenditure less than 30 per cent of the net state domestic product, eight years (1972-73, 1975-76, 1976-77, 1977-78, 1978-79, 1979-80, 1998-99 and 1999-2000) showing total public expenditure between 30 and 50 per cent of the net state domestic product while twenty years (1980-81 to 1997-98 and 2000-01 to 2001-02) showing total public expenditure more than 50 per cent of the net state domestic product. The rapid expansion of Government expenditure in absolute terms and as percentage of State income in the Planning period is due to the change in outlook as regards the State's role in the development of the

economy. The Five Year Plans clearly have an impact on the growth of Government expenditure.

Column 10 shows State's own tax revenue as a percentage of total public expenditure. The figure was 3.64 per cent in 1972-73, which gradually grew to 8.61 per cent in 1999-2000 and the budget estimate for 2001-02 shows a slight decline to 7.87 per cent. This only shows that the State has not been able to generate enough of its own resources so as to be able to cope with mounting public expenditure. The State has a long way to go in order to be self-reliant.

Column 11 exhibits total tax revenue as a percentage of total public expenditure. The figure which was 10.02 per cent in 1972-73 gradually grew to 12.85 per cent in 1984-85. Suddenly in 1985-86 the percentage rose to 31.50 per cent. This could be explained by the quantum jump in the growth rate of shared taxes while State's own taxes grew at the usual slow rate. The highest percentage was recorded in 1997-98, which was 42.35 per cent. Again this happened because of the big contribution by the shared taxes to the total tax revenue while State's own tax revenue showed a slight declining trend. Here, again it only proves that the State has not put in extra effort to mobilise sufficient resources to counter the menace of rising public expenditure.

Thus, we can draw the following observations from the above analysis:

(i) There has been an increase in net state domestic product but the rate of increase is less than the rate of increase in State's own tax revenue and much less than the rate of increase of the total tax revenue over the period.

(ii) The role of the State's own tax revenue as a component of net state domestic product over the period of our study viz., 1972-73 to 2001-02, has not been up to the expectation or likely drive for additional taxation as a source of revenue for the State. This is so because of the fact, that the percentage share of the State's own tax revenue in the net state domestic product has increased at a much slower rate than the pace ascribed to total tax revenue.

(iii) If we visualise tax-income ratio as the simplest measure of tax burden or sacrifice, the information given in Table 5.1 reveals that the State of Meghalaya fares rather poorly on this count, and

(iv) The State has been depending more and more on shared taxes for the purpose of resource mobilisation.

(v) The State has to find out ways and means other than tax revenue in order to finance the rising trend in public expenditure.

The above trend is supported by the observations made by our study on the basis of the Table 5.2 given below.

Table 5:2 Percentage Shares of State's Own Tax Revenue, Shared Taxes and Non-tax Revenue of Meghalaya

(Rupees in Crores)

Year	State's Own Tax	Non-tax Rev-enue	Shared Taxes	Total Tax Rev-enue	Col. 2 as a % of Col. 5	Col. 3 as a % of Col. 5	Col. 4 as a % of Col. 5
1	2	3	4	5	6	7	8
1972-73	1.21	0.93	2.12	4.26	28.40	21.83	49.77
1973-74	1.55	1.27	2.31	5.13	30.21	24.76	45.03
1974-75	1.95	1.98	2.23	6.16	31.66	32.14	36.20
1975-76	2.18	3.04	2.92	8.14	26.78	37.35	35.87
1976-77	2.48	2.14	3.09	7.71	32.17	27.76	40.07
1977-78	2.58	2.04	3.24	7.86	32.83	25.95	41.22
1978-79	3.39	4.14	3.58	11.11	30.51	37.27	32.22
1979-80	4.04	3.65	6.52	14.21	28.43	25.69	45.88
1980-81	4.88	21.93	7.18	33.99	14.36	64.52	21.12
1981-82	6.20	6.34	8.02	20.56	30.15	30.84	39.01
1982-83	7.37	5.99	8.72	22.08	33.38	27.13	39.49
1983-84	9.50	7.21	9.86	26.57	35.75	27.14	37.11
1984-85	12.24	9.79	10.67	32.70	37.43	29.94	32.63

1985-86	14.93	11.51	45.52	71.96	20.75	15.99	63.26
1986-87	17.74	14.11	55.27	87.12	20.36	16.20	63.44
1987-88	19.61	17.26	65.29	102.16	19.19	16.90	63.91
1988-89	27.72	20.90	82.47	131.09	21.15	15.94	62.91
1989-90	32.26	18.85	65.17	116.28	27.74	16.21	56.05
1990-91	36.01	18.71	80.36	135.08	26.66	13.85	59.49
1991-92	42.54	22.62	105.27	170.43	24.96	13.27	61.77
1992-93	44.18	18.08	125.64	187.90	23.51	9.62	66.87
1993-94	47.93	28.40	127.83	204.16	23.48	13.91	62.61
1994-95	56.27	38.64	144.63	239.54	23.49	16.13	60.38
1995-96	66.26	66.92	159.71	292.89	22.62	22.85	54.53
1996-97	77.37	47.47	217.56	342.40	22.60	13.86	63.54
1997-98	73.55	29.85	286.77	390.17	18.85	7.65	73.50
1998-99	88.36	51.46	300.55	440.37	20.06	11.69	68.25
1999-00	102.98	83.86	341.76	528.60	19.48	15.87	64.65
2000-01 (R.E.)	132.48	95.48	164.25	392.21	33.78	24.34	41.88
2001-02 (B.E.)	140.45	105.35	183.16	428.96	32.74	24.56	42.70

Source:

Budget in Brief, Government of Meghalaya:: 1974-75; 1977-78; 1978-79; 1982-83; 1983-84

Budget at a Glance, Government of Meghalaya:: 1984-85; 1989-90; 1994-95; 1996-97; 1998-99; 2001-02

Rate of Growth : Column 3 = $1.3438\ e^{0.1444t}$ $R^2 = 0.9191$

Column 4 = $1.4510\ e^{0.1955t}$ $R^2 = 0.9385$

Column 5 = $4.0045\ e^{0.1761t}$ $R^2 = 0.9673$

It is observed from the Table 5.2 above that the rate of growth of the State's own tax revenue is much lower than the rate of growth of the State's share in Central taxes. Nonetheless, the increasing importance of State's own tax revenue as an important component of net state domestic product is clearly discernible over the period of our study.

Table 5.2 clearly shows the significance of the trend of shared taxes for the State of Meghalaya during the period 1972-73 to 2001-02. The share of shared taxes in the total tax revenue of the State increased from 49.77 per cent in the year 1972-73 to 64.65 per cent in the year 1999-2000. After that it is showing a declining trend which may not indicate the exact picture as the figures in the two years, namely, 2000-01 and 2001-02 represent the revised estimate and budget estimate respectively. Except for the year 1980-81 when the high percentage of non-tax revenue pulled up the percentage of shared taxes in the total revenue to a mere 21.22 per cent. For fifteen years out of the thirty year period under study, the share of shared taxes in the total revenue was less than 50 per cent, three years for less than 60 per cent and twelve years the dependence on Central taxes was more than 60 per cent. This clearly shows that the State of Meghalaya has not been able to generate its own resources that it has to depend mainly on the Centre

for its own survival. It may be pointed out here that the dependence of the State of Meghalaya on the non-tax revenue as a source of revenue has been more than offset by the revenue from shared taxes, even though it is an internal source of revenue by itself. Moreover, a scrutiny at the columns 6 and 8 of Table 5.2, reveals that the relative importance of the State's own taxes has been much less than it has been in the case of shared taxes as a component of total revenue of the State during the period of our study.

Further, it is intriguing to find that the relative importance of the State's own tax revenue has demonstrated a somewhat fluctuating behaviour though it has registered a trend which is somewhat declining from 28.40 per cent in the year 1972-73 to 19.48 per cent in the year 1999-2000. However, the figures for 2000-01 and 2001-02 are 33.78 per cent and 32.74 per cent which represent revised estimate and budget estimate respectively. This amply shows that the State of Meghalaya is increasingly facing a decline in the generation of its own tax revenue, meaning that it is increasingly depending on the Central devolutions. Therefore, on the basis of its own effort, in the last thirty years of our study, Meghalaya's revenue performance has been rather dismal in the sense that the State raised a lower proportion of revenue in comparison to other sources of revenue, viz., shared taxes.

5.3.2 Average Tax Rate and Marginal Tax Rate

In order to have a more meaningful analysis of the changing tax-income ratio we have the Average Tax Rate in relation to the Marginal Tax Rate. The intention of relating these two measures of the tax-income ratio is two-fold:

Firstly, the concept of marginal rate of taxation is useful in relation to a discussion on the appropriateness of the disposition of additional national income among several uses in any given country.[4] The marginal tax rate determines whether, and how fast, the tax ratio increases in the context of an increase in income over time. Here, it may be hypothesised that the higher the per capita income, the easier it is to achieve a high marginal tax rate.

Secondly, the Average Tax Rate of the base period is likely to influence the marginal rate in so far as it is relatively easy with a given tax system to take out the same fraction from the incremental income as that from the original income base. Further, this will indicate the degree of variations in the tax revenue with respect to changes in the tax base.

The Average Tax Rates are calculated by using the following formula:

$$ATR = \frac{Amount\ of\ taxes\ collected}{Size\ of\ the\ taxable\ base}$$

The same thing can be put symbolically as follows:

$$ATR_i = \frac{RA_i}{PB_i}$$

where RA_i and PB_i are the actual revenue and potential base respectively for the $_i$th tax in the State.

The Marginal Rate of Taxation is the tax rate applicable to increments to the tax base. For estimating the Marginal Tax Rate, the following formula is used:

$$MTR = \frac{Absolute\ change\ in\ Tax\ \mathrm{Re}venue}{Absolute\ change\ in\ Tax\ Base}$$

The same thing can be put symbolically as follows:

$$MTR = \frac{\Delta TR}{\Delta TB}$$

where, MTR = Marginal Tax Rate,
Δ TR = change in Tax Revenue, and
Δ TB = change in Tax Base.

Table 5.3 below is an improvement upon Tables 5.1 and 5.2. It provides some further insight into the changing tax-income ratio over the planning period. The average and marginal tax rates are presented both for the aggregate revenue as also for the shared taxes and State's own tax revenues. The results as given in Table 5.3 only strengthen the

earlier finding which shows that the Average Tax Rate in the case of the State's own tax revenue has recorded a consistent movement throughout the plan period of our study.

Table 5.3 Average and Marginal Rates of Taxation

Year	Average Rate on			Marginal Rate on		
	Total Tax Reve-nue	State's Own Tax Rev-enue	Shared Taxes	Total Tax Rev-enue	State's Own Tax Rev-enue	Shared Taxes
1	2	3	4	5	6	7
1972-73	3.17	1.15	2.02	16.21	10.40	5.81
1973-74	3.56	1.43	2.13	8.86	11.08	–2.22
1974-75	3.73	1.74	1.99	25.99	6.50	19.49
1975-76	4.42	1.89	2.53	10.28	6.56	3.72
1976-77	4.64	2.07	2.57	1.70	0.68	1.02
1977-78	4.32	1.91	2.41	7.66	5.39	2.27
1978-79	4.65	2.26	2.39	22.88	4.14	18.74
1979-80	6.38	2.44	3.94	10.66	5.93	4.73
1980-81	6.72	2.72	4.00	8.24	5.03	3.21
1981-82	6.91	3.01	3.90	8.75	5.50	3.25
1982-83	7.08	3.25	3.83	9.07	5.91	3.16

1983-84	7.36	3.61	3.75	9.07	7.00	2.07
1984-85	7.58	4.05	3.53	95.62	6.85	88.77
1985-86	17.70	4.37	13.33	28.06	6.28	21.78
1986-87	18.90	4.59	14.31	14.77	2.32	12.45
1987-88	18.19	4.20	13.99	64.65	20.74	43.91
1988-89	21.78	5.48	16.30	–8.24	2.26	10.50
1989-90	14.78	4.73	10.05	17.52	4.47	13.05
1990-91	15.17	4.69	10.48	26.90	5.59	21.31
1991-92	16.72	4.81	11.91	23.34	1.74	21.60
1992-93	17.35	4.51	12.84	14.21	2.42	11.79
1993-94	15.51	4.23	11.28	4.76	6.69	–1.93
1994-95	15.97	4.47	11.50	20.50	8.17	12.33
1995-96	16.37	4.80	11.57	65.70	10.58	55.12
1996-97	19.86	5.21	14.65	31.87	–1.86	33.74
1997-98	21.32	4.35	16.97	7.35	3.81	3.54
1998-99	18.70	4.25	14.45	14.39	3.77	10.62
1999-00	18.03	4.17	13.86	–43.65	8.70	–52.35
2000-01 (R.E.)	10.57	4.72	5.85	5.83	1.73	4.10
2001-02 (B.E.)	9.90	4.30	5.60			

Note: Calculations are based on Tables 5.1 and 5.2

A scrutiny of Table 5.3 shows that there existed a marked shift in the pattern of tax revenue since the inception of the State in 1972-73. For instance, the Average Tax Rate seems to have registered a moderate increase for the State's own tax revenue and a quantum jump for the shared taxes. This is clearly shown by the fact that, whereas the Average Tax Rate of the State's own tax which was only 1.15 per cent in the year 1972-73 increased to a mere 4.30 per cent in the year 2001-02. On the other hand, the Average Tax Rate of shared taxes increased from 2.02 per cent in the year 1972-73 to 13.86 per cent in the year 1999-2000. The revised estimate for 2000-01 and the budget estimate for 2001-02 are 5.85 per cent and 5.60 per cent respectively.

Further, the bifurcation of the total tax revenues into those accruing to the State's own taxes and shared taxes, clearly shows that the bulk of the increase in the total tax revenue is accounted for by the shared taxes. Of the 18.03 per cent of the net state domestic product (column 2 of the table), taken away by the State and the Centre in the year 1999-2000, 13.86 per cent is by the Centre alone, and the rest 4.17 per cent by the State government. In other words, the Union Government has collected more than 77 per cent of the total revenue, and the contribution of the State itself is only 23 per cent. It can be seen that throughout the thirty year period of our study, only the year

1984-85 witnessed the contribution of the State's own taxes to be slightly higher than the contribution of shared taxes. This means that, the contribution of the State's own taxes declined from 36.28 per cent in the year 1972-73 to 23.13 per cent in 1999-2000, though the figures for 2000-01 and 2001-02 which are revised estimate and budget estimate respectively show an increasing trend. On the other hand the shared taxes steadily increased from 63.72 per cent in 1972-73 to 76.87 per cent in the year 1999-2000, in spite of the fact that the figures for 2000-01 and 2001-02 which are the revised and budget estimate figures respectively, show a decline.

The means and measures of Dispersion of the Average and Marginal Rates of Taxation for the entire period of our study have been estimated. The purpose here is to find out the range of variations in these two tax rates over these years. The figures for the range of variation in these two tax rates are presented below in Table 5.4.

From the above Table, by considering the average tax rate of total tax revenue, State's own tax revenue and shared taxes it is found that the coefficient of variation (62.48) of average tax rate of shared taxes is the highest and therefore least consistent or most variable. On the other hand it is found that the coefficient of variation (33.69) of the average tax rate of State's own tax revenue is the lowest and therefore most

consistent or least variable. Similarly, by taking into account the marginal tax rate of total tax revenue, State's own tax revenue and

Table 5.4 Means and Measures of Dispersion of Average and Marginal Tax Rates (1972-73 to 2001-02)

Sl. No.	Average/ Marginal Tax Rate	Mean	Standard Deviation	Coefficient of Variation
1.	Average Tax Rate of Total Tax Revenue	11.9113	6.2153	52.18
2.	Average Tax Rate of State's own Tax Revenue	3.6470	1.2285	33.69
3.	Average Tax Rate of Shared Taxes	8.2643	5.1637	62.48
4.	Marginal Tax Rate of Total Tax Revenue	18.0328	24.1038	133.67
5.	Marginal Tax Rate of State's own Tax Revenue	5.8062	4.0738	70.16
6.	Marginal Tax Rate of Shared Taxes	12.9510	22.7247	175.47

Note: Coefficient of variation is calculated by using Karl Pearson's formula

$$V = \frac{\sigma}{a} \times 100$$

where, V = Coefficient of Variation, σ = Standard Deviation and a = mean value of the series.

shared taxes it is found that the coefficient of variation (175.47) of marginal tax rate of shared taxes is the highest and therefore least consistent or most variable. However, the coefficient of variation (70.16) of the marginal tax rate of State's own tax revenue is the lowest and therefore most consistent or least variable.

5.3.3 Composition of State's Tax Revenue

It is pertinent to know the composition of the State's tax revenue in the process of the State making an effort at mobilizing additional resources through taxation. As a consequence, the direct and indirect taxes have increased in importance both in absolute as well as in relative terms. In order to find out how far these changes in the structure and yield of these taxes have remained consistent with the requirements of rapid growth, an analysis of the trend in revenue yields from different taxes and also their relative importance in the system of taxation has been made.

It has been pointed out earlier that our study tries to analyze the composition of the tax revenues in terms of either the percentage of different taxes in the total tax revenue, or, the ratio of these taxes to net

state domestic product (NSDP); here, an attempt is made to lay more emphasis on the changes in the composition of tax revenue.

Table 5.5 shows more in detail the composition of the total tax revenue, State's own tax and shared taxes from 1972-73 to 2001-02. The figures in parenthesis indicate the percentage contribution of direct and indirect taxes to their respective totals.

By looking at the components of Table 5.5 we can safely infer that indirect taxes have contributed a larger share to the increase in tax revenue of the Meghalaya Government over the years. While the total tax revenue has swollen up by more than ninety seven times during 1972-73 to 2001-02, the direct tax revenue has increased by a mere nearly twenty four times and the indirect tax revenue has expanded by more than one hundred and twenty three times. In absolute terms, during the period of our study, while the indirect tax revenue has witnessed a remarkable augmentation of Rs. 299.90 crores, the increase in direct tax revenue is a mere Rs. 20.38 crores. It is worth noting that there has been a consistent increase in State taxes except for 1997-98 and similarly there has been a consistent rise in shared taxes except for the years 1989-90 and 1990-91. But it is distressing to note the decline in shared taxes for the years 2000-01 and 2001-02 although the figures for these two years represent the revised estimate and

budget estimate respectively. In both the sources of tax revenue, the indirect taxes occupy a predominant position throughout the period of our study.

Several recent studies on economic development have proved that with the growth of the economy, the share of direct taxes in total revenue, both at the State and National income level, would reveal a consistent increase, because with the rise in the net state domestic product as well as the per capita income, the scope for expansion of taxation both vertically and horizontally becomes possible. The simple reason for the insignificant contribution of the direct taxes to the State exchequer is because of the predominance of the agricultural sector in the State economy. In a backward State like Meghalaya, in the year 2001, more than 77 per cent of the total population is directly or indirectly engaged in agricultural activities, thereby giving rise to a substantial existence of a subsistence sector in the State economy. As a result, the taxable capacity of the people is extremely weak in addition to the already limited tax base. Therefore, it is not possible on the part of the State government to bring in better elasticity into the overall tax system through direct taxes. Moreover, it has become imperative to rationalise the insignificant role of the direct taxes in the overall tax structure of the State economy.

There are also other important factors, which contribute to the decline in the importance of direct taxation as a source of revenue for the State. Some of these are: (a) insufficient tax incentives and concessions or tax holidays that have been granted over the planning period for capital formation to take place in the private sector, (b) the negligible contribution of the agricultural income tax to the total direct taxes due to its gradual disappearance from the scene or the half-hearted implementation of the same, and (c) the existence of mass poverty and the prevalence of self-employment, which has kept many people away from the direct tax net. Therefore, from the above findings it can be concluded that Meghalaya has still a long way to go before it can acquire the status of a developed State.

On the other side of the picture we find the increasing reliance of the economy of Meghalaya on indirect taxation, which is in tune with the stand taken by the Taxation Enquiry Commission and the Planning Commission, regarding the role and effectiveness of indirect taxation in India. This fact is reflected in the views put forward by Harberger[5] and others, whereby they observed that direct taxes have a tendency to reduce the rate of savings more than would an indirect tax of equal revenue yield. They further pointed out the known fact that most of the underdeveloped economies face the problem of savings mobilisation in

order to accelerate the pace of their economic development, and therefore came to the conclusion that the impact of direct taxes on savings would have a deleterious effect on the rate of growth of these economies, which could probably be avoided, if the equivalent amount yielded by the tax could be raised through indirect levies. On the basis of this argument, we may hasten to generalise the fact of the predominant role of indirect taxes in the tax structure of Meghalaya, which aims at resource mobilisation for development needs.

A closer examination of Table 5.5 shows that the contribution of direct tax to the total tax system of the State keeps on steadily declining from 26.73 per cent in 1972-73 to 22.68 per cent in 1977-78. After that the decline is on a steep downhill keeping the average percentage hovering about 5.02 per cent and 19.48 per cent. Another alarming feature of the tax structure in Meghalaya is the heavy dependence on shared taxes as a source of revenue which was 63.66 per cent in 1972-73 steadily increased to 76.84 per cent in 1999-2000, although the figures for 2000-01 and 2001-02 show a declining trend. Thus, it can be pointed out that the State has to put in more efforts in order to intensify its own source of revenue.

5.3.4 Pattern of the Composition of the State's Tax Revenue

It is clear from the above discussion that during the period of our study, whatever increase in tax revenues that has taken place could be achieved only through the rationalisation of the tax structure of both direct and indirect taxes. Hence, in this section, we are going to examine the changes that have taken place in the structure of the State's own tax revenue, i.e., in terms of the trend in revenue yields from various taxes and what has been the relative place occupied by them in the system of taxation over the last thirty years of our study. This information is being provided in Table 5.6.

It can be seen from Table 5.6 that the pattern of State's own taxes has changed significantly in relative terms, i.e., there has been a tremendous increase in taxes on commodities and services consisting of State Excise, Sales Tax, Motor Vehicle Tax, Goods and Passenger Tax, Duties on Electricity, Entertainment including Betting Taxes at the cost of Taxes on income and expenditure, and Taxes on Property and Capital Transaction which include Land Revenue and Stamps and Registration fees, which may be considered desirable for the period under study. This trend is corroborated by the relative percentage contribution of these taxes to the State's own tax revenue. The percentage contribution of Land Revenue and Stamps and Registration

Fees which stood at 0.83 per cent and 7.44 per cent respectively in the year 1972-73 declined consistently during the period of study to the level of 0.14 per cent and 2.09 per cent respectively in the year 2001-02. This trend conforms to the general theoretical and empirically justified hypothesis: with the gradual commercialisation and modernisation of an economy, it becomes possible for a developing economy to shift from agricultural taxes to taxes on commodities and services.

The next interesting observation is the changes in the composition of State taxes on commodities and services during the period of our study. The enormous growth in revenue from these taxes can be attributed to State's sales tax. In fact, this source contributed the maximum to the State's own tax revenue throughout the period of our study. The percentage contribution of sales tax to the State's own tax revenue which was 45.45 per cent in 1972-73 increased gradually without much fluctuations to 51.83 per cent in 2001-02. The highest contribution of 63.28 per cent was recorded in the year 1988-89. Sales Taxation has been occupying a predominant position in the tax structure due to the extension of sales taxation along with the expansion of the tax base and, the frequent upward revision of its rate from time to time. Similarly, in the case of State Excise, there has been

an increase from 14.05 per cent in 1972-73 to 38.30 per cent in 2001-02 proving to be the second most powerful revenue earner for the State. This could be explained by the fact that the State does not follow the other States in the country in implementing the policy of prohibition. The Duties on Electricity are showing a declining trend from 1.65 per cent in 1972-73 to 0.18 per cent in 2001-02. The only exception was in 1983-84 when it contributed 3.47 per cent of the total State own tax revenue. For the rest of the period of our study, the contribution was between two and less than one per cent. The same observation could be made in the case of the contribution of Motor Vehicle Tax and Goods and Passenger Tax amounting to 16.53 per cent and 3.31 per cent respectively in 1972-73, which came down to 3.35 per cent and 2.36 per cent respectively in 2001-02. Even the Entertainment including Betting Taxes showed a declining trend during the period of our study. Therefore, the declining trends are an indicator that the State has not been able to rationalise its budgets throughout the period of our study.

Switching over our attention to the shared taxes, the total share in Central Taxes, Duties, etc., has increased steadily from 63.66 per cent in 1972-73 to 76.84 per cent in 1999-2000, although there is a decline in the years 2000-01 and 2001-02 which are the revised estimate and

the budget estimate figures respectively. This is mainly contributed by the share of Union Excise Duties which was 36.94 per cent in 1972-73 and ultimately jumped to 66.31 per cent in 1999-2000. However the figures for the two years thereafter show an inclination to decrease. On the other hand, the percentage share of taxes on income other than corporation tax in the gross shared taxes shows a declining trend throughout the period under study, i.e., a decrease from 26.13 per cent in 1972-73 to 6.37 per cent in 2001-02.

A striking feature of the State's taxation as shown by the above Table is the phenomenal increase in shared taxes' contribution to the total tax revenue of the State. This continual outpacing of the State's own tax revenue by the shared taxes is supported by the figures presented in Table 5.6, whereas the overall percentage contribution of the State's own individual taxes to the total tax revenue presents a declining trend throughout. The increasing dependence of the State on the share of Central taxes might partly be due to the ever-increasing pressure of the State on the Central Government to widen the pool of shareable taxes.

Thus, the trend that is observed from the pattern of the composition of the State's taxes is not at all warranted from the point of view of a healthy fiscal economy. The reverse would have been

commendable in the context of the State's efforts at achieving self-reliance with regard to resource mobilisation of sufficient resources for implementing several developmental programmes. In order to substantiate our argument, we shall work out the ratio of specified taxes to the net state domestic product.

5.3.5 The Ratio of Individual Taxes to Net State Domestic Product

To what extent the exercise of resource mobilisation by the Government has been a success can be judged from the improvement in the proportion of net state domestic product taken away as taxes. Moreover, the percentages of different sources of revenue to net state domestic product can be used to study the shifts in the tax structure. Bearing in mind these ends, an attempt is being made to relate the specified taxes to net state domestic product for which information is being provided in Table 5.7 below.

From the information given in Table 5.7, it can be clearly seen that the share of total tax revenue to net state domestic product has increased from 3.17 per cent in 1972-73 to 9.90 per cent in 2001-02. It can be clearly seen that professional tax is a stagnant source of revenue. From 0.02 per cent of the net state domestic product in 1972-73, it was increasing nominally to 0.09 per cent in 1987-88 and again

Table 5.7 Tax Revenue as a Percentage of Net State Domestic Product in Meghalaya

	STATE'S OWN TAX REVENUE										
Year	Profes-sional Tax	Land Reve-nue	Stamps & Regis-tra-tion Fees	State Excise	Sales Tax	Motor Vehicle Tax	Goods and Passen-ger Tax	Duties on Elec-tricity	Enter-tain-ment inclu-ding Betting Taxes	Pur-chase Tax	State Own Tax Reve-nue
1	2	3	4	5	6	7	8	9	10	11	12
1972-73	…..	0.01	0.09	0.16	0.52	0.19	0.04	0.02	0.12	….	1.15
1973-74	0.02	0.05	0.07	0.20	0.72	0.16	0.06	0.02	0.13	….	1.43
1974-75	0.03	0.09	0.08	0.25	0.92	0.16	0.07	0.02	0.13	….	1.74
1975-76	0.03	0.04	0.08	0.26	1.05	0.17	0.09	0.02	0.15	….	1.89
1976-77	0.05	0.04	0.08	0.32	1.08	0.19	0.13	0.03	0.15	….	2.07
1977-78	0.03	0.04	0.08	0.30	0.98	0.19	0.11	0.04	0.15	….	1.91
1978-79	0.05	0.01	0.09	0.56	1.07	0.21	0.11	0.03	0.15	….	2.26
1979-80	0.05	0.06	0.08	0.59	1.19	0.21	0.11	0.04	0.11	0.01	2.44
1980-81	0.07	0.08	0.09	0.71	1.29	0.21	0.11	0.03	0.14	….	2.72
1981-82	0.08	0.03	0.10	0.77	1.32	0.23	0.31	0.05	0.11	0.01	3.01
1982-83	0.07	0.03	0.10	0.84	1.55	0.25	0.11	0.01	0.14	0.15	3.25
1983-84	0.08	0.02	0.12	0.89	1.86	0.29	0.12	0.13	0.10	0.02	3.61
1984-85	0.04	0.03	0.11	1.04	2.27	0.25	0.12	0.04	0.13	0.04	4.05
1985-86	0.06	0.03	0.11	0.99	2.50	0.36	0.12	0.01	0.11	0.08	4.37
1986-87	0.07	0.06	0.13	1.06	2.64	0.30	0.12	0.03	0.13	0.06	4.59
1987-88	0.09	0.01	0.11	1.00	2.32	0.27	0.11	0.04	0.24	0.01	4.20
1988-89	0.08	0.02	0.11	1.18	3.47	0.28	0.12	Negl.	0.15	0.08	5.48
1989-90	0.07	0.03	0.09	1.65	2.28	0.24	0.13	Negl.	0.09	0.15	4.73
1990-91	0.04	0.01	0.09	1.64	2.28	0.27	0.11	0.01	0.09	0.16	4.69
1991-92	0.06	0.01	0.08	1.99	2.06	0.27	0.12	Negl.	0.07	0.14	4.81
1992-93	0.04	0.01	0.07	1.87	2.01	0.26	0.10	Negl.	0.06	0.10	4.51
1993-94	0.07	0.02	0.08	1.83	1.74	0.22	0.11	Negl.	0.05	0.10	4.23
1994-95	0.08	0.01	0.08	1.64	2.16	0.19	0.11	Negl.	0.12	0.09	4.47
1995-96	- 0.01	0.05	0.10	1.89	2.13	0.23	0.11	Negl.	0.19	0.10	4.80
1996-97	0.08	0.01	0.08	2.11	2.11	0.20	0.38	Negl.	0.04	0.20	5.21
1997-98	0.03	0.01	0.12	1.66	2.18	0.18	0.08	0.01	0.01	0.07	4.35
1998-99	0.04	0.02	0.11	1.57	2.21	0.14	0.07	0.04	0.06	0.01	4.25
1999-00	0.02	0.01	0.11	1.60	2.17	0.15	0.06	Negl.	0.05	0.01	4.17
2000-01	0.12	0.01	0.09	1.71	2.32	0.17	0.11	0.04	0.06	0.11	4.72
2001-02	0.01	0.01	0.09	1.65	2.23	0.14	0.10	0.01	0.04	0.02	4.30

Calculations are based on Tables 5.1 and 5.5

Table 5.7a Tax Revenue as a Percentage of Net State Domestic Product in Meghalaya

Year	SHARED TAXES					Total Tax Revenue	Total Direct Taxes	Total Indirect Taxes
	Taxes on Income other than Corporation Tax	Other Taxes on Income and Expenditure	Share of Union Excise Duties	Additional Duties of Excise	Total share in Central Taxes Duties, etc.			
	14	15	16	17	18	19	20	21
1972-73	0.83	0.02	1.17	….	2.02	3.17	0.85	2.32
1973-74	0.86	0.02	1.26	….	2.13	3.56	0.93	2.63
1974-75	0.82	0.02	1.15	….	1.99	3.73	0.94	2.80
1975-76	1.14	0.02	1.37	….	2.53	4.42	1.22	3.19
1976-77	0.97	0.02	1.58	….	2.57	4.64	1.07	3.57
1977-78	0.91	0.01	1.48	….	2.40	4.32	0.98	3.34
1978-79	0.85	0.01	1.19	0.35	2.40	4.65	0.91	3.75
1979-80	0.93	….	2.71	0.30	3.94	6.38	1.05	5.34
1980-81	0.99	….	2.71	0.30	4.00	6.72	1.14	5.58
1981-82	0.87	- 0.01	2.71	0.32	3.90	6.91	0.99	5.93
1982-83	0.89	Negl.	2.66	0.30	3.84	7.08	1.00	6.09
1983-84	0.79	….	2.60	0.35	3.75	7.36	0.89	6.46
1984-85	0.72	Negl.	2.41	0.39	3.53	7.58	0.79	6.79
1985-86	0.99	….	11.84	0.49	13.33	17.70	1.09	16.61
1986-87	1.03	….	12.77	0.51	14.31	18.90	1.16	17.74
1987-88	1.02	Negl.	12.50	0.47	13.98	18.19	1.11	17.08
1988-89	0.99	….	14.84	0.47	16.30	21.78	1.09	20.69
1989-90	1.09	….	8.37	0.42	9.88	14.78	1.19	13.41
1990-91	0.76	….	9.42	0.29	10.47	15.17	0.81	14.35
1991-92	1.20	….	10.29	0.41	11.91	16.72	1.27	15.44
1992-93	1.29	….	11.11	0.44	12.84	17.35	1.34	16.01
1993-94	1.41	….	9.48	0.38	11.28	15.51	1.50	14.00
1994-95	1.41	….	9.69	0.39	11.50	15.97	1.50	14.47
1995-96	2.29	….	8.93	0.35	11.57	16.37	2.33	14.04
1996-97	2.58	….	11.69	0.38	14.65	19.86	2.67	17.19
1997-98	3.53	….	13.06	0.37	16.96	21.32	3.57	17.74
1998-99	1.97	….	12.19	0.30	14.45	18.70	2.02	16.68
1999-00	1.90	….	11.95	….	13.85	18.03	1.92	16.11
2000-01	0.73	….	5.12	….	5.85	10.57	0.86	9.72
2001-02	0.63	….	4.98	….	5.61	9.90	0.65	9.25

Calculations are based on Tables 5.1 and 5.5

declining gradually to 0.01 per cent in 2001-02. Only the year 1995-96 saw a negative contribution of 0.01 per cent.

Again in the case of land revenue, the percentage contribution remains more or less stagnant throughout the period of our study with 0.01 per cent of the net state domestic product in 1972-73 and recording the same figure in the year 2001-02. There were, however, some slight fluctuations in the contribution viz., the year 1974-75 registered 0.09 per cent, 1980-81 recorded 0.08 per cent and the years 1976-77 and 1986-87 witnessed the contribution of 0.06 per cent of the net state domestic product. With regard to Stamps and Registration Fees, the contribution was stagnant with 0.09 per cent of the net state domestic product in 1972-73 and recording 0.11 per cent in 1999-2000, thereafter showing the same figure of 0.09 per cent in 2001-02. Receipts from State excise duty, which registered 0.16 per cent in 1972-73 leaped to a notable 1.65 per cent in 2001-02. Sales Tax contributed the maximum amount during the period of our study. From 0.52 per cent of the net state domestic product in 1972-73 it increased to 2.23 per cent in 2001-02. In the case of Motor Vehicle Tax the receipts tend to decline from 0.19 per cent in 1972-73 to 0.14 per cent in 2001-02. The Goods and Passenger Tax receipts showed signs of slight increase from 0.04 per cent in 1972-73 to 0.10 per cent in the

year 2001-02. Similarly, the Purchase Tax did not show much increase with only 0.01 per cent of the net state domestic product in 1979-80 it registered 0.02 per cent in 2001-02. In respect of Duties on Electricity and Entertainment including Betting Taxes the contribution as a proportion of the net state domestic product showed a declining trend during the period of our study. On the basis of our findings above, we may draw certain conclusions which are as follows:

(i) Assessing the ratio of State's own taxes to the net state domestic product, it can be clearly seen that out of 4.30 per cent of the net state domestic product mopped up through taxation in the year 2001-02, 2.23 per cent was accounted for by the State's Sales Tax alone. The overall incidence of Sales Tax has increased more than four fold from 0.52 per cent in 1972-73 to 2.23 per cent in 2001-02. This amply proves that the State's Sales Tax has emerged as the single most important source of the State's own tax revenue during the period of our study. Next comes the State Excise as the second most important source of revenue. It accounted for 1.65 per cent of the net state domestic product in the year 2001-02 and its incidence increased from 0.16 per cent in 1972-73 to 1.65 per cent in 2001-02. The remaining 0.42 per cent of the net state domestic product was accounted for by the other taxes viz., Professional Tax, Land Revenue, Stamps and

Registration Fees, Motor Vehicle Tax, Goods and Passenger Tax, Duties on Electricity, Entertainment including Betting Taxes and Purchase Tax. Thus, from the point of view of productivity, this latter group of taxes has clearly displayed a dismal performance during the period of our study.

(ii) A closer scrutiny of the ratio of indirect taxes to the State income reveals that the overall incidence of indirect taxes has increased more than ten times during the period of our study, from 2.32 per cent in 1972-73 to 16.11 per cent in 1999-2000, even though it is showing sign of a decline to 9.25 per cent in 2001-02.

Thus, the inferences substantiate our earlier findings. Further, it is to be noted that the relative importance of different taxes, however, has not varied much, when they are related to the net state domestic product.

Therefore, in the absence of additional means to mop up adequate revenue, the State of Meghalaya is far from the goal of financial self-reliance, whose dependence on federal transfers constitute more than seventy six per cent of the total fiscal resources of the State. As a consequence of the devolution of increasing developmental responsibilities to the State on the one hand and at the same time the allocation of relatively inelastic sources of revenue on the other, there

has been a growing and widening gap between the State's own financial resources and its expenditure requirements. This has augmented the need for increasing transfers of funds from the Centre to the State. Bearing in mind this current tendency, we shall next examine the quantitative implications of federal transfers to the State of Meghalaya.

PART II

5.4 Trends and Patterns of Federal Transfers

In this section, an analysis has been made to examine the magnitude and the components of federal transfers to the State of Meghalaya in order to find out their relative size and importance in the overall fiscal structure of the State.

The intention here is to examine the trends in the composition of federal transfers with reference to its main components, namely, (i) tax devolution, that is State's share of the Central taxes as determined by the recommendations of the Finance Commission, (ii) grants-in-aid of different categories, and, (iii) Central loans.

The pattern of financial devolution in Meghalaya as in other States of India, is being determined by the approach to fiscal federalism as enshrined in the Constitution. Over the years, the

principle of fiscal federalism in India has undergone a drastic change. During the pre-independence period, before the passing of the Government of India Act, 1935, pure federalism was sought to be established in India. In fact the 1919 Act conceded substantial fiscal autonomy to the then "provinces." On the other hand, under the Act of 1935, there was a clear shift from the principle of pure federalism to the principle of fiscal deficiency, which tended to restrict the fiscal autonomy of the States, making them largely dependent on the "Federal Government". Therefore, the period between 1919 and 1935 witnessed a clear shift from the "Loosest of the loose" to the "Tightest of the tight" version of fiscal federalism.[6]

Post-independence period saw the fiscal deficiency approach securely embodied in the Constitution. As pointed out by the Report of the Taxation Enquiry Commission: "The Constitution of India closely follows the pattern of division of tax powers between the Centre and the States established by the Government of India Act, 1935. Under the quasi-federal character of our Constitution, fairly wide powers of taxation belong to the Union."[7]

According to the provisions of the Constitution, the Finance Commission shall be appointed by the President of India once in five years, and that it has been empowered to make recommendations

regarding the sharing of taxes between the States of the Union. Grants-in-aid in general are viewed as the backbone of the Indian federal system, for these funds provide substantial assistance to the States, which are trying to improve their taxing capacities and at the same time have a narrow tax base. Besides the Finance Commission, two other separate agencies have also been given jurisdiction over the allocation of grants-in-aid funds. They are the Planning Commission, which possesses discretionary powers to determine the amount and the nature of the assignment of the funds for planning expenditures for various States and, the Ministry of Finance, which determines the amount of grants-in-aid on the basis of the priorities of the projects. Besides providing direct grants, the Planning Commission is empowered to make payments in the form of loans to meet items in the State budgets, which are classified as plan expenditures.

The emergence of the Planning Commission as a central planning authority determining the size of plan grants to the States has enhanced the Centre's financial control over the States. As a result of this intensified adherence to the principle of fiscal deficiency, Meghalaya has shown a distinct trend of rapidly growing financial dependence on federal transfers. Bearing in mind this ground reality, an attempt is

Table 5.8 Transfer of Financial Resources from the Union to the State of Meghalaya

(Rupees in Crores)

Year	Shared taxes	Total statutory grants	Loans & Advances from the Centre	Total Resources transferred	State's Total Own Resources (Tax & Non-tax)	Aggregate State's Expenditure	Total Resource Transferred to Aggregate State's Expenditure	State's Total Own Resources to Aggregate State's Expenditure
1	2	3	4	5	6	7	8	9
1972-73	2.12	13.23	5.36	20.71	2.14	33.25	62.29	6.44
	(10.24)	(63.88)	(25.88)	(100.00)				
1973-74	2.31	12.18	5.46	19.95	2.82	26.86	74.27	10.50
	(11.58)	(61.05)	(27.37)	(100.00)				
1974-75	2.23	23.39	0.64	26.26	3.92	32.69	80.33	11.99
	(8.49)	(89.07)	(2.44)	(100.00)				
1975-76	2.92	25.19	1.00	29.11	5.22	35.44	82.14	14.73
	(10.03)	(86.53)	(3.44)	(100.00)				
1976-77	3.09	30.82	1.94	35.85	4.62	40.95	87.55	11.28
	(8.62)	(85.97)	(5.41)	(100.00)				
1977-78	3.24	33.46	2.50	39.20	4.62	56.18	69.78	8.22
	(8.26)	(85.36)	(6.38)	(100.00)				
1978-79	3.59	43.90	2.33	49.82	7.53	55.29	90.11	13.62
	(7.21)	(88.12)	(4.67)	(100.00)				
1979-80	6.52	46.19	1.90	54.61	7.69	64.19	85.08	11.98
	(11.94)	(84.58)	(3.48)	(100.00)				
1980-81	7.19	55.94	4.05	67.18	26.81	101.94	65.90	26.30
	(10.70)	(83.27)	(6.03)	(100.00)				
1981-82	8.03	61.81	5.06	74.90	12.54	136.57	54.84	9.18
	(10.72)	(82.52)	(6.76)	(100.00)				
1982-83	8.73	74.71	24.67	108.11	13.36	124.71	86.69	10.71
	(8.08)	(69.10)	(22.82)	(100.00)				
1983-84	9.86	98.39	9.89	118.14	16.71	147.01	80.36	11.37
	(8.35)	(83.28)	(8.37)	(100.00)				
1984-85	10.67	115.28	10.83	136.78	22.03	178.29	76.72	12.36
	(7.80)	(84.28)	(7.92)	(100.00)				
1985-86	45.52	111.02	13.00	169.54	26.44	191.93	88.33	13.78

	(26.85)	(65.48)	(7.67)	(100.00)				
1986-87	55.27	127.54	13.18	195.99	31.85	230.22	85.13	13.83
	(28.20)	(65.07)	(6.73)	(100.00)				
1987-88	65.29	154.29	15.78	235.36	36.88	264.36	89.03	13.95
	(27.74)	(65.55)	(6.71)	(100.00)				
1988-89	82.47	171.18	22.79	276.44	48.62	318.05	86.92	15.29
	(29.83)	(61.92)	(8.25)	(100.00)				
1989-90	65.17	192.82	36.02	294.01	50.05	350.69	83.84	14.27
	(22.17)	(65.58)	(12.25)	(100.00)				
1990-91	80.36	217.89	27.87	326.12	54.72	405.65	80.39	13.49
	(24.64)	(66.81)	(8.55)	(100.00)				
1991-92	105.27	238.25	20.74	364.26	65.17	492.29	73.99	13.24
	(28.90)	(65.41)	(5.69)	(100.00)				
1992-93	125.64	240.60	22.19	388.43	62.26	588.60	65.99	10.58
	(32.35)	(61.94)	(5.71)	(100.00)				
1993-94	127.82	296.63	105.41	529.86	76.33	909.08	58.29	8.40
	(24.12)	(55.98)	(19.90)	(100.00)				
1994-95	144.63	290.76	37.50	472.89	94.92	796.20	59.39	11.92
	(30.58)	(61.49)	(7.93)	(100.00)				
1995-96	159.71	391.00	20.87	571.58	133.18	796.41	71.77	16.72
	(27.94)	(68.41)	(3.65)	(100.00)				
1996-97	217.57	388.06	28.53	634.16	124.84	813.58	77.95	15.34
	(34.31)	(61.19)	(4.50)	(100.00)				
1997-98	286.77	306.58	39.42	632.77	103.40	850.72	74.38	12.15
	(45.32)	(48.45)	(6.23)	(100.00)				
1998-99	300.55	392.32	48.88	741.75	139.82	1022.93	72.51	13.67
	(40.52)	(52.89)	(6.59)	(100.00)				
1999-00	341.76	415.04	50.76	807.56	186.85	1195.40	67.56	15.63
	(42.32)	(51.39)	(6.29)	(100.00)				
2000-01	164.25	845.01	61.31	1070.57	227.96	1601.89	66.83	14.23
(R.E.)	(15.34)	(78.93)	(5.73)	(100.00)				
2001-02	183.16	892.17	60.88	1136.21	245.80	1785.15	63.65	13.77
(B.E.)	(16.12)	(78.52)	(5.36)	(100.00)				

Note: Shared taxes include (i) share of income tax proceeds, and (ii) share of proceeds from Union excise duties.

Source :

Budget in Brief, Government of Meghalaya:: 1974-75; 1977-78; 1978-79; 1982-83; 1983-84;

Budget at a Glance, Government of Meghalaya:: 1984-85; 1986-87; 1989-90; 1996-97; 2000-01;

made to ascertain the compositional magnitude of the total Central transfers in the over-all State finances. Table 5.8 gives a picture of the total resources transferred from the Union to the State of Meghalaya during the period 1972-73 to 2001-02. The total Central resources transferred to the State in absolute terms were Rs. 20.71 crores in 1972-73, which increased to Rs. 1136.21 crores in 2001-02. The ratio of Union resources transferred to aggregate State's expenditure was 62.29 per cent in 1972-73 which increased to 63.65 per cent in 2001-02. During this period, there were fluctuations as high as 90.11 per cent in 1979-80 and as low as 58.29 per cent in 1993-94. On the other hand, the ratio of the State's total own resources both tax and non-tax to aggregate State's expenditure was 6.44 per cent in 1972-73 which showed a modest increase in 2001-02 which is 13.77 per cent. From the information that we have for the thirty years of our study, we can hypothesise that the State will continue to depend heavily on the Central transfers, in the years to come.

A detailed examination of Table 5.8 also reveals that the funds made available to the State through the statutory transfers were Rs. 13.23 crores in 1972-73 which increased steeply to Rs. 892.17 crores in 2001-02. In relative terms, the statutory grants follow the declining trend, from 63.88 per cent of the total resources transferred in 1972-73

to 51.39 per cent of the total resources transferred in 1999-00, even though the budget figure in 2001-02 is 78.52 per cent. Thus the Table clearly reveals that the significance of the statutory grants which fall under the purview of the Finance Commission has been declining. The important factors that have contributed to the declining effectiveness of the Finance Commission in determining the nature and quantum of financial assistance to the State by the Union could be found in the nature of central planning process that the economy has adopted.[8] On the other hand, the increasing dependence of the State government on the non-statutory grants (although this percentage shows a declining trend, in comparison to the statutory grants) cannot remain the trend in order to maintain the financial autonomy of the State. This clearly shows that the over dependence of the State government on Central grants and aids may not be conducive to the financial health of the State economy.

Moreover, Table 5.8 discloses the fact that the State's share of divisible taxes and duties has increased both in absolute and in relative terms, from Rs. 2.12 crores in 1972-73 to Rs. 341.76 crores in 1999-2000. In terms of percentage, the share of divisible taxes to the total resources transferred which was 10.24 per cent in 1972-73 jumped to 42.32 per cent in 1999-2000. However the budget estimate for 2001-02

is Rs. 183.16 crore, that is 16.12 per cent of the total resources transferred. This trend without any doubt has brought about a plausible deleterious effects on the growth and sustenance of the taxation efforts of the State in recent times.

Further, if the pattern of the composition of federal transfers is to be taken as the yardstick to measure the relative degree of self-reliance of the State, then the findings of the foregoing Table corroborate the inference drawn earlier that the degree of self-reliance in Meghalaya is exceptionally low. This is further supported by Meghalaya's remarkably high dependence on grants, the high and increasing share of tax devolution, and the relatively small share of Meghalaya's own taxes and non-tax revenue in the overall resource mobilisation effort of the State.

5.5 Summary of the Findings

In this chapter we have attempted to study the problem of resource constraint and at the same time to find out the prospects of internal resource mobilization in the State since its inception in 1972-73, covering a period of thirty years of economic planning so as to meet the challenges of mounting expenditure.

From the above analysis of the planning period covering a span of thirty years, State's own tax revenue has registered a growth rate of 16.71 per cent per annum during the period of our study. This increase of State's own tax revenue over the years may be attributed to the extension of the tax base and tax coverage of these taxes and also due to an upward revision of the tax rates during these years.

The trend of total tax revenue of the State during the thirty years of our study shows the annual compound rate of growth of approximately 18.59 per cent. Total tax revenues show a rising trend throughout the period. Since the total tax revenue includes shared taxes, the higher exponential growth rate may be ascribed to the better tax mobilisation efforts made by the Central Government from time to time. Further, higher growth of total taxes indicates the degree of elasticity and buoyancy that are inherent in the shared taxes resulting in a larger devolution of resources from the Centre to the State by way of higher share in the Central taxes.

As seen earlier, total public expenditure recorded the annual compound rate of growth of approximately 14.68 per cent. The growth in public expenditure may be explained by the intensive development efforts made by the government through comprehensive economic

planning which necessitated the exploring of the new bases and sources of additional resources.

The net state domestic product indicates an annual compound rate of growth of about 12.61 per cent. This increase in net state domestic product during our period of study may be the result of the relative greater contribution of the secondary and tertiary sectors to the State income. Given the exponential growth rates of State's own taxes and the net state domestic product, it may be observed that the growth rate of State's own taxes has continually outpaced the growth of net state domestic product.

The percentage of State's own tax revenue to net state domestic product, increased slowly over the years. If, we judge the performances of the State's own tax revenue on the basis of its contribution to State income, then the performances of the State's own tax revenue presents a poor picture altogether. From this angle, the State's own tax revenue has been increasing at a very slow rate during the period of our study.

The percentage of total tax revenue to net state domestic product shows the resultant picture of dismal growth rate of total tax revenue. Nonetheless, during the thirty years of our study, a moderate share in incremental income has been transferred to the public exchequer.

The ratio of the State's own tax revenue to the total tax revenues accruing to the State during these years shows a distressing feature in that the ratio remained stagnant during the period of our study. This indicates that the State has not put in extra efforts in raising its own tax revenue in a much more efficient way during the period of our study and also has not made any sincere effort to tap more resources.

Regarding total public expenditure as a percentage of net state domestic product, the figures show the rapid expansion of Government expenditure in absolute terms and as percentage of State income in the Planning period due to the change in outlook as regards the State's role in the development of the economy. The Five Year Plans clearly have an impact on the growth of Government expenditure.

State's own tax revenue as a percentage of total public expenditure exhibits that the State has not been able to generate enough of its own resources so as to be able to cope with mounting public expenditure. The State has a long way to go in order to be self-reliant.

The observation on total tax revenue as a percentage of total public expenditure proves of the big contribution by the shared taxes to the total tax revenue, while State's own tax revenue showed a slow increasing trend. Here, again it only proves that the State has not put in

extra effort to mobilise sufficient resources to counter the explosive cycles of public expenditure growth.

If we visualise tax-income ratio as the simplest measure of tax burden or sacrifice, the analysis reveals that the State of Meghalaya fares rather poorly on this count.

The State has been depending more and more on shared taxes for the purpose of resource mobilisation. The State of Meghalaya is too poor to generate its own resources that it has to depend entirely on the Centre for its own survival. Moreover, the relative importance of the State's own taxes has been much less than it has been in the case of shared taxes as a component of total revenue of the State during the period of our study. Therefore, on the basis of its own effort, in the last thirty years of our study, Meghalaya's revenue performance has been rather dismal in the sense that the State raised a lower proportion of revenue in comparison to other sources of revenue, viz., shared taxes.

The indirect taxes have contributed a larger share to the increase in tax revenue of the Meghalaya Government over the years. While the total tax revenue has swollen up by more than ninety seven times during 1972-73 to 2001-02, the direct tax revenue has increased by a mere nearly twenty four times and the indirect tax revenue has expanded by more than one hundred and twenty three times. In both

the sources of tax revenue, the indirect taxes occupy a predominant position throughout the period of our study.

Since there is a substantial existence of a subsistence sector in the State economy, as a result, the taxable capacity of the people is extremely weak in addition to the already limited tax base. Therefore, it is not possible on the part of the State government to bring in better elasticity into the overall tax system through direct taxes. Moreover, it has become imperative to rationalise the insignificant role of the direct taxes in the overall tax structure of the State economy.

There are also other important factors which contribute to the decline in the importance of direct taxation as a source of revenue for the State such as the negligible contribution of the agricultural income tax to the total direct taxes due to its gradual disappearance from the scene or the half-hearted implementation of the same, and the existence of mass poverty and the prevalence of self-employment, which has kept many people away from the direct tax net. Therefore, from the above findings it can be concluded that Meghalaya has still a long way to go before it can acquire the status of a developed State.

On the other side of the picture we find the increasing reliance of the economy of Meghalaya on indirect taxation, which is in tune with the stand taken by the Taxation Enquiry Commission and the Planning

Commission, regarding the role and effectiveness of indirect taxation in India.

The contribution of direct tax to the total tax system of the State keeps on steadily declining. Another alarming feature of the tax structure in Meghalaya is the heavy dependence on shared taxes as a source of revenue. Thus, it can be pointed out that the State has to make more efforts in order to intensify its own source of revenue.

The pattern of State's own taxes has changed significantly in relative terms, i.e., there has been a tremendous increase in taxes on commodities and services. The percentage contribution of Land Revenue and Stamps and Registration has declined consistently during the period of study. That is, with the gradual commercialisation and modernisation of an economy, it becomes possible for a developing economy to shift from agricultural taxes to taxes on commodities and services.

The next interesting observation is the changes in the composition of State taxes on commodities and services during the period of our study. Sales Taxation has been occupying a predominant position in the tax structure due to the extension of sales taxation along with the expansion of the tax base and, the frequent upward revision of its rate from time to time. Similarly, in the case of State Excise, there has been

an increase due to the fact that the State does not follow the other States in the country in implementing the policy of prohibition. The Duties on Electricity are showing a declining trend. During the period of our study, the contribution was between two and less than one per cent. The same observation could be made in the case of the contribution of Motor Vehicle Tax including Goods and Passenger. Even the Entertainment including Betting Taxes showed a declining trend during the period of our study. Therefore, all these declining trends are an indicator that the State has not been able to rationalise its budgets throughout the period of our study.

Regarding the shared taxes it may be noted that the total share in Central Taxes, Duties, etc., has increased steadily. This is mainly contributed by the share of Union Excise Duties. On the other hand, the percentage share of taxes on income other than corporation tax in the gross shared taxes shows a declining trend throughout the period under study.

A striking feature of the State's taxation is the phenomenal increase in shared taxes contribution to the total tax revenue of the State. There is a continual outpacing of the State's own tax revenue by the shared taxes. The increasing dependence of the State on the share of Central taxes might partly be due to the ever-increasing pressure of

the State on the Central Government to widen the pool of shareable taxes.

Thus, the trend that is observed from the pattern of the composition of the State's taxes is not at all warranted from the point of view of a healthy fiscal economy. The reverse would have been commendable in the context of the State's efforts at achieving self-reliance with regard to resource mobilisation of sufficient resources for implementing several developmental programmes.

To what extent the exercise of resource mobilisation by the Government has been a success can be judged from the improvement in the proportion of net state domestic product taken away as taxes. Moreover, the percentages of different sources of revenue to net state domestic product can be used to study the shifts in the tax structure. The State's Sales Tax has emerged as the single most important source of the State's own tax revenue during the period of our study. Next comes the State Excise as the second most important source of revenue. The remaining part of net state domestic product was accounted for by the other taxes viz., Professional Tax, Land Revenue, Stamps and Registration Fees, Motor Vehicle Tax, Goods and Passenger Tax, Duties on Electricity, Entertainment including Betting Taxes and Purchase Tax. Thus, from the point of view of productivity,

this latter group of taxes has clearly displayed a dismal performance during the period of our study.

A closer scrutiny of the ratio of indirect taxes to net state domestic product reveals that the overall incidence of indirect taxes has increased more than ten times during the period of our study. It is to be noted that the relative importance of different taxes, however, has not varied much, when they are related to net state domestic product.

Therefore, in the absence of additional means to mop up adequate revenue, the State of Meghalaya is far from the goal of financial self-reliance, whose dependence on federal transfers constitute more than seventy six per cent of the total fiscal resources of the State. As a consequence of the devolution of increasing developmental responsibilities to the State on the one hand and at the same time the allocation of relatively inelastic sources of revenue on the other, there has been a growing and widening gap between the State's own financial resources and its expenditure requirements. This has augmented the need for increasing transfers of funds from the Centre to the State.

The total Central resources transferred to the State in absolute terms were Rs. 20.71 crores in 1972-73 which increased to Rs. 1136.21 crores in 2001-02. The ratio of Union resources transferred to

aggregate State's expenditure was 62.29 per cent in 1972-73 which increased to 63.65 per cent in 2001-02. From the information that we have for the thirty years of our study, we can hypothesise that the State will continue to depend heavily on the Central transfers, in the years to come.

The significance of the statutory grants which fall under the purview of the Finance Commission has been declining. The important factor could be found in the nature of central planning process that the economy has adopted. On the other hand, the increasing dependence of the State government on the non-statutory grants (although this percentage shows a declining trend, in comparison to the statutory grants) cannot remain the trend in order to maintain the financial autonomy of the State. This clearly shows that the over dependence of the State government on Central grants and aids may not be conducive to the financial health of the State economy.

The State's share of divisible taxes and duties has increased both in absolute and in relative terms. This trend without any doubt has brought about a plausible deleterious effects on the growth and sustenance of the taxation efforts of the State in recent times.

Further, if the pattern of the composition of federal transfers is to be taken as the yardstick to measure the relative degree of self-reliance

of the State, then the findings corroborate the inference drawn earlier that the degree of self-reliance in Meghalaya is exceptionally low. This is further supported by Meghalaya's remarkably high dependence on grants, the high and increasing share of tax devolution, and the relatively small share of Meghalaya's own taxes and non-tax revenue in the overall resource mobilisation effort of the State.

5.6 Concluding Remarks

It is evident from the above discussions that the State has failed miserably on the front of internal resource mobilisation thereby giving rise to a situation of explosive cycle of expenditure growth. It is a well-known fact that the capacity of the Government to execute development programmes in the State depends upon its willingness and capacity to generate the necessary resources. After using the familiar growth rate formula, it is found that State's total public expenditure (both revenue and capital accounts) recorded a growth rate of 14.68 per cent per annum during the three decades of our study as seen in the last chapter, while State's own tax revenue has registered a growth rate of 16.71 per cent per annum during the period of our study and State's total tax revenue registered a growth rate of 18.59 per cent per annum during the period of our study. From the above observations, it is very

difficult to accept the hypothesis that the level of public expenditure depends much more heavily on the tax system prevailing in the State so as to place the required revenues at the disposal of the government. This could be explained by the fact that in a backward State like Meghalaya, not only are the monetary and capital markets underdeveloped, but the level of taxation is very low due to the very structure of the State economy which is extremely backward in many respects.

The financial dependence of the State on the Union government has been on the increase in recent years. It is felt that to a large extent, the financial problems of the State arise owing to lack of effort on its own part to raise additional resources.

Since the economy of Meghalaya is so poor and backward it is imperative that a higher proportion of whatever economic resources so generated be diverted into productive investment. The option for direct tax is very limited, so the State needs to generate higher revenues from indirect tax and non-tax sources. According to a panel of economists "the way to solvency is no more through spending cuts, it's through higher income generation."[9]

As we have seen above, a modern state is a welfare state. Meghalaya is no exception to this. As a result, public expenditure is

bound to rise with the progress of the society, and the ways and means to finance these expenditures would have to be found out.

Keeping in mind the constraints of the growth of State's tax revenues over the years which we believe has given rise to an explosive cycle of public expenditure growth, an appraisal of the constituent expenditure instruments in terms of determinant study assumes much current significance. Such a study, we believe, would help in identifying the factors responsible for the observed anomaly. An attempt therefore is made to look into this intrinsic issue in terms of determinant analysis, in the next chapter.

5.7 References

1. Douglas, M. (1953): 'Taxable Capacity and British and Canadian Experience', on *Limits of Taxable Capacity*, Princeton, N.J., Tax Institute, Inc.,p.31

2. Due, J.F. and Friedlaender, A.F. (1973): *Government Finance, Economics of the Public Sector,* Georgetown, Onterio, Richard D. Irwin, Inc. Hornewood, Illionois, Irwin Dorsey Ltd., p. 87

3. Mishra B., (1996), *An Economic Study of Buoyancy and Elasticity of Orissa's Tax System,* Utkal University, Bhubaneswar, Unpublished Thesis, Ch. 5

4. Chelliah, Raja J. (1975): 'Trends in Taxation in Developing Countries,' in Richard M. Bird and Oliver Oldman (Eds.), *Readings on Taxation in Developing Countries,* London, The John Hopkins University Press, p.109

5. Harberger, A. (1964): 'Taxation, Resource Allocation, and Welfare,' in *The Role of Direct and Indirect Taxes in the Federal Revenue System*, National Bureau of Economic Research, New York, pp.25-70.

- Lewis, A. (1965): *The Theory of Economic Growth,* London, Richard D. Irwin, p.403
- Wallich, H.C. and Adler, J.H. (1951): *Public Finance in Developing Country,* M.I.T. Press, Cambridge, pp.132-144

6. Richard, A. Musgrave (1961): *The Theory of Public Finance* (I.S.E.), the McGraw-Hill Book Company, pp.179-182

7. Government of India (1975) Report of the Taxation Enquiry Commission, Vol. I, p.8

8. Mathew, T. (1975): *Tax Policy: Some Aspects of Theory and Indian Experience,* Kalyani Publishers, Delhi, pp.93-94

9. INDIA TODAY, February 14, 2000 ,p.36-44

Table 5.5 Composition of the Total Tax Revenue of Meghalaya

(Rupees in Crores)

Year	Total Taxes	Direct Taxes	Indirect Taxes	State Taxes	Direct Taxes	Indirect Taxes	Shared Taxes	Direct Taxes	Indirect Taxes
1	2	3	4	5	6	7	8	9	10
1972-73	3.33 (100.00)	0.89 (26.73)	2.44 (73.27)	1.21 (100.00)	0.01 (0.83)	1.20 (99.17)	2.12 (100.00)	0.88 (41.51)	1.24 (58.49)
1973-74	3.86 (100.00)	1.01 (26.17)	2.85 (78.83)	1.55 (100.00)	0.08 (5.16)	1.47 (94.84)	2.31 (100.00)	0.93 (40.26)	1.38 (59.74)
1974-75	4.18 (100.00)	1.05 (25.12)	3.13 (74.88)	1.95 (100.00)	0.13 (6.67)	1.82 (93.33)	2.23 (100.00)	0.92 (41.26)	1.31 (58.74)
1975-76	5.10 (100.00)	1.41 (27.65)	3.69 (72.35)	2.18 (100.00)	0.09 (4.13)	2.09 (95.87)	2.92 (100.00)	1.32 (45.21)	1.60 (54.79)
1976-77	5.57 (100.00)	1.28 (22.98)	4.29 (77.02)	2.48 (100.00)	0.11 (4.44)	2.37 (95.56)	3.09 (100.00)	1.17 (37.86)	1.92 (62.14)
1977-78	5.82 (100.00)	1.32 (22.68)	4.50 (77.32)	2.58 (100.00)	0.10 (3.88)	2.48 (96.12)	3.24 (100.00)	1.22 (37.65)	2.02 (62.35)
1978-79	6.98 (100.00)	1.36 (19.48)	5.62 (80.52)	3.39 (100.00)	0.09 (2.65)	3.30 (97.35)	3.59 (100.00)	1.27 (35.38)	2.32 (64.62)
1979-80	10.56 (100.00)	1.36 (19.48)	8.83 (83.62)	4.04 (100.00)	0.19 (4.70)	3.85 (95.30)	6.52 (100.00)	1.54 (23.62)	4.98 (76.38)
1980-81	12.07 (100.00)	2.04 (16.90)	10.03 (83.10)	4.88 (100.00)	0.26 (5.33)	4.62 (94.67)	7.19 (100.00)	1.78 (24.76)	5.41 (75.24)

1981-82	14.23 (100.00)	2.03 (14.27)	12.20 (85.73)	6.20 (100.00)	0.22 (3.55)	5.98 (96.45)	8.03 (100.00)	1.81 (22.54)	6.22 (77.46)
1982-83	16.10 (100.00)	2.26 (14.04)	13.84 (85.96)	7.37 (100.00)	0.24 (3.26)	7.13 (96.74)	8.73 (100.00)	2.02 (23.14)	6.71 (76.86)
1983-84	19.36 (100.00)	2.35 (12.14)	17.01 (87.86)	9.50 (100.00)	0.26 (2.74)	9.24 (97.26)	9.86 (100.00)	2.09 (21.20)	7.77 (78.80)
1984-85	22.91 (100.00)	2.40 (10.48)	20.51 (89.52)	12.24 (100.00)	0.21 (1.72)	12.03 (98.28)	10.67 (100.00)	2.19 (20.52)	8.48 (79.48)
1985-86	60.45 (100.00)	3.73 (6.17)	56.72 (93.83)	14.93 (100.00)	0.33 (2.21)	14.60 (97.79)	45.52 (100.00)	3.40 (7.47)	42.12 (92.53)
1986-87	73.01 (100.00)	4.48 (6.14)	68.53 (93.86)	17.74 (100.00)	0.51 (2.87)	17.23 (97.13)	55.27 (100.00)	3.97 (7.18)	51.30 (92.82)
1987-88	84.91 (100.00)	5.19 (6.11)	79.72 (93.89)	19.62 (100.00)	0.45 (2.29)	19.16 (97.71)	65.29 (100.00)	4.74 (7.26)	60.56 (92.74)
1988-89	110.19 (100.00)	5.53 (5.02)	104.66 (94.98)	27.72 (100.00)	0.50 (1.80)	27.22 (98.20)	82.47 (100.00)	5.03 (6.09)	77.44 (93.91)
1989-90	96.37 (100.00)	7.87 (8.17)	88.50 (91.83)	31.20 (100.00)	0.70 (2.24)	30.50 (97.76)	65.17 (100.00)	7.17 (11.00)	58.00 (89.00)
1990-91	116.37 (100.00)	6.23 (5.35)	110.14 (94.65)	36.01 (100.00)	0.39 (1.08)	35.62 (98.92)	80.36 (100.00)	5.84 (7.27)	74.52 (92.73)
1991-92	147.81 (100.00)	11.26 (7.62)	136.55 (92.38)	42.54 (100.00)	0.65 (1.53)	41.89 (98.47)	105.27 (100.00)	10.61 (10.08)	94.66 (89.92)
1992-93	169.82 (100.00)	13.16 (7.75)	156.66 (92.25)	44.18 (100.00)	0.52 (1.18)	43.66 (98.82)	125.64 (100.00)	12.64 (10.06)	113.00 (89.94)
1993-94	175.75 (100.00)	17.04 (9.70)	158.71 (90.30)	47.93 (100.00)	1.04 (2.17)	46.89 (97.83)	127.82 (100.00)	16.00 (12.52)	111.82 (87.48)

1994-95	200.90 (100.00)	18.85 (9.38)	182.05 (90.62)	56.27 (100.00)	1.05 (1.87)	55.22 (98.13)	144.63 (100.00)	17.80 (12.31)	126.83 (87.69)
1995-96	225.97 (100.00)	32.20 (14.25)	193.77 (85.75)	66.26 (100.00)	0.61 (0.92)	65.65 (99.08)	159.71 (100.00)	31.60 (19.79)	128.11 (80.21)
1996-97	294.94 (100.00)	39.60 (13.43)	255.34 (86.57)	77.37 (100.00)	1.28 (1.65)	76.09 (98.35)	217.57 (100.00)	38.32 (17.61)	179.25 (82.39)
1997-98	360.32 (100.00)	60.43 (16.77)	299.89 (83.23)	73.55 (100.00)	0.69 (0.94)	72.86 (99.06)	286.77 (100.00)	59.74 (20.83)	227.03 (79.14)
1998-99	388.91 (100.00)	42.08 (10.82)	346.83 (89.18)	88.36 (100.00)	1.05 (1.19)	87.31 (98.81)	300.55 (100.00)	41.03 (13.65)	259.52 (86.35)
1999-00	444.74 (100.00)	47.40 (10.66)	397.34 (89.34)	102.98 (100.00)	0.57 (0.55)	102.41 (99.45)	341.76 (100.00)	46.84 (13.71)	294.92 (86.29)
2000-01 R.E.	296.73 (100.00)	24.05 (8.11)	272.68 (91.89)	132.48 (100.00)	3.49 (2.63)	128.99 (97.37)	164.25 (100.00)	20.56 (12.52)	143.69 (87.48)
2001-02 B.E.	323.61 (100.00)	21.27 (6.57)	302.34 (93.43)	140.45 (100.00)	0.67 (0.48)	139.78 (99.52)	183.16 (100.00)	20.60 (11.25)	162.56 (88.75)

Source: (*1) Budget at a Glance,* Government of Meghalaya:: 1984-85 to 2001-2002 *(2) Statistical Hand Book*, Meghalaya, 1976 *(3) Budget in Brief*, Government of Meghalaya, 1974-75; 1977-78; 1978-79 (Figures in parentheses indicate the proportion to the total.)

Note: Rate of Growth:

(i) Total Direct Taxes = $0.5671\, e^{0.1475t}$, $R^2 = 0.9333$

(ii) Total Indirect Taxes = $2.0305\, e^{0.1929t}$, $R^2 = 0.9585$

(iii) State's Own Direct Taxes = $0.0572\, e^{0.1132t}$, $R^2 = 0.7822$

(iv) State's Own Indirect Taxes = $1.1332\, e^{0.1685t}$, $R^2 = 0.9878$

(v) Shared Direct Taxes = $0.5108\, e^{0.1493t}$, $R^2 = 0.9265$

(vi) Shared Indirect Taxes = $0.9091\, e^{0.2100t}$, $R^2 = 0.9308$

Table 5.6 Relative Contributions of State's Own Tax and Shared Taxes in Total Tax Revenue

(Rupees in Crores)

	Taxes on Income & Expen-diture	Taxes on Property & Capital Transaction		Taxes on Commodities and Services								Share in Central Taxes						
Year	Profes-sional Tax	Land Rev-enue	Stamps & Regis-tration Fees	State Excise	Sales Tax	Motor Vehicle Tax	Goods And Pass-enger Tax	Duties On Elec-tricity	Enter-tain-ment inclu-ding Betting Taxes	Pur-chase Tax	State Own Tax Rev-Nue	Taxes On Income Other Than Cor-pora-tion Tax	Other Taxes On Incom e And Expen-diture	Share Of Union Excise Duties	Addi-tional Duties Of Excise	Taxes On Hotels	Total Share In Central Taxes, Duties, Etc.	Total Tax Rev-nue
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1972-73	…	0.01 (0.03) *0.83	0.09 (2.70) *7.44	0.17 (5.11) *14.05	0.55 (16.52) *45.45	0.20 (6.01) *16.53	0.04 (1.20) *3.31	0.02 (0.60) *1.65	0.13 (3.90) *10.74	…..	1.21 (36.34) (100.00)	0.87 (26.13)	0.02 (0.60)	1.23 (36.94)	…..	…..	2.12 (63.66)	3.33 (100.00)
1973-74	0.02 (0.52) *1.29	0.05 (1.30) *3.23	0.08 (2.07) *5.16	0.22 (5.70) *14.19	0.78 (20.21) *50.32	0.17 (4.40) *10.97	0.07 (1.81) *4.52	0.02 (0.52) *1.29	0.14 (3.63) *9.03	…..	1.55 (40.16) (100.00)	0.93 (24.09)	0.02 (0.52)	1.36 (35.23)	…..	…..	2.31 (59.84)	3.86 (100.00)
1974-75	0.03 (0.72) *1.54	0.10 (2.39) *5.13	0.09 (2.15) *4.62	0.28 (6.70) *14.36	1.03 (24.64) *52.82	0.18 (4.31) *9.23	0.08 (1.91) *4.10	0.02 (0.48) *1.03	0.14 (3.35) *7.18	…..	1.95 (46.65) (100.00)	0.92 (22.01)	0.02 (0.48)	1.29 (30.86)	…..	…..	2.23 (53.35)	4.18 (100.00)
1975-76	0.04 (0.78) *1.83	0.05 (0.98) *2.29	0.09 (1.76) *4.13	0.30 (5.88) *13.76	1.21 (23.73) *55.50	0.20 (3.92) *9.17	0.10 (1.96) *4.59	0.02 (0.39) *0.92	0.17 (3.33) *7.80	…..	2.18 (42.75) (100.00)	1.32 (25.88)	0.02 (0.39)	1.58 (30.98)	…..	…..	2.92 (57.25)	5.10 (100.00)
1976-77	0.06 (1.08) *2.42	0.05 (0.90) *2.02	0.10 (1.80) *4.03	0.38 (6.82) *15.32	1.30 (23.34) *52.42	0.23 (4.13) *9.27	0.15 (2.69) *6.05	0.03 (0.54) *1.21	0.18 (3.23) *7.26	…..	2.48 (44.52) (100.00)	1.17 (21.01)	0.02 (0.36)	1.90 (34.11)	…..	…..	3.09 (55.48)	5.57 (100.00)
1977-78	0.04 (0.69) *1.55	0.06 (1.03) *2.33	0.11 (1.89) *4.26	0.40 (6.87) *15.50	1.32 (22.68) *51.16	0.25 (4.30) *9.69	0.15 (2.58) *5.82	0.05 (0.86) *1.94	0.20 (3.44) *7.75	…..	2.58 (44.38) (100.00)	1.22 (20.96)	0.02 (0.34)	2.00 (34.36)	…..	…..	3.24 (55.67)	5.82 (100.00)

1978-79	0.07 (1.00) *2.06	0.02 (0.29) *0.59	0.13 (1.86) *3.83	0.84 (12.03) *24.78	1.60 (22.92) *47.21	0.31 (4.44) *9.14	0.16 (2.29) *4.72	0.04 (0.57) *1.18	0.22 (3.15) *6.49	0.00	3.39 (48.57) (100.00)	1.27 (18.19)	0.02 (0.29)	1.78 (25.50)	0.52 (7.45)	…..	3.59 (51.43)	6.98 (100.00)
1979-80	0.08 (0.76) *1.98	0.10 (0.95) *2.47	0.14 (1.38) *3.46	0.97 (9.19) *24.01	1.97 (18.66) *48.76	0.35 (3.31) *8.66	0.18 (1.70) *4.46	0.06 (0.57) *1.49	0.18 (1.70) *4.46	0.01 (0.09) *0.25	4.04 (38.26) (100.00)	1.54 (14.58)	…..	4.48 (42.42)	0.50 (4.73)	…..	6.52 (61.74)	10.56 (100.00)
1980-81	0.12 (0.99) *2.46	0.14 (1.16) *2.87	0.17 (1.41) *3.48	1.27 (10.52) *26.02	2.31 (19.14) *47.34	0.38 (3.15) *7.79	0.19 (1.57) *3.89	0.05 (0.41) *1.03	0.25 (2.07) *5.12	…..	4.88 (40.43) (100.00)	1.78 (14.75)	…..	4.87 (40.35)	0.53 (4.39)	0.01 (0.08)	7.19 (59.57)	12.07 (100.00)
1981-82	0.16 (1.12) *2.58	0.06 (0.42) *0.97	0.21 (1.48) *3.39	1.59 (11.17) *25.65	2.71 (19.04) *43.71	0.48 (3.37) *7.74	0.63 (4.43) *10.16	0.11 (0.77) *1.77	0.22 (1.55) *3.55	0.03 (0.21) *0.48	6.20 (43.57) (100.00)	1.80 (12.65)	–0.02 (–0.14)	5.58 (39.21)	0.66 (4.64)	0.01 (0.07)	8.03 (56.43)	14.23 (100.00)
1982-83	0.17 (1.06) *2.31	0.07 (0.43) *0.95	0.22 (1.37) *2.99	1.90 (11.80) *25.78	3.52 (21.86) *41.76	0.56 (3.48) *7.60	0.25 (1.55) *3.39	0.02 (0.12) *0.27	0.32 (1.99) *4.34	0.34 (2.11) *4.61	7.37 (45.78) (100.00)	2.02 (12.55)	0.01 (0.06)	6.03 (37.45)	0.67 (4.16)	…..	8.73 (54.22)	16.10 (100.00)
1983-84	0.21 (1.08) *2.21	0.04 (0.21) *0.42	0.31 (1.60) *3.26	2.34 (12.09) *24.63	4.90 (25.31) *51.58	0.75 (3.87) *7.90	0.32 (1.65) *3.37	0.33 (1.70) *3.47	0.26 (1.34) *2.74	0.04 (0.21) *0.42	9.50 (49.07) (100.00)	2.09 (10.80)	…..	6.84 (35.33)	0.93 (4.80)	…..	9.86 (50.93)	19.36 (100.00)
1984-85	0.12 (0.52) *0.98	0.08 (0.35) *0.65	0.32 (1.40) *2.62	3.14 (13.71) *25.65	6.87 (29.99) *56.13	0.75 (3.27) *6.13	0.35 (1.53) *2.86	0.11 (0.48) *0.90	0.38 (1.66) *3.10	0.12 (0.52) *0.98	12.24 (53.43) (100.00)	2.19 (9.56)	0.01 (0.04)	7.28 (31.78)	1.19 (5.19)	…..	10.67 (46.57)	22.91 (100.00)
1985-86	0.22 (0.36) *1.47	0.11 (0.18) *0.74	0.36 (0.60) *2.41	3.37 (5.57) *22.57	8.55 (14.14) *57.27	1.22 (2.02) *8.17	0.40 (0.66) *2.68	0.03 (0.05) *0.20	0.39 (0.65) *2.61	0.28 (0.46) *1.88	14.93 (24.70) (100.00)	3.39 (5.61)	…..	40.45 (66.92)	1.68 (2.78)	…..	45.52 (75.30)	60.45 (100.00)
1986-87	0.26 (0.36) *1.47	0.25 (0.34) *1.41	0.51 (0.70) *2.87	4.08 (5.59) *23.00	10.18 (13.94) *57.38	1.14 (1.56) *6.43	0.48 (0.66) *2.71	0.10 (0.14) *0.56	0.51 (0.70) *2.87	0.23 (0.32) *1.30	17.74 (24.30) (100.00)	3.97 (5.44)	…..	49.34 (67.58)	1.96 (2.68)	…..	55.27 (75.70)	73.01 (100.00)
1987-88	0.42 (0.49) *2.14	0.03 (0.04) *0.15	0.50 (0.59) *2.55	4.69 (5.52) *23.91	10.85 (12.78) *55.30	1.24 (1.46) *6.32	0.53 (0.62) *2.70	0.19 (0.22) *0.97	1.12 (1.32) *5.71	0.05 (0.06) *0.25	19.62 (23.11) (100.00)	4.74 (5.58)	0.01 (0.01) …..	58.36 (68.73)	2.18 (2.57)	…..	65.29 (76.89)	84.91 (100.00)

1988-89	0.40 (0.36) *1.44	0.10 (0.09) *0.36	0.55 (0.50) *1.98	5.98 (5.43) *21.57	17.54 (15.92) *63.28	1.40 (1.27) *5.05	0.59 (0.54) *2.13	0.01 (0.01) *0.04	0.76 (0.69) *2.74	0.39 (0.35) *1.41	27.72 (25.16) (100.00)	5.03 (4.56)	….. 	75.07 (68.13)	2.37 (2.15)	…..	82.47 (74.84)	110.19 (100.00)
1989-90	0.49 (0.51) *1.57	0.21 (0.22) *0.68	0.60 (0.62) *1.92	10.87 (11.28) *34.84	15.02 (15.59) *48.14	1.61 (1.67) *5.16	0.85 (0.88) *2.72	0.01 (0.01) *0.03	0.57 (0.59) *1.83	0.97 (1.01) *3.11	31.20 (32.38) (100.00)	7.17 (7.44)	….. 	55.21 (57.29)	2.79 (2.90)	…..	65.17 (67.62)	96.37 (100.00)
1990-91	0.34 (0.29) *0.94	0.04 (0.03) *0.11	0.70 (0.60) *1.94	12.57 (10.80) *34.91	17.46 (15.00) *48.49	2.11 (1.81) *5.86	0.81 (0.70) *2.25	0.04 (0.03) *0.01	0.69 (0.59) *1.92	1.25 (1.07) *3.47	36.01 (30.94) (100.00)	5.84 (5.02)	….. 	72.27 (62.10)	2.25 (1.93)	…..	80.36 (69.06)	116.37 (100.00)
1991-92	0.53 (0.36) *1.25	0.12 (0.08) *0.28	0.72 (0.49) *1.69	17.62 (11.92) *41.42	18.24 (12.34) *42.88	2.40 (1.62) *5.64	1.03 (0.70) *2.42	0.01 (0.01) *0.02	0.60 (0.41) *1.41	1.27 (0.86) *2.99	42.54 (28.78) (100.00)	10.60 (7.17)	….. 	91.02 (61.58)	3.65 (2.47)	…..	105.27 (71.22)	147.81 (100.00)
1992-93	0.38 (0.22) *0.86	0.14 (0.08) *0.32	0.68 (0.40) *1.54	18.25 (10.75) *41.31	19.63 (11.56) *44.43	2.58 (1.52) *5.84	1.02 (0.60) *2.31	0.01 (0.01) *0.02	0.56 (0.33) *1.27	0.93 (0.55) *2.10	44.18 (26.02) (100.00)	12.64 (7.44)	….. 	108.73 (64.03)	4.27 (2.51)	…..	125.64 (73.98)	169.82 (100.00)
1993-94	0.83 (0.47) *1.73	0.21 (0.12) *0.44	0.94 (0.53) *1.96	20.74 (11.80) *43.27	19.71 (11.21) *41.12	2.52 (1.43) *5.26	1.19 (0.68) *2.49	0.01 (0.01) *0.02	0.60 (0.34) *1.25	1.18 (0.67) *2.46	47.93 (27.27) (100.00)	16.00 (9.10)	….. 	107.47 (61.15)	4.35 (2.48)	…..	127.82 (72.73)	175.75 (100.00)
1994-95	0.99 (0.49) *1.76	0.06 (0.03) *0.11	0.97 (0.48) *1.73	20.58 (10.24) *36.57	27.18 (13.53) *48.30	2.45 (1.22) *4.35	1.35 (0.67) *2.40	0.01 (0.01) *0.02	1.51 (0.75) *2.68	1.17 (0.58) *2.08	56.27 (28.01) (100.00)	17.80 (8.86)	….. 	121.88 (60.67)	4.95 (2.46)	…..	144.63 (71.99)	200.90 (100.00)
1995-96	-0.09 (-0.04) *-0.14	0.70 (0.31) *1.06	1.39 (0.62) *2.10	26.15 (11.57) *39.47	29.44 (13.03) *44.43	3.14 (1.39) *4.74	1.46 (0.65) *2.20	0.06 (0.03) *0.09	2.67 (1.18) *4.03	1.34 (0.59) *2.02	66.26 (29.32) (100.00)	31.60 (13.98)	….. 	123.27 (54.55)	4.84 (2.14)	…..	159.71 (70.68)	225.97 (100.00)
1996-97	1.13 (0.38) *1.46	0.15 (0.05) *0.20	1.16 (0.39) *1.50	31.28 (10.61) *40.43	31.40 (10.65) *40.59	2.95 (1.00) *3.81	5.71 (1.94) *7.38	0.01 (0.00) *0.01	0.56 (0.19) *0.72	3.02 (1.02) *3.90	77.37 (26.23) (100.00)	38.32 (12.99)	….. 	173.62 (58.87)	5.63 (1.91)	…..	217.57 (73.77)	294.94 (100.00)
1997-98	0.57 (0.16) *0.78	0.12 (0.03) *0.16	2.09 (0.58) *2.84	28.12 (7.80) *38.23	36.83 (10.22) *50.07	2.96 (0.82) *4.02	1.30 (0.36) *1.77	0.09 (0.03) *0.12	0.23 (0.06) *0.31	1.24 (0.34) *1.69	73.55 (20.41) (100.00)	59.74 (16.58)	….. 	220.85 (61.29)	6.18 (1.72)	…..	286.77 (79.59)	360.32 (100.00)

1998-99	0.73 (0.19) *0.83	0.32 (0.08) *0.36	2.28 (0.59) *2.58	32.69 (8.41) *37.00	45.92 (11.81) *51.97	2.90 (0.75) *3.28	1.39 (0.36) *1.57	0.78 (0.20) *0.88	1.23 (0.32) *1.39	0.12 (0.03) *0.14	88.36 (22.72) (100.00)	41.03 (10.55)	…..	253.36 (65.15)	6.16 (1.58)	…..	300.55 (77.28)	388.91 (100.00)
1999-00	0.39 (0.09) *0.38	0.17 (0.04) *0.17	2.66 (0.60) *2.58	39.51 (8.88) *38.37	53.52 (12.03) *51.97	3.79 (0.85) *3.68	1.40 (0.31) *1.36	0.02 (0.00) *0.02	1.23 (0.28) *1.19	0.29 (0.07) *0.28	102.98 (23.16) (100.00)	46.84 (10.53)	…..	294.92 (66.31)	…..	…..	341.76 (76.84)	444.71 (100.00)
2000-01 R.E.	3.31 (1.12) *2.50	0.18 (0.06) *0.14	2.54 (0.86) *1.92	48.00 (16.18) *36.23	65.00 (21.91) *49.06	4.70 (1.58) *3.55	3.10 (1.04) *2.34	1.00 (0.34) *0.75	1.67 (0.56) *1.26	2.98 (1.00) *2.25	132.48 (44.65) (100.00)	20.56 (6.93)	…..	143.69 (48.42)	…..	…..	164.25 (55.35)	296.73 (100.00)
2001-02 B.E.	0.48 (0.15) *0.34	0.19 (0.06) *0.14	2.93 (0.91) *2.09	53.80 (16.62) *38.30	72.80 (22.50) *51.83	4.70 (1.45) *3.35	3.32 (1.03) *2.36	0.25 (0.08) *0.18	1.34 (0.41) *0.95	0.64 (0.20) *0.46	140.45 (43.40) (100.00)	20.60 (6.37)	…..	162.56 (50.23)	…..	…..	183.16 (56.60)	323.61 (100.00)

Note : (i) Figures in Parenthesis indicate the proportion to total (ii) Figures with an asterisk indicate the proportion to State own tax

(iii) N.A. = Not available (iv) Negl. = Negligible

Source : *Meghalaya Budget in Brief*, Government of Meghalaya, 1974-75; 1978-79; 1983-84; 1982-83

Budget at a Glance, Government of Meghalaya:: 1984-85 to 2001-02

Statistical Hand Book, Meghalaya,1976

Rate of Growth :

Column 13 = $0.5098\ e^{0.1494t}$; $R^2 = 0.9267$

Column 14 = $1.0174\ e^{-0.0007t}$; $R^2 = 0.5842$

Column 15 = $0.8391\ e^{0.2119t}$; $R^2 = 0.9288$

Column 16 = $0.7303\ e^{0.1456t}$; $R^2 = 0.3752$

Column 18 = $1.4510\ e^{0.1955t}$; $R^2 = 0.9385$

Column 19 = $2.6266\ e^{0.1859t}$; $R^2 = 0.9628$

Table 5.5 Composition of the Total Tax Revenue of Meghalaya

(Rupees in Crores)

Year	Total Taxes	Direct Taxes	Indirect Taxes	State Taxes	Direct Taxes	Indirect Taxes	Shared Taxes	Direct Taxes	Indirect Taxes
1	2	3	4	5	6	7	8	9	10
1972-73	3.33 (100.00)	0.89 (26.73)	2.44 (73.27)	1.21 (100.00)	0.01 (0.83)	1.20 (99.17)	2.12 (100.00)	0.88 (41.51)	1.24 (58.49)
1973-74	3.86 (100.00)	1.01 (26.17)	2.85 (78.83)	1.55 (100.00)	0.08 (5.16)	1.47 (94.84)	2.31 (100.00)	0.93 (40.26)	1.38 (59.74)
1974-75	4.18 (100.00)	1.05 (25.12)	3.13 (74.88)	1.95 (100.00)	0.13 (6.67)	1.82 (93.33)	2.23 (100.00)	0.92 (41.26)	1.31 (58.74)
1975-76	5.10 (100.00)	1.41 (27.65)	3.69 (72.35)	2.18 (100.00)	0.09 (4.13)	2.09 (95.87)	2.92 (100.00)	1.32 (45.21)	1.60 (54.79)
1976-77	5.57 (100.00)	1.28 (22.98)	4.29 (77.02)	2.48 (100.00)	0.11 (4.44)	2.37 (95.56)	3.09 (100.00)	1.17 (37.86)	1.92 (62.14)
1977-78	5.82 (100.00)	1.32 (22.68)	4.50 (77.32)	2.58 (100.00)	0.10 (3.88)	2.48 (96.12)	3.24 (100.00)	1.22 (37.65)	2.02 (62.35)
1978-79	6.98 (100.00)	1.36 (19.48)	5.62 (80.52)	3.39 (100.00)	0.09 (2.65)	3.30 (97.35)	3.59 (100.00)	1.27 (35.38)	2.32 (64.62)
1979-80	10.56 (100.00)	1.36 (19.48)	8.83 (83.62)	4.04 (100.00)	0.19 (4.70)	3.85 (95.30)	6.52 (100.00)	1.54 (23.62)	4.98 (76.38)
1980-81	12.07 (100.00)	2.04 (16.90)	10.03 (83.10)	4.88 (100.00)	0.26 (5.33)	4.62 (94.67)	7.19 (100.00)	1.78 (24.76)	5.41 (75.24)
1981-82	14.23 (100.00)	2.03 (14.27)	12.20 (85.73)	6.20 (100.00)	0.22 (3.55)	5.98 (96.45)	8.03 (100.00)	1.81 (22.54)	6.22 (77.46)

1982-83	16.10 (100.00)	2.26 (14.04)	13.84 (85.96)	7.37 (100.00)	0.24 (3.26)	7.13 (96.74)	8.73 (100.00)	2.02 (23.14)	6.71 (76.86)
1983-84	19.36 (100.00)	2.35 (12.14)	17.01 (87.86)	9.50 (100.00)	0.26 (2.74)	9.24 (97.26)	9.86 (100.00)	2.09 (21.20)	7.77 (78.80)
1984-85	22.91 (100.00)	2.40 (10.48)	20.51 (89.52)	12.24 (100.00)	0.21 (1.72)	12.03 (98.28)	10.67 (100.00)	2.19 (20.52)	8.48 (79.48)
1985-86	60.45 (100.00)	3.73 (6.17)	56.72 (93.83)	14.93 (100.00)	0.33 (2.21)	14.60 (97.79)	45.52 (100.00)	3.40 (7.47)	42.12 (92.53)
1986-87	73.01 (100.00)	4.48 (6.14)	68.53 (93.86)	17.74 (100.00)	0.51 (2.87)	17.23 (97.13)	55.27 (100.00)	3.97 (7.18)	51.30 (92.82)
1987-88	84.91 (100.00)	5.19 (6.11)	79.72 (93.89)	19.62 (100.00)	0.45 (2.29)	19.16 (97.71)	65.29 (100.00)	4.74 (7.26)	60.56 (92.74)
1988-89	110.19 (100.00)	5.53 (5.02)	104.66 (94.98)	27.72 (100.00)	0.50 (1.80)	27.22 (98.20)	82.47 (100.00)	5.03 (6.09)	77.44 (93.91)
1989-90	96.37 (100.00)	7.87 (8.17)	88.50 (91.83)	31.20 (100.00)	0.70 (2.24)	30.50 (97.76)	65.17 (100.00)	7.17 (11.00)	58.00 (89.00)
1990-91	116.37 (100.00)	6.23 (5.35)	110.14 (94.65)	36.01 (100.00)	0.39 (1.08)	35.62 (98.92)	80.36 (100.00)	5.84 (7.27)	74.52 (92.73)
1991-92	147.81 (100.00)	11.26 (7.62)	136.55 (92.38)	42.54 (100.00)	0.65 (1.53)	41.89 (98.47)	105.27 (100.00)	10.61 (10.08)	94.66 (89.92)
1992-93	169.82 (100.00)	13.16 (7.75)	156.66 (92.25)	44.18 (100.00)	0.52 (1.18)	43.66 (98.82)	125.64 (100.00)	12.64 (10.06)	113.00 (89.94)
1993-94	175.75 (100.00)	17.04 (9.70)	158.71 (90.30)	47.93 (100.00)	1.04 (2.17)	46.89 (97.83)	127.82 (100.00)	16.00 (12.52)	111.82 (87.48)
1994-95	200.90 (100.00)	18.85 (9.38)	182.05 (90.62)	56.27 (100.00)	1.05 (1.87)	55.22 (98.13)	144.63 (100.00)	17.80 (12.31)	126.83 (87.69)
1995-96	225.97 (100.00)	32.20 (14.25)	193.77 (85.75)	66.26 (100.00)	0.61 (0.92)	65.65 (99.08)	159.71 (100.00)	31.60 (19.79)	128.11 (80.21)
1996-97	294.94 (100.00)	39.60 (13.43)	255.34 (86.57)	77.37 (100.00)	1.28 (1.65)	76.09 (98.35)	217.57 (100.00)	38.32 (17.61)	179.25 (82.39)

1997-98	360.32 (100.00)	60.43 (16.77)	299.89 (83.23)	73.55 (100.00)	0.69 (0.94)	72.86 (99.06)	286.77 (100.00)	59.74 (20.83)	227.03 (79.14)
1998-99	388.91 (100.00)	42.08 (10.82)	346.83 (89.18)	88.36 (100.00)	1.05 (1.19)	87.31 (98.81)	300.55 (100.00)	41.03 (13.65)	259.52 (86.35)
1999-00	444.74 (100.00)	47.40 (10.66)	397.34 (89.34)	102.98 (100.00)	0.57 (0.55)	102.41 (99.45)	341.76 (100.00)	46.84 (13.71)	294.92 (86.29)
2000-01 R.E.	296.73 (100.00)	24.05 (8.11)	272.68 (91.89)	132.48 (100.00)	3.49 (2.63)	128.99 (97.37)	164.25 (100.00)	20.56 (12.52)	143.69 (87.48)
2001-02 B.E.	323.61 (100.00)	21.27 (6.57)	302.34 (93.43)	140.45 (100.00)	0.67 (0.48)	139.78 (99.52)	183.16 (100.00)	20.60 (11.25)	162.56 (88.75)

Source : *Budget at a Glance,* Government of Meghalaya:: 1984-85; 1986-87; 1987-88; 1988-89; 1992-93; 1996-97; 2001-2002

Statistical Hand Book, Meghalaya,1976

Budget in Brief, Government of Meghalaya, 1974-75; 1977-78; 1978-79

Figures in parentheses indicate the proportion to the total.

Note: Rate of Growth:

(i) Total Direct Taxes $= 0.5671\, e^{0.1475t}$, $R^2 = 0.9333$

(ii) Total Indirect Taxes $= 2.0305\, e^{0.1929t}$, $R^2 = 0.9585$

(iii) State's Own Direct Taxes $= 0.0572\, e^{0.1132t}$, $R^2 = 0.7822$

(iv) State's Own Indirect Taxes $= 1.1332\, e^{0.1685t}$, $R^2 = 0.9878$

(v) Shared Direct Taxes $= 0.5108\, e^{0.1493t}$, $R^2 = 0.9265$

(vi) Shared Indirect Taxes $= 0.9091\, e^{0.2100t}$, $R^2 = 0.9308$

CHAPTER VI

EMPIRICAL ANALYSIS OF THE DETERMINANTS OF PUBLIC EXPENDITURE

6.1 Introduction

In the preceding chapter we have analyzed the compositional pattern of tax revenues of Meghalaya. From the above analysis we have found that the performance of Meghalya on the resource mobilization front, particularly its own taxing power, has not been satisfactory. This has culminated in the form of explosive cycle of public expenditure growth in the State. Therefore, attainment of a desirable level of financial self-reliance on the part of the State remains a distant reality. As a result, the financial dependence of Meghalaya on the Union Government has been on the increase in recent years. Further, the analysis carried out so far proves that, Meghalaya has been making half-hearted tax efforts during the entire period of our study to tide over the phenomenal increase in public expenditure that has occurred in the State during the said period. As public expenditure keeps on mounting while the means to finance expenditure are lagging behind, creates a situation of poverty of the State. This calls forth a detailed analysis of the determinants of public expenditure to ascertain the intricacies of its explosive growth. And, since we have already

argued in the previous chapter that both public expenditure and taxation are two sides of the same coin, an analysis of the determinants of public expenditure in isolation from the determinants of taxation may give a partial picture of the wider problem of explosive cycle of expenditure growth. So, an attempt is made in this chapter to analyze the determinants of both public expenditure and taxation by giving more weight-age to expenditure side of the problem as the main objective of our study is to focus on the determinants of public expenditure.

6.1 Core of the Problem

From the trends of public expenditure and taxation that have emerged from our analyses that we have carried out in the previous chapters, it has become necessary to find out the important variables that determine public expenditure and revenue in Meghalaya. The determinants' study would enable us to have a better understanding of the mechanism of changes that take place in public expenditure and taxation of the State. Changes over time in expenditures can result from the changes in the quantity (including quality) and the cost of public services provided and the capacity of the Government to mobilize adequate resources from its various taxes and other sources.

Changes in per capita tax revenues over time, on the other hand, may result from changes either in taxable capacity or in tax effort on the part of the State.[1] The variables which are presumed to explain the changes in expenditures may also be held to influence the changes in revenue. What is more important is that, in a time-series determinants' study, one faces the problem of restricted choice of the variables because, either comparable data for a reasonable time period are not available or inclusion of certain variables gives rise to the problem of multi-collinearity.[2] A very recent study tested, with the help of the latest available data of some selected developing countries, and proved the hypothesis of Peacock and Wiseman according to which expenditure relates to revenue.[3] But, what has been the consequences of their inter-relationship in the context of Meghalaya remains to be examined by the empirical equations that we have developed in Chapter III of our study.

6.2 Empirical interpretation of the Determinants of Public Expenditure in Meghalaya

The empirical equations of the model that we have cited in Chapter III are being tested below. First of all, we shall examine the

following equation which we may call it a global empirical equation for estimating the public expenditure of Meghalaya.

$$E = a_0 + a_1 NSDP + a_2 Y_C + a_3 CPI + a_4 CrA + a_5 Pveh + a_6 Gveh + a_7 RL + a_8 Emp + a_9 HB + a_{10} Doct + a_{11} SP + a_{12} SPS \quad \ldots\ldots\ldots(6.1)$$

In the above estimating equation, we have taken public expenditure as a function of twelve variables viz., net state domestic product (*NSDP*), per capita income (Y_C), consumer price index (*CPI*), area under crop (*CrA*), number of passenger vehicles per 1000 population (*PVeh*), number of goods vehicles per 1000 population (*GVeh*), road length per 100 KM^2 (*RL*), employment (*Emp*), hospital beds per 1000 population (*HB*), doctors per 1000 population (*Doct*), enrolment at school level (*SP*) and enrolment at post-school level (*SPS*). We would like to see whether the above variables have any influence upon public expenditure.

$$\hat{E} = 108.3438 + \underset{(0.5808)}{0.4531}\, NSDP + \underset{(4.8305)}{0.0113}\, Y_C + \underset{(0.5277)}{0.1004}\, CPI + \underset{(0.5251)}{0.0828}\, CrA - \underset{(0.0838)}{37.8222}\, PVeh + \underset{(-2.1424)}{27.8828}\, GVeh + \underset{(2.0850)}{2.0572}\, RL - \underset{(0.3618)}{2.6278}\, Emp - \underset{(-0.9294)}{35.0430}\, HB + \underset{(-0.5695)}{223.3164}\, Doct - \underset{(0.3976)}{0.1094}\, SP - \underset{(-0.3612)}{0.8613}\, SPS$$

$$R^2 = 0.9960 \qquad D\text{-}W\ Statistic = 2.2754$$

In this particular equation (6.1) the estimates of the parameter viz., *NSDP, PVeh* and *GVeh* are significant, which means that these estimates are reliable for prognosis purposes. Whereas *NSDP* and Y_C as well as *CPI* which are considered to be pure economic variables, reveal that the estimates of the parameters of *Yc* and *CPI* are not significant although we have desired the t-estimates should have been more meaningful had these been reliable for the purpose of estimating the expenditure. This equation would probably reveal some important information if we examine together with the revenue empirical equation given in equation (6.22). R^2 does not yield so relevant statistical information in this regression analysis when the number of variables is very large because each individual variable contributes something to the total variance as a result of which R^2 becomes very large. There is no auto-correlation present. Of course we can adopt a generalized linear regression model to remove the effect of auto-correlation in the following way:

We define ρ (auto-correlation coefficient)

$$\rho = \frac{\Sigma U_t U_{t-1}}{\Sigma U_{t-1}^2} \qquad \text{.....(6.2)}$$

Where U's are the error terms $E - \hat{E} = \hat{e} = U_t$ (say)

Now we write

$$Et = a_{0t} + a_1 \log Y_{NSDPt} + a_2 \log Y_{Ct} + a_3 \log Y_{CPIt} + a_4 \log Y_{CrAt} + a_5 \log Y_{PVeht} + a_6 \log Y_{GVeht} + a_7 \log Y_{RLt} + a_8 \log Y_{Empt} + a_9 \log Y_{HBt} + a_{10} \log Y_{Doctt} + a_{11} \log Y_{SPt} + a_{12} \log Y_{SPSt} + U_t \quad \text{.....(6.3a)}$$

and $\rho E_{t-1} = \rho\,(a_{0t-1} + a_1 \log Y_{NSDPt-1} + a_2 \log Y_{Ct-1} + a_3 \log Y_{CPIt-1} + a_4 \log Y_{CrAt-1} + a_5 \log Y_{Pveht-1} + a_6 \log Y_{Gveht-1} + a_7 \log Y_{RLt-1} + a_8 \log Y_{Empt-1} + a_9 \log Y_{HBt-1} + a_{10} \log Y_{DocTt-1} + a_{11} \log Y_{SPt-1} + a_{12} \log Y_{SPSt-1} + U_{t-1})$ .....(6.3.b)

Then by subtracting (6.3.b) from (6.3.a) we derive

$$(Et - \rho Et\text{-}1) = (a_{0t} - \rho a_{0t-1}) + a_{1t}*(Y_{NSDPt} - \rho Y_{SDPt-1}) + a_{2t}*(Y_{Ct} - \rho Y_{Ct-1}) + a_{3t}*(Y_{CPIt} - \rho Y_{CPIt-1}) + a_{4t}*(Y_{CrAt} - \rho\, Y_{CrAt-1}) + a_{5t}*(Y_{PVeht} - \rho Y_{PVeht-1}) + a_{6t}*(Y_{GVeht} - \rho Y_{GVeht-1}) + a_{7t}*(Y_{RLt} - \rho Y_{RLt-1}) + a_{8t}*(Y_{Empt} - \rho Y_{Empt-1}) + a_{9t}*(Y_{HBt} - \rho Y_{HBt-1}) + a_{10t}*(Y_{DocTt} - \rho\, Y_{DocTt-1}) + a_{11t}*(Y_{SPt} - \rho Y_{SPt-1}) + a_{12t}*(Y_{SPSt} - \rho Y_{SPSt-1}) + (U_t - \rho U_{t-1}) \quad \text{.....(6.4)}$$

We can simply write (6.4) as

$$E^* = a_{0t}^* + a_{1t}^* Y_{NSDPt}^* + a_{2t}^* Y_{Ct}^* + a_{3t}^* Y_{CPIt}^* + a_{4t}^* Y_{CrAt}^* + a_{5t}^* Y_{PVeht}^* + a_{6t}^* Y_{GVeht}^* + a_{7t}^* Y_{RLt}^* + a_{8t}^* Y_{Empt}^* + a_{9t}^* Y_{HBt}^* + a_{10t}^* Y_{DocTt}^* + a_{11t}^* Y_{SPt}^* + a_{12t}^* Y_{SPSt}^* + U_t^* \quad \text{.....(6.5)}$$

where $E^* = E - \rho E$

$a_{it}^* = (a_i - \rho a_i)$

$Y_{SDPt}^* = (Y_{NSDPt} - \rho Y_{NSDPt-1})$

$Y_{Ct}^* = (Y_{Ct} - \rho Y_{Ct-1})$

$Y_{CPIt}^* = (Y_{CPIt} - \rho Y_{CPIt-1})$

$Y_{CrAt}^* = (Y_{CrAt} - \rho Y_{CrAt-1})$

$Y_{PVeht}^* = (Y_{PVeht} - \rho Y_{PVeht-1})$

$Y_{GVeht}^* = (Y_{GVeht} - \rho Y_{GVeht-1})$

$Y_{RLt}^* = (Y_{RLt} - \rho Y_{RLt-1})$

$Y_{Empt}^* = (Y_{Empt} - \rho Y_{Empt-1})$

$Y_{HBt}^* = (Y_{HBt} - \rho Y_{HBt-1})$

$Y_{DocTt}^* = (Y_{DocTt} - \rho Y_{DocTt-1})$

$Y_{SPt}^* = (Y_{SPt} - \rho Y_{SPt-1})$

$Y_{SPSt}^* = (Y_{SPSt} - \rho Y_{SPSt-1})$

If we now test this model (6.5) empirically, surely we shall have either no auto-correlation or less magnitude of auto-correlation than at

present. But at this stage we try to analyze all these models as if there is no auto-correlation.

The above empirical equation (6.1) exhibits that the model is the best fit as indicated by R^2. Also we are satisfied with the empirical evidence that there is no correlation in the disturbance term yet we have some serious doubts regarding the adequacy of this model. Thus the equation poses a number of questions: (1) with regard to the estimates of the parameter having the minimum variance property; (2) whether there are possible relationships among the independent variables which might give rise to the problem of multi-collinearity; (3) there is the problem of denomination (e.g. *NSDP* is in terms of money, *CPI* is an index number and vehicles, are numbers, etc.) which poses a serious threat to the estimate of the parameters concerned.

Now the first question is answered by the t-values themselves since t is defined by

$$t = \frac{\hat{\beta}}{\sqrt{V(\hat{\beta})}} \qquad \ldots\ldots\ldots\ldots(6.6)$$

We can always adopt a rule of thumb to test the significance of the parameters of independent variables at 5 per cent reliability should

have been exactly 1.96 which we might take as 2. In which case the second moment of the variance of the estimate of the parameter should be either half or nearly half the estimate of the parameter itself which will only then give t value $\geq$ 1.96. So far in this model given in the empirical equation (6.1) out of 12 independent variables, 9 variables do not possess estimates which have a minimum variance property or acceptable. As a result of which we did not have significant t values for the estimates of the parameters. The effect of this is rather serious. We can see that this empirical equation (6.1) is a best fit indicated by R^2. Also we do not have the problem of auto-correlation of high order. Yet it will not be justified to use this empirical equation for prognosis.

Coming to the second question whether there is multi-collinearity problem that exists. We know that a complete multi-collinearity gives rise to indeterminancy of the estimates of the parameter. We intend to estimate this model to examine whether the above named variables have the minimum variance property or not. If we found that the equation containing insignificant t associated with an estimate of the parameter, then we might re-compute another model to find the exact viable relationship between public expenditure (E) and the independent variables having the character of BLUE. We can call this process as reduction analysis.

We may also adopt another transformation by using a model for public expenditure such as

$$E_t = a_0 + a_1 E_{t-1} + U_t \qquad \text{…..…..…(6.7)}$$

$$\hat{E}_t = \hat{a}_0 + \hat{a}_1 E_{t-1} \qquad \text{……(6.8)}$$

We shall have,

$$\left.\begin{aligned} E_t - \hat{E}_t &= e_t \\ E_t - e_t &= E_t^* \end{aligned}\right] \qquad \text{…..……(6.9)}$$

Then we can try the above model

$$\begin{aligned} E^* = {} & a_0 + a_1 NSDP + a_2 Y_C + a_3 CPI + a_4 CrA + a_5 PVeh + \\ & a_6 GVeh + a_7 RL + a_8 Emp + a_9 HB + a_{10} Doct + \\ & a_{11} SP + a_{12} SPS \end{aligned} \qquad \text{……..…...(6.10)}$$

Now we shall have the log linear version of the same model. The result of the empirical equation is

$$\begin{aligned} \log \hat{E} = {} & \underset{(-0.7028)}{-5.5} + \underset{(1.3760)}{0.6934 \log NSDP} + \underset{(0.1449)}{0.0933 \log Y_C} + \\ & \underset{(0.8412)}{0.6875 \log CPI} + \underset{(0.2178)}{0.3281 \log CrA} - \underset{(-1.7730)}{0.9285 \log P Veh} + \end{aligned}$$

$$0.4257 \log G\,Veh + 0.1251 \log RL - 0.3291 \log Emp -$$
$$(1.0355) \qquad (0.1742) \qquad (-0.3614)$$

$$0.2754 \log HB + 0.6152 \log Doct + 0.3477 \log SP +$$
$$(-0.6192) \qquad (1.0287) \qquad (0.4614)$$

$$0.1602 \log SPS$$
$$(0.2117)$$

$$R^2 = 0.9935 \qquad D.W.\ Statistic = 0.6551 \qquad \ldots\ldots(6.11)$$

This particular empirical equation has twelve independent variables. Of these only the Passenger Vehicles (*PVeh*) with parameter estimate which happens to be significant or should we say reliable, whereas all the other eleven independent variables did not give us reliable estimates of their parameters. Therefore, we cannot reject the equation but certainly we shall be careful to use this equation as an indicator for future demand for public expenditure. Also we could see D-W Statistic gives the impression that it carries serious type of auto-correlation present, although in the long time series analysis, experience has led us to believe the presence of auto-correlation.

We may also adopt another expenditure function (6.12) such as

$$E = f(Yc, CPI, PVeh, GVeh, Doct)$$

This empirical equation gives the result as

$\wedge$

$$E = -128.2588 - 0.0385\,Yc + 0.6281\,CPI + 18.1914\,P\,Veh -$$
$$\quad (-1.9456) \quad (-0.9237) \quad (4.1616) \quad (0.6265)$$

$$28.672\,G\,Veh + 116.0391\,Doct$$
$$(-1.6769) \quad (0.2299)$$

$$R^2 = 0.9744 \qquad D\text{-}W\ Statistic = 1.3085 \qquad \ldots\ldots\ldots\ldots\ldots(6.12)$$

This empirical equation using two prominent economic variables such as *Yc* and *CPI* and others which are socio-demographic variables gives us a rather one singular information for the first time that consumer price index (*CPI*) is a reliable variable that influences the expenditure although we expected *Yc* should have been having positive influence upon expenditure, but it is not. Out of the entire variables, the estimate of the parameter of goods vehicles (*GVeh*) is statistically significant. Therefore here again we cannot use this equation as an empirical basis for prediction purposes.

Coming to equation (6.13) where $E = f(Yc)$ which is the most quoted variable in almost every piece of literature, we have

$$\hat{E} = -66.2423 + 0.0913\,Yc$$
$$\quad (-3.5559) \quad (22.8330)$$

$$R^2 = 0.9525 \qquad D\text{-}W\ Statistic = 0.7835 \qquad \ldots\ldots\ldots(6.13)$$

The above equation shows that the estimate of parameter of per capita income (*Yc*) is very highly significant. D-W Statistic shows the presence of auto-correlation.

Now let us take another equation $E = f(NSDP)$. The empirical equation yields the following

$$\hat{E} = \underset{(2.5740)}{6.0718} + \underset{(62.7014)}{0.5439\ NSDP}$$

$$R^2 = 0.9771 \qquad D\text{-}W\ Statistic = 1.9653 \quad \ldots\ldots\ldots (6.14)$$

The equation (6.14) has been used to determine the public expenditure only with one independent variable viz., net state domestic product (*NSDP*) which could be considered as the sum total effect of all sectors of the economy. The t-statistic for estimate of the parameter viz., t-value is so high that we can say this is significant at the level of probability as high as 100 per cent. R^2 shows that nearly 98 per cent of the variations in public expenditure are explained by *NSDP*. Also we can say definitely that there is no auto-correlation whatsoever.

However, we would like to use the following model used by the earlier studies[4] which takes into consideration the primary sector income (Y_P), the per capita income (Y_c) and the consumer price index (*CPI*).

$$\hat{E} = \underset{}{-75.3320} + \underset{(3.0184)}{0.4644\, Y_P} + \underset{(0.1012)}{0.1494\, Y_C} + \underset{(2.3604)}{0.1768\, CPI}$$
$$\underset{(1.2101)}{}$$

$$R^2 = 0.9902 \quad D.W.\ Statistic = 1.6855 \qquad \text{…….(6.15)}$$

Now let us examine equation (6.15) if it could give us any clue regarding the sign of the estimate of the parameter of per capita income (Y_C). This empirical equation bears positive sign for all the estimated parameters of the independent variables. Except that of the estimate of parameter of Y_C, all other estimates are significant, as R^2 gives us 99 per cent of the total variation contributed by the variables. We found also that there is also almost no auto-correlation evidenced by the D-W Statistic.

Let us examine equation (6.16) which is a log linear empirical relationship of expenditure as a function of per cent of primary sector income (Y_P), per capita income (Y_C) and consumer price index (*CPI*).

$$\log \hat{E} = \underset{(-4.8203)}{-5.0664} + \underset{(0.6389)}{0.1638 \log Yp} -$$

$$\underset{(-0.5319)}{0.1193 \log Yc} + \underset{(4.9075)}{1.4042 \log CPI}$$

$$R^2 = 0.9935 \quad D.W.\ Statistic = 1.0594 \qquad \text{…..…..(6.16)}$$

Here its signs are positive for Y_P, and *CPI* whereas the Y_C has a negative sign which we think may not be acceptable. We can offer

some kind of interpretation for this. We can see that though Y_C is increasing, it is not increasing in the same rate or proportionately with respect to expenditure. Thus there is a comparatively sluggish growth rate of Y_C than that of public expenditure. Also we have noticed that the t value for *CPI* is highly significant whereas the other estimates of the parameter are of statistically significance at 5 per cent level. Going by the coefficient of determination R^2 which is equal to 0.99 there is no least doubt about the adequacy of the model though the D-W Statistic shows the presence of auto-correlation in the data.

Let us consider the following model:

$$\hat{E} = \underset{(-1.7449)}{-121.7578} + \underset{(0.4032)}{0.6832\ Yc} + \underset{(29.3062)}{0.4001\ CPI}$$

$$R^2 = 0.9863 \quad D.W.\ Statistic = 1.3825 \qquad \text{……..(6.17)}$$

If we examine equation (6.17), which is an expenditure function of the same variables viz., per capita income (Y_C) and consumer price index (*CPI*), like in the previous cases, in the expenditure empirical function, Y_C function bears a positive sign. This, again, confirms our view, though most of the economists treat revenue and expenditure as almost having the same explanatory variables; but it is not so, because we found here in all our empirical equations, the negative sign of Y_C estimate of revenue function, whereas, in the expenditure function, it is

a positive sign. There must be some plausible cause for this variation of signs in case of revenue and expenditure. D-W Statistic shows that there is some minor auto-correlation.

Now we shall have the log linear version of the same model. The empirical equation is:

$$\underset{\wedge}{\log E} = \underset{(-5.0937)}{-4.7812} - \underset{(-0.7891)}{0.1655 \log Yc} + \underset{(41.9382)}{1.5833 \log CPI}$$

$$R^2 = 0.9933 \quad D.W.\ Statistic = 1.2806 \qquad \text{.....(6.18)}$$

Coming to the empirical equation (6.18), here, expenditure is a function of per capita income (Y_C) and consumer price index (*CPI*). Again if we simply look at the negative sign of the parameter estimate of Y_C which is also shown by equation (6.16); but Y_P which was included as the independent variable in equation (6.16) is dropped in equation (6.18) so the negative sign of the estimate of parameter Y_C may be interpreted in the same way as for the other equations. Whereas the *CPI* happens to be a prominent contributor to public expenditure. And the coefficient of determination R^2 explains 99 per cent of the total variation. D-W Statistic shows that there is only a little bit of presence of auto-correlation in the disturbance term. This empirical equation is therefore acceptable statistically.

We shall consider the following model:

$$\hat{E} = \underset{(-0.3441)}{-21.7695} + \underset{(31.1170)}{0.8231\,Yp} - \underset{(-0.4173)}{0.6538Yc}$$

$$R^2 = 0.9878 \qquad D.W.\ Statistic = 1.6366 \qquad \ldots\ldots(6.19)$$

The above empirical equation (6.19) is a linear version of public expenditure as a function of per cent of primary sector income (Y_P) and per capita income (Y_C). Here Y_C is having the negative sign whereas Y_P not only bears a positive but it is also an estimate of a parameter which is highly significant and R^2 is equal to .99. D-W Statistic shows that there is almost no auto-correlation.

Now we shall have the log linear version of the same model. The empirical equation is:

$$\log \hat{E} = \underset{(-4.8110)}{-6.7490} + \underset{(29.1694)}{1.4266\log Yp} + \underset{(0.4447)}{0.1369\log Yc}$$

$$R^2 = 0.9865 \quad D.W.\ Statistic = 0.4997 \qquad \ldots\ldots\ldots(6.20)$$

Now coming to equation (6.20), we are estimating the expenditure as a function of per cent of primary sector income (Y_P) and per capita income (Y_C). Here, again, the estimate of Y_P is positive as well as that of Y_C. Also the parameter estimate of Y_P alone is highly significant while that of Y_C is insignificant. D-W Statistic leads us to believe that there is auto-correlation.

Finally, we shall use the three sectors of the economy as explanatory variables. That is,

$E = f(Y_P, Y_S, Y_T)$. This empirical equation gives the following result:

$$\hat{E} = \underset{(-1.7313)}{-2345.813} + \underset{(0.8565)}{11.4492\,Y_P} - \underset{(-0.6945)}{14.1968\,Y_S} + \underset{(3.5160)}{50.4898\,Y_T}$$

$$R^2 = 0.8031 \qquad D\text{-}W\ Statistic = 0.7160 \qquad \ldots\ldots\ldots\ldots (6.21)$$

In the equation (6.21) we determine public expenditure using the variables primary sector (Y_P), secondary sector (Y_S) and the tertiary sector (Y_T). First R^2 is quite large and explains 80 per cent of the total variance of the regression equation. However the D-W Statistic indicated the existence of auto-correlation. Coming to the most important part of the empirical analysis, viz., significance of the estimates of the parameter we could see that only the tertiary sector which is highly significant at least at 99 per cent probability, whereas in the case of the other two variables, their estimates of parameter are not significant even at 95 per cent level of probability, although the constant term gives an estimate of parameter which is significant at 95 per cent level of probability. But statisticians usually ignore the significance of the estimate of the parameter of the constant term since

it is only the variables which are of importance in order to estimate the demand for public expenditure.

6.3 Empirical interpretation of the determinants of revenue in Meghalaya

The determinants of revenue in the State of Meghalaya can be tested with the help of the following empirical equations. We shall first of all examine the global empirical equation for estimating the public revenue of Meghalaya.

$$R = a_0 + a_1 NSDP + a_2 Y_C + a_3 CPI + a_4 CrA + a_5 PVeh + a_6 GVeh + a_7 RL + a_8 Emp + a_9 HB + a_{10} Doct + a_{11} SP + a_{12} SPS \quad \text{.....(6.22)}$$

$$\hat{R} = 237.5625 - 0.5363\ NSDP + 0.0730\ Y_C + 0.6491\ CPI - 0.7317\ CrA - 84.4928\ PVeh + 52.4128\ GVeh - 11.3437\ RL - 3.5061\ Emp - 43.40235\ HB + 1653.063\ Doct - 0.756\ SP + 4.2634\ SPS$$

(0.8126) (–1.0967) (2.2598) (5.1647) (–0.5191) (–0.5191) (–2.8861) (2.5706) (–1.3042) (–0.7646) (–0.4808) (1.9505) (–0.0156) (0.4079)

$R^2 = 0.9921$ D-W = 1.8618

We have taken revenue as a function of variables other than Y_C, Y_P and *CPI* which are given more importance by the earlier studies. We would like to find out whether the variables have any influence upon the revenue.

Straightaway, we know that from the schools (*SP*) hardly do we have any chance of earning revenue. In fact, it is the grant that is given to them which constitutes the government expenditure. In the case of school education, it is a free education up to matriculation level. Therefore, most of the students do not pay or pay only nominal school fees. Salaries of teachers are being borne by the government. Again it has negative influence upon the source of revenue. This also applies in the case of enrolment at the post-school level (*SPS*). So in our opinion, there is a negative sign for the estimates of the parameter and we have rightly observed that this variable with negative sign for the school enrolment, whereas positive sign for post-school enrolment. Similarly, road length (*RL*) is also taking a big chunk of public expenditure. It is not so much a source of revenue. Anything that the government does in the name of road tax is negligible compared to the cost of construction and as such it should bear a negative sign.

Now coming to another variable hospital beds per 1000 population (*HB*), here again in the government run hospitals and public

health centres, the patients pay a minimal fee or no fee at all compared to the expenditure incurred in running and maintaining these hospitals. Here again, this variable is an expenditure-oriented variable rather than revenue-oriented variable. Therefore, we should have a negative sign for the estimate of the parameter of this variable. And this is so, because it has a high magnitude of regression coefficient which is – 43.40235.

The variable area under crop (*CrA*) is a revenue-oriented variable. Therefore, we believe that if it is not a significant contributor to revenue, at least a positive contribution from this variable is expected. Also we have to note that in Meghalaya, although a variety of crops are grown, yet Meghalaya is not self-sufficient in food production. So far, there is no imposition of agricultural income tax on the farmers except land revenue. Nevertheless, some positive contribution to revenue is expected. But it has come out to be negative which is against our expectation.

Regarding the number of passenger vehicles (*PVeh*) as an explanatory variable for estimating the revenue function it should have a positive sign for the estimate of the parameter but it was not so. It has a negative sign. Also the magnitude of the coefficient is very high. In this particular case the government pays huge subsidy to the State

Transport Corporation which could not meet its expenditure from the revenue earned from the passengers. Every year the Corporation has to depend on government for subsidy. Therefore, probably it contributes negatively as a source of revenue-earning for the state.

While the goods transportation (*GVeh*) is mainly done by the private operators, it is an important source of revenue earning compared to many other sources. And its positive contribution to revenue is shown by the positive sign with a regression coefficient which is 52.4128.

We are using the number of persons employed (*Emp*) as one of the explanatory variables in this revenue function. Employment here refers to a permanent employment. To create and maintain permanent employment means expenditure. Unlike in the private enterprises, the government officials do not contribute anything towards revenue directly. Therefore, we call it more an expenditure-oriented variable rather than a revenue-oriented variable and as such we expect its estimate of parameter to come out negatively and it is shown by our empirical equation to be so.

Another variable specially the doctors per 1000 population (*Doct*) pay both income tax as well as service tax and nothing more. They are supposed to contribute positively towards revenue and the

parameter estimate should therefore bear a positive sign and it is also given by the empirical equation as such.

Now coming to the purely economic variables viz., net state domestic product (*NSDP*), per capita income (Y_C) and consumer price index (*CPI*), the estimate of the parameter of the *NSDP* is highly expected by us as a positive contributor towards revenue. But this parameter is given negative by the empirical equation. Only one plausible explanation we can give here is that the growth of net state domestic product and the growth of revenue are in the opposite direction meaning that the rate of growth of revenue is increasing while the rate of growth of net state domestic product is in decreasing order. There may be some other explanations to this and it needs probably further analysis of this parameter.

Next the per capita income (Y_C) which as an independent variable was discussed thoroughly while we were interpreting the earlier empirical equations. The estimate of this parameter rightly bears a positive sign. Also it is statistically important. So also like the other independent variables, consumer price index (*CPI*) bears a positive sign with a highly statistically significant estimate of the parameter. D-W Statistic shows that there is no auto-correlation and the coefficient of determination R^2 explains 99 per cent of the total variation.

However the result of this equation puzzles us a little bit as if the entire revenue function is explained by doctors per 1000 population (*Doct*) and the number of goods vehicles (*GVeh*) positively. The contribution of the other variables has also great impact upon revenue which we can infer on the very large estimates of the parameter. We can accept this equation as a statistically viable model and see if possible some of the variables could be dropped as an explanatory variable in estimating revenue. The problem of a multiple regression with many explanatory variables is that joint effect and the synergic effect sometimes cannot be isolated but they have a common feature of having a very high coefficient of determination and also as per the additivity the estimate of the parameter concerned, the estimates also likewise speak to accommodate all the variables.

In this empirical equation out of twelve variables, seven variables bear a negative sign and 5 variables bear a positive sign. That does not mean we should drop these seven variables bearing the negative signs.

Now we shall have the log linear version of the same model. The empirical equation is:

$$\log R = \underset{(-.3357)}{-1.7187} + \underset{(1.7183)}{0.3330 \log NSDP} + \underset{(0.4306)}{0.1853 \log Y_C} +$$

$$\underset{(1.8244)}{0.8242 \log CPI} - \underset{(-0.5345)}{0.4843 \log CrA} - \underset{(-.2847)}{0.1577 \log P Veh} +$$

$$\underset{(.1599)}{0.0527 \log G Veh} + \underset{(1.1415)}{05285 \log RL} - \underset{(-0.1839)}{0.1240 \log Emp} +$$

$$\underset{(0.1333)}{0.0410 \log HB} + \underset{(1.2203)}{0.5920 \log Doct} + \underset{(0.1647)}{0.0957 \log SP} +$$

$$\underset{(0.2888)}{0.1567 \log SPS}$$

$R^2 = 0.9966 \qquad D.W. = 1.3143$ ……(6.23)

This empirical equation is having a very interesting feature to show. First, it has got negative signs of parameter only for three independent variables. Unlike the seven variables in the linear equation, the variables which have negative contribution to revenue are area under crop (*CrA*), passenger vehicles (*PVeh*) and employment (*Emp*), and all the other variables have positive signs. We are ignoring the signs of the constant term.

Of these variables only the independent variables net state domestic product (*NSDP*) and consumer price index (*CPI*) bear the estimates of the parameters which are statistically significant at 5 per cent level given by the t values. While the other variables give the estimates of the parameter which have t values giving non-significant

results. Econometrically, for an empirical equation, significant t values are more important than R^2. Significant t values means that there is reliability of the estimates of the parameter. Now according to this equation we have almost all the variables apart from those three having positive contribution to revenue. This makes a difference between the linear and log linear function. Remember that the condition of additivity of the parameters is always present in the case of linear model whereas not in the case of log linear model. Only one advantage of having log linear version is that the regression coefficient themselves measure the elasticity of the particular variable with respect to revenue though it is a constant elasticity. We shall of course make some changes later on by changing the structure of the model by dropping some independent variables.

Taking into account the empirical equations (6.22) and (6.23) which we might consider them as a global empirical equation for estimating the revenue of Meghalaya, where we have considered certain explanatory variables, following the footsteps of our predecessors, and found without any doubt, that the model is the best fit as indicated by R^2. Also we are satisfied with the empirical evidence that there is no correlation in the disturbance term yet we have some serious doubts regarding the adequacy of this model. Thus the equation

poses a number of questions: (1) with regard to the estimates of the parameter having the minimum variance property; (2) two of the independent variables contribute directly to revenue; (3) whether there are possible relationship among the independent variables which might give rise to the problem of multi-collinearity; (4) there is the problem of denomination which poses a serious threat as regard the estimate of the parameters concerned.

Coming to the second question whether multi-collinearity problem exists or not. We know that a complete multi-collinearity gives rise to indeterminancy of the estimates of the parameter. Straight-away in this model we have certain variables which we might consider as strongly correlated e.g. between net state domestic product (*NSDP*) and per capita income (Y_C). Again between passenger vehicles (*Pveh*) and goods vehicles (*Gveh*), between hospital beds (*HB*) and doctors (*Doct*), between school enrolment (*SP*) and post-school enrolment (*SPS*) there will be relationship. We have to drop certain variables from the model. In this particular case we have to examine some other related things. Suppose an independent variable with parameter estimate is having greater variance as well as related with another one or two independent variables then we should drop such variable from the model. Sometimes we may also drop a variable which might be

influencing very remotely the revenue function. In this particular case, straight-away from the requirement of minimum variance property we can drop seven variables viz., net state domestic product (*NSDP*), cropped area (*CrA*), road length (*RL*), employment (*Emp*), hospital beds (*HB*), enrolment at school level (*SP*) and enrolment at post-school level (*SPS*). Now we can understand that there should be very strong co-relationship between net state domestic product (*NSDP*) and per capita income (Y_C). We would like to retain Y_C just because it yields an estimate which is having the required minimum variance property. For our practical purpose therefore we drop *NSDP* and take Y_C as one of the independent variables. Now in the case of *PVeh* and *GVeh* both of them have non-significant values of t. Therefore it will be difficult to select between these two. But *RL* depends on the intensity of the variables like *PVeh, GVeh* and also it has an estimate which apparently is not having minimum variance property. Therefore from these three variables we drop *RL* as one of the independent variables. Now *Emp* as an independent variable is assumed to contribute something to revenue whether positive or negative but the magnitude of the contribution is not as high as some other independent variables. Also it does not have minimum variance property. Therefore we drop employment (*Emp*) as an independent variable from the revenue function. The next

independent variable hospital beds (*HB*) whose t-value itself indicates that the estimate of this parameter (*HB*) is not having the requisite minimum variance property. In spite of its magnitude of this regression coefficient of (*HB*) we drop this variable as an independent variable. Now coming to *SP* and *SPS,* we assume that there is a strong relationship between these two variables. Also judging from the t values we can say that the estimates do not have the minimum variance property. Therefore we drop these two variables from the model. Although the number of medical practitioners is too remotely connected with revenue, yet it has possessed the minimum variance property as well as the magnitude of regression coefficient and we can retain this variable in the model.

Now we are left with the theoretical revenue function:

$R = f\,(Yc, CPI, PVeh, GVeh, Doct)$

$$R = a_0 + a_1 Yc + a_2 CPI + a_3 PVeh + a_4 GVeh + a_5 Doct \quad \text{.....(6.24)}$$

We intend to estimate this model in order to examine whether the above named variables have the minimum variance property or not. If we found that the equation containing insignificant t associated with an estimate of the parameter, then we might re-compute another model to find the exact viable relationship between revenue and the

independent variables having the character of BLUE. We can call this process as reduction analysis.

Then we can try the above model

$$R^* = a_0 + a_1 Y_C + a_2 CPI + a_3 PVeh + a_4 GVeh + a_5 Doct \quad \ldots.(6.25)$$

$$\hat{R} = \underset{(-2.1923)}{-122.4375} + \underset{(1.0082)}{0.0356\, Y_C} + \underset{(3.004)}{0.3843\, CPI} - \underset{(-0.5757)}{13.9974\, Pveh}$$

$$- \underset{(-0.1618)}{2.3233\, G\, Veh} + \underset{(1.1009)}{470.4375\, Doct}$$

$$R^2 = 0.9829 \qquad D\text{-}W\ Statistic = 1.8179 \qquad \ldots\ldots\ldots(6.25)$$

Empirical equation (6.25) straight-away showed that the model is a bad fit compared to (6.23) which is shown by R^2 = .9829. D-W Statistic which is equal to 1.8179 shows that there is no auto-correlation in the disturbance term but one point is that both passenger vehicles (*PVeh*) and goods vehicles (*GVeh*) whose estimates of the parameter give non-significant t-value thereby making the estimates of the parameter less reliable whereas another important variable per capita income (Y_C) and the number of medical doctors (*Doct*) have t-values which are only significant about 10 per cent level of probability. At least we expected that per capita income (Y_C) will be more an influencing variable than any variable in the model. However the

model showed that both passenger vehicles (*PVeh*) and goods vehicles (*Gveh*) and the medical doctors (*Doct*) appear to be more dominating variables in estimating the revenue of the State. Perhaps these three sub-sectors contribute more to the realisation of revenue than per capita income (Y_C) or consumer price index (*CPI*). On the other hand consumer price index (*CPI*) happens to have a significant t-value. We do not talk about the significance of the intercept term because it is not a variable by itself but a product of joint effect of all the independent variables. It should be interesting to see whether revenue can be estimated by using passenger vehicles (*PVeh*) and goods vehicles (*GVeh*) and the medical doctors (*Doct*), and dropping per capita income (Y_C) and consumer price index (*CPI*). In that case, it will be an equation of non-conventional type but worth examining.

We would like to recall here the earlier empirical equation (6.17) where it is attempted to analyse expenditure by using consumer price index (*CPI*) and per capita income (Y_C) as explanatory variables. There, it is found that the equation is the best fit but the parameter estimates are not significant and the magnitude of the parameter estimates are not very high. So, the same thing happens in this equation (6.25). Therefore we must try another empirical equation by getting revenue as a function of passenger vehicles (*Pveh*) and goods vehicles

(*Gveh*) and another equation such as revenue as a function of medical doctors (*Doct*) alone. These variables are included in equation (6.25). Although the number of medical doctors (*Doct*) in Meghalaya is quite small yet it has the estimate of the parameter which has the highest value compared to the other variables, hence requiring an empirical analysis.

Now coming to equation (6.26) where we have dropped few of the independent variables

$$\hat{R} = \underset{(-2.9423)}{-72.2639} + \underset{(1.1662)}{0.0287\,Y_C} + \underset{(3.0254)}{0.3705\,CPI} - \underset{(-0.8648)}{7.1405\,PVeh}$$

$$R^2 = 0.982 \qquad D\text{-}W\ Statistic = 1.2068 \qquad \ldots\ldots\ldots(6.26)$$

Regarding the signs of the parameters concerned, the passenger vehicles (*PVeh*) have a negative sign which shows that there is a decline in revenue with the increase in passenger vehicles. Although the magnitude of the parameter estimates of per capita income(Y_C) and consumer price index (*CPI*) are not so high yet they are contributing positively towards revenue. As regard the consumer price index (*CPI*) the estimates of the parameter of *CPI* is statistically significant whereas the estimates of the parameter of per capita income (Y_C) is not. And as far as passenger vehicles (*PVeh*) is concerned its estimated parameter is not the least significant which shows some doubt about

the reliability of the estimates of this parameter but $R^2 = .982$ gives an account of 98 per cent of the total variance by the equation. However, D-W Statistic indicates that there is auto-correlation in the disturbance term. As we had suggested earlier, this could be improved upon if we adopt the generalised least squares method.

Now we shall consider equation (6.27) where we have excluded the passenger vehicles (*PVeh*) and the goods vehicles (*GVeh*) as explanatory variables.

$$\hat{R} = \underset{(-2.0348)}{-90.7275} + \underset{(1.0315)}{0.0257\, Y_C} + \underset{(2.7631)}{0.3289\, CPI} + \underset{(0.9421)}{26.6992\, Doct}$$

$$R^2 = 0.9814 \quad D\text{-}W\ Statistic = 1.2158 \qquad \ldots\ldots\ldots(6.27)$$

The only demographic variable viz., the number of medical doctors (*Doct*) is retained in this equation. Again we see $R^2 = 0.9814$ which is 98 per cent of the total variance is explained by the equation which indicates that the model is a good fit. As far as D-W Statistic is concerned there is some degree of auto-correlation in the disturbance term. Now coming to the estimates of the parameter we found that the magnitude of the parameter, except for the medical doctors (*Doct*), the other parameter estimates are not very high. Again we see that only consumer price index (*CPI*) has an estimate which is more reliable due to its significant value of t whereas the per capita income (Y_C) is not

significant at 5 per cent level of probability and so is the estimate for the parameter medical doctors (*Doct*). But we are satisfied that all the variables contributed positively as given by the signs of the parameter as we expected so when the model was formulated.

We have then a series of empirical analysis using different sets of explanatory variables but we want to perform a more synthetic analysis of the public revenue by using either transformed variables or role of certain explanatory variables either in combination or alone for explaining the revenue function. Towards this end we thought of the following models:

$$R = f(PVeh, GVeh) \qquad \text{.....(6.28)}$$

Here we found earlier that the passenger vehicle (*PVeh*) and the goods vehicle (*GVeh*) playing a prominent role in the multivariate model discussed henceforth. Therefore we thought of analysing the role of these variables individually in explaining the revenue and as such we adopted this model (6.29).

$$\hat{R} = \underset{(-7.3061)}{-170.0287} + \underset{(10.1189)}{91.2511}\, PVeh - \underset{(-3.9526)}{44.9420}\, GVeh$$

$$R^2 = 0.9603 \quad \text{D-W Statistic} = 1.2055 \qquad \text{.....(6.28)}$$

First we are having only a linear equation and as such we happen to have additivity of the parameter. In so far the signs of the parameter of the variables is concerned, two of them do bear positive signs. But we found here the parameter for passenger vehicles (*PVeh*) bears a positive sign whereas not the parameter of goods vehicles (*GVeh*). This means that there is a negative influence so far as the contribution of goods vehicles (*GVeh*) is concerned towards the realisation of revenue. This may be probably due to the fact, that the goods transportation is usually a private one and run by a multitude of operators as private concerns and as such does not give a true account of the income or expenditure for assessing the tax although we know that transportation of goods is a very lucrative business and it is as good as the transport of passengers. Moreover the goods vehicles (*GVeh*) performed not only the inter-state services but also the door to door services and hence it is the busiest of all transport operations and the charges in transporting vary from one type of good to another and requiring immediate or urgent disposal. Therefore they charge a very good price for their services.

Coming to the coefficient for passenger vehicles (*PVeh*) we need not say much except that it has a positive contribution towards the realisation of revenue. $R^2 = 0.9603$ indicates that 96 per cent of the

total variance is explained by the model. *D-W Statistic = 1.2055* of course gives more evidence of auto-correlation although it is not very serious. So far the model fits very well yet we have the natural doubt if not viability but validity of this model.

It is found in equation (6.26) the parameter estimate for medical doctors (*Doct*) was the highest of all the variables. Therefore we have an itch to see how this variable will alone react if we take revenue as a function of the number of medical doctors (*Doct*) per thousand population.

$$R = f(Doct) \qquad \ldots\ldots\ldots\ldots (6.29)$$

This model (6.29) has been adopted but we must be careful after all this variable is a demographic variable and not an economic variable. So this may be unethical to adopt such a relationship and revenue as a function of the number of medical doctors (*Doct*) per thousand population. It is due to the empirical evidence in equation (6.26) that we have a tendency to adopt this model.

$$\hat{R} = \underset{(-2.8776)}{-613.3252} + \underset{(4.3610)}{4931.246\ Doct}$$

$$R^2 = 0.4224 \qquad D\text{-}W\ Statistic = 0.2610 \qquad \ldots\ldots\ldots (6.29)$$

This is another empirical equation which is not certainly conventional may be because many of the studies will not conform to our idea that revenue should be explained by the variable medical doctors (*Doct*) per thousand population. But what inspired us to take this variable is that in multiple regression model this variable is one of those that had the highest regression coefficient. Therefore we want to if not isolating by studying this variable in relation to revenue. As we have said already, ethically, this demographic variable is not that important to ensure the result which is given by the empirical evidence $R^2 = 0.4224$, that is, not worth reporting. Therefore we can say that this explanatory variable could be ignored in multiple regression equation although it has the highest regression coefficient. Of course the t-value of this parameter of estimate is highly significant and the *D-W Statistic* with the value of 0.2610 surely signifies that there is a heavy auto-correlation of the disturbance term. As a result the estimated value given by this empirical equation has a greater discrepancy with the observed values. We only present this model to justify our curiosity.

Next we have revenue as a function of per capita income

$$R = f(Y_C) \qquad \text{.....(6.30)}$$

Coming to equation (6.30) almost all our predecessors have adopted this model. Of course they also used consumer price index

(*CPI*) as another independent variable in their models. But no doubt it is almost universally accepted that per capita income (Y_C) is a more probable explanatory variable which we have been discussing earlier. That is why we have decided to take revenue as a function of per capita income (Y_C) alone.

Coming to equation (6.30) where $R = f(Y_C)$ which is the most quoted variable almost in very piece of literature and we are curious to see how this equation will fare:

$$\hat{R} = \underset{(-3.5442)}{-49.6230} + \underset{(31.8613)}{0.9572}\, Y_C$$

$$R^2 = 0.9750 \qquad D\text{-}W\ Statistic = 1.0965 \qquad \text{.....(6.30)}$$

Here the parameter estimate for per capita income (Y_C) gives us a very highly significant value, that means to say that the estimate of this parameter is a reliable one. *D-W Statistic = 1.0965* gives us the indication that there is some auto-correlation of minor order. And R^2 = *0.9750* definitely gives us the impression that the model is a viable one and a valid one because it has explained 97 per cent of the total variance. From this model we can infer that even in the absence of other explanatory variables, per capita income (Y_C) is a judicious and reliable variable to explain the revenue of the State.

Now let us take

$$R = f(NSDP) \qquad \text{.....} \quad (6.31)$$

Coming to equation (6.31) that revenue can be explained by net state domestic product (*NSDP*) alone. Of course the per capita income (Y_C) could be used as an explanatory variable if we can use also as the explanatory variable. This can be considered as a modification of the model (6.30).

$$\hat{R} = \underset{(-3.5619)}{-195.0608} + \underset{(10.1164)}{2.2858\ NSDP}$$

$$R^2 = 0.7974 \qquad D\text{-}W\ Statistic = 0.3004 \qquad \text{.....} (6.31)$$

This empirical equation should have been almost similar to (6.30) in respect of the estimates of parameter, statistical significance of the parameter, the coefficient of determination and the problem of auto-correlation. But there is some degree of difference between this empirical equation and the empirical equation using per capita income (Y_C) alone. Roughly speaking, there is a strong correlation between net state domestic product (*NSDP*) and per capita income (Y_C); after all Net National Income is straightaway net state domestic product. Therefore we expect all the qualities of the earlier model should be similar to this model. We have found almost significant t-value of the

estimate of the parameter of net state domestic product (*NSDP*) but D-W Statistic indicates some doubt about the efficacy of this model by having serious problem of auto-correlation in the disturbance term. Also $R^2 = 0.7974$ which is less than the value of R^2 given by per capita income (Y_C) as given by the empirical equation using only per capita income (Y_C) so that it is per capita income (Y_C) which is a more reliable variable than the net state domestic product (*NSDP*) in explaining the revenue. We are having here 80 per cent of the total variance explained by the model which means to say that it is not a reliable model like the model in equation (6.30).

Let us consider the following model used by the earlier studies:

$$\hat{R} = \underset{(.2694)}{15.4843} + \underset{(4.4467)}{0.6316\, Y_P} - \underset{(-1.2193)}{1.6607\, Y_C} + \underset{(1.7200)}{0.1189\, CPI}$$

$$R^2 = 0.9818 \qquad D.W.\ Statistic = 0.9143 \qquad \ldots\ldots\ldots (6.32)$$

Now we are estimating equation (6.32). Here, revenue is a simple linear function of per capita income (Y_C), per cent of primary sector income (Y_P) and consumer price index (*CPI*). The coefficient of determination R^2 is equal to .98 while the D-W Statistic shows that there is presence of auto-correlation. One interesting thing is that the per cent of primary sector income (Y_P) whose parameter estimate comes out to be significant here was not taken into consideration in the

earlier equations. Also we found negative sign here in case of parameter estimate of per capita income (Y_C). One interesting feature of this equation is that nearly all the parameter estimates are statistically significant. This of course gives us another question to ponder upon, that it is not always true, that in the time series data it is found that there is sure auto-correlation. As R^2 explains 98 per cent of the total variation, so the only problem is the negative sign in the per capita income (Y_C).

By taking the log linear of the above model we have:

$$\widehat{\log R} = \underset{}{-6.1464} + \underset{(0.5786)}{0.2471 \log Yp} + \underset{(0.6325)}{0.2356 \log Yc} + \underset{(4.0273)}{1.8958 \log CPI}$$
$$\underset{(-3.5097)}{}$$

$$R^2 = 0.9818 \quad D.W.\ Statistic = 0.9143 \qquad \ldots\ldots\ldots(6.33)$$

The model (6.33) as we have seen above portrays revenue as a function of percent of income originating in primary sector (Y_P), per capita income (Y_C) and consumer price index (CPI). The coefficient of regression R^2 is quite high explaining 98 per cent of the total variation by the model. As a result the model could be considered statistically adequate model. And we expected that all these explanatory variables contribute positively towards the estimation of revenue and as such their positive signs support our assumption although the parameters estimates of percent of income originating in primary sector (Y_P) and

per capita income (Y_C) are not statistically significant at 5 per cent level whereas consumer price index (*CPI*) is highly significant. This could be accounted for by sampling error in the explanatory demand variables. Also there are probable seasonal and periodic variations in these variables. But if we go by the signs of the parameter and the coefficient of determination R^2 the model is rightly acceptable to us. As regard the presence of auto-correlation D-W Statistic showed that there is auto-correlation. On the other hand it is almost an admitted fact, that the empirical analysis of time series data having an auto-correlation, cannot be ignored.

We shall now consider another empirical equation:

$$\hat{R} = \underset{(-0.6409)}{-47.6445} + \underset{(0.5179)}{(0.9349)\,Yc} + \underset{(29.0541)}{0.4226\,CPI}$$

$$R^2 = 0.9867 \qquad D.W.\ Statistic = 1.4674 \qquad \text{…….(6.34)}$$

Coming to equation (6.34), we have revenue function expressed as a linear function of only 2 independent variables viz., per capita income (Y_C) and consumer price index (*CPI*). Here again like in the previous cases, Y_C has a negative sign and the *CPI* is having a positive sign which is also significant. R^2 is equal to .9863 and D-W Statistic shows that there is auto-correlation though not serious.

Let us consider:

$$\widehat{\log R} = \underset{}{-6.5800} + \underset{(0.8775)}{0.3061 \log Yc} + \underset{(25.9078)}{1.6268 \log CPI}$$
$$\underset{(-4.2148)}{}$$

$$R^2 = 0.9815 \quad D.W.\ Statistic = 0.7627 \quad \text{.....(6.35)}$$

Now coming to equation (6.35) we have dropped the per cent of primary sector income (Y_P) to see if revenue could be explained alone by per capita income (Y_C) and the consumer price index (*CPI*) which shows that the empirical equation (6.35) gives a completely different picture. First it bore a positive sign of the parameter estimates of Y_C; also *CPI* becomes very highly significant whereas D-W Statistic shows that there is a presence of auto-correlation. We have used this version of the model in order to see exactly what is the nature of per capita income (Y_C) in explaining revenue. It also confirms the view that revenue and expenditure are not exactly same vector of the dependent variable. There is a slight difference between revenue and expenditure.

Consider another version of empirical equation:

$$\widehat{R} = \underset{}{51.5195} + \underset{(37.5027)}{0.8972\ Yp} - \underset{(-1.5970)}{2.2011\ Yc}$$
$$\underset{(0.9527)}{}$$

$$R^2 = 0.9919 \quad D.W.\ Statistic = 1.8830 \quad \text{.....(6.36)}$$

Next, we are adopting a linear version of equation (6.37), that is, we are talking of equation (6.36). Here, again, the sign of the estimate of parameter for per capita income (Y_C) bears a negative sign although

the estimate is significant at more than 5 per cent level. The per cent of primary sector income (Y_P) comes out to be a positive contributor to revenue. Also the estimate of this parameter is very highly significant. D-W Statistic shows that there is no auto-correlation present. The coefficient of determination R^2 is equal to .9919 merely explains entirely the total variation.

$$\widehat{\log R} = \underset{(-3.9740)}{-8.4199} + \underset{(19.7402)}{1.4581 \log Yp} + \underset{(1.2524)}{0.5825 \log Yc}$$

$$R^2 = 0.9690 \quad D.W.\ Statistic = 0.4691 \qquad \ldots\ldots\ldots(6.37)$$

Now coming to equation (6.37), a log linear equation, we have dropped consumer price index (*CPI*), although we have no reason to do it. We wanted to see consumer price index (*CPI*), because, after all, it is an indicator of stability of the economy, and also that of general welfare. But it certainly cannot influence public expenditure as much as revenue. Thus, we took revenue as a function of per cent primary sector income (Y_P) and per capita income (Y_C). Now this time we found that both of them have positive influence upon revenue. And the estimate of the parameter of per cent primary sector income (Y_P) is very highly significant, so is the per capita income (Y_C) estimate. And R^2 is equal to .9690, whereas D-W Statistic shows some auto-correlation. This equation is also a best fit.

Next we take up the following model:

$$R = f(Y_P, Y_S, Y_T) \qquad \text{…….(6.38)}$$

Now we are thinking of using another model (6.38) which is slightly different from the model using the sectors of the economy as explanatory variables. But here we have classified the sectors into three broad categories viz., primary sector (Y_P), secondary sector (Y_S) and tertiary sector (Y_T). The definition of these sectors is well known. Now we shall discuss the empirical findings of this model.

$$\hat{R} = \underset{(-2.1714)}{-1821.0} + \underset{(0.6113)}{4.9492}\, Y_P - \underset{(-0.8794)}{10.3027}\, Y_S + \underset{(5.0002)}{42.9404}\, Y_T$$

$$R^2 = 0.9317 \qquad D\text{-}W\ Statistic = 1.5139 \qquad \text{……(6.38)}$$

First we look at the signs of the parameter. It is not expected that the estimates of the parameter of the secondary sector (Y_S) should have come out with negative sign. We expected that the secondary sector (Y_S) has a positive contribution to the realisation of revenue. So far the tertiary sector (Y_T) is concerned, the estimate of this parameter is of such a large magnitude that we can say that it is more prominent or influential in estimating the revenue than the other two sectors of the economy. On the other hand R^2 gives us the indication of the viability of this model as a model of best fit. When it comes to the question of the reliability of the estimates of the parameter, neither the estimates of

the parameter of primary sector (Y_P) nor the estimates of the parameter of secondary sector (Y_S) appears to be reliable because their t-values are not significant. Whereas, the estimates of the parameter of tertiary sector (Y_T) sector is highly significant. D-W Statistic showed that there is some slight degree of auto-correlation present in the disturbance term. On the whole this model is reliable one, definitely for us explaining the current situation but not reliable for prognosis.

6.4 Summary of the Findings

The empirical analysis of the determinants of public expenditure gives the following broad conclusions:

From the analysis of public expenditure as a simple linear function of twelve variables it is found that the pure economic variables viz., per capita income, net state domestic product and consumer price index whose parameter estimates are not significant and therefore not reliable for the purpose of estimating the expenditure. A log linear version of the same equation shows that only passenger vehicles with parameter of the estimate which is significant. Though we cannot reject this equation, yet we cannot use it as an indicator of future demand for public expenditure.

Analysing public expenditure as a simple linear function of per capita income, consumer price index, passenger vehicles, goods vehicles and doctors per thousand population, it is found for the first time that consumer price index is a reliable variable that influences public expenditure.

By taking public expenditure as a simple linear function of per capita income, it is found that the estimate of the parameter of per capita income is very highly significant.

However, while considering public expenditure as a simple linear function of net state domestic product, the estimating equation exhibits a very interesting result of R^2 which is equal to nearly 0.98. The result indicates that public expenditure in the State is influenced very much by the changes in net state domestic product.

In our empirical analysis, we have utilised the model of the earlier studies viz., public expenditure as a simple linear function of primary sector income, per capita income and consumer price index. The result exhibits positive sign for all the estimates of the parameters of the independent variables; except for the per capita income, all other estimates are significant. Taking the log linear relationship of the same model, the result shows that there is a comparatively sluggish growth rate of per capita income than that of public expenditure.

In the analysis of public expenditure as a linear function of per capita income and consumer price index, the result shows that per capita income bears a positive sign. The log linear relationship of the same model, yields the result which indicates that the consumer price index is a prominent contributor to public expenditure.

While analysing public expenditure as a simple linear function of primary sector income and per capita income, the result shows that the estimate of parameter for per capita income bears a negative sign while the primary sector income not only bears a positive sign but the estimate of a parameter is highly significant. However a log linear version of the same model gives the result which indicates that the estimate of the parameter of primary sector income is highly significant.

In the final empirical analysis of public expenditure as a simple linear function of per cent of income originating in the primary, secondary and tertiary Sectors, the result shows that only the tertiary sector which is highly significant at least at 99 per cent level of probability.

The empirical analysis of the determinants of revenue gives the following broad conclusions:

From the analysis of revenue as a simple linear function of twelve variables it is seen that among the pure economic variables viz., per capita income, net stated domestic product and consumer price index, it is found that the estimate of the parameter of the net state domestic product is highly expected by us to contribute positively towards revenue yet the empirical equation shows that it is negative. The estimate of the parameter of per capita income rightly bears a positive sign and the consumer price index bears a positive sign with a highly statistically significant estimate of the parameter. The log linear version of the same model indicates that only two independent variables viz., net state domestic product and consumer price index bear the estimates of the parameters which are statistically significant.

By taking revenue as a simple linear function of per capita income, consumer price index, passenger vehicles, goods vehicles and doctors per thousand population, it is found that passenger vehicles, goods vehicles and medical doctors appear to be more dominating variables in estimating the revenue of the State.

While analysing revenue as a simple linear function of per capita income, consumer price index and passenger vehicles it is found that although the magnitude of the parameter estimates of per capita

income and consumer price index are not so high yet they are contributing positively towards the revenue of the State.

From the point of view of revenue as a simple linear function of per capita income, consumer price index and medical doctors it is seen that the parameter estimate of consumer price index is highly significant in the estimation of the revenue of the State.

However, by taking revenue as a simple linear function of passenger vehicles and goods vehicles, the result shows that the coefficient of the passenger vehicles has a positive contribution towards the realisation of revenue. On the other hand there is a negative influence in so far as the contribution of goods vehicles is concerned towards the realisation of revenue of the State.

In an attempt to analyse revenue as a simple linear function of medical doctors it is disclosed that the estimated value given by this empirical equation has a greater discrepancy with the observed values.

From the analysis of revenue as a simple linear function of per capita income it is detected that the parameter estimate gives us a very highly significant value. From this model we can infer that even in the absence of other explanatory variables, per capita income is a judicious and reliable variable in order to explain the revenue of the State.

In taking revenue as a simple linear function of net state domestic product it is seen that the variable net state domestic product is less reliable than per capita income in explaining the revenue of the State.

By considering revenue as a simple linear function of primary sector income, per capita income and consumer price index, it is found that the parameter estimate of primary sector income comes out to be significant here. The log linear version of the same model shows that all these explanatory variables contribute positively towards the estimation of revenue.

By expressing revenue as a linear function of per capita income and consumer price index, it is found that as in the previous cases, the per capita income has a negative sign while the consumer price index has a positive sign which is also significant. By using a log linear version of the same empirical equation it is found that the model confirms the view that revenue and expenditure are not exactly the same vector of the dependent variable. There is a slight difference between revenue and expenditure.

By taking into account revenue as a simple linear function of primary sector income and per capita income it is noted that the estimate of parameter for per capita income bears a negative sign

although the estimate is significant. The primary sector income comes out to be a positive contributor to revenue as the estimate of this parameter is very highly significant. From the log linear version of the same equation it is noticed that the estimate of the parameter of primary sector income is very highly significant so also the per capita income estimate, that is, both of them have positive influence upon revenue.

In the final empirical analysis of revenue as a simple linear function of per cent of income originating in the primary, secondary and tertiary sectors, it is found that the estimate of the parameter of the tertiary sector is of a large magnitude, that is, it is very prominent and influential in estimating the revenue of the State than the other two sectors of the State economy. The model is a reliable one for explaining the current situation but not reliable for prognosis purposes.

6.5 Concluding Remarks

From the above empirical analysis, it is found that in Meghalaya, the rise in the level of per capita income influences the level of public expenditure as usually found in most empirical analyses. However, from the above analysis, it is found that net state domestic is an important determinant of public expenditure thereby proving our

hypothesis that the level of public expenditure responds freely to the rise in the level of net state domestic product.

Further, it is the consumer price index which is a more important determinant of public expenditure. This could be explained by the fact that a substantial portion of the State's expenditures are constituted by 'wages and salaries' which may reasonably be presumed to increase proportionately with consumer price index as the State government employees belong to the organized sector. Therefore, our analysis has proved the hypothesis that in Meghalaya, changes in consumer price index tend to bring about a change in the level and quantum of public expenditure i.e., the consumer price index has a positive influence on the growth of public expenditure as demonstrated by the increasing cost of providing public services.

Since the primary sector income still plays an important role in the determination of public expenditure, it may be inferred that the State has not been able to effect structural changes in the predominant agrarian economy. Normally, when the economy becomes more urbanized, the level of public services supplied tends to increase. It may be concluded, therefore, that the quantity of public services provided has not increased much during the period of our study. In other words, the analysis has proved the hypothesis that in Meghalaya,

there exists a functional relationship between the growth of the State's public expenditure and the changes in the quantity of public services provided.

Another interesting finding is that the tertiary sector is another important factor which determines public expenditure. This may be due to the fact that in the absence of industrialization taking place during the period of our study, the workforce of the State has no other option but to join in this sector. Again passenger vehicles rather than goods vehicles exert greater impact on public expenditure in the State. This is something incompatible as Meghalaya is highly backward with a very low per capita income.

On the revenue front, the level of per capita income is still considered as a judicious and reliable variable in the estimation of revenue of the State. However, the important role played by the primary sector income in the determination of revenue indicates that the State has not been able, in the last thirty years of statehood, to change the structural characteristic of its economy. The State economy has remained stagnant, otherwise as the State develops, the share of primary sector income is expected to decline. The tertiary sector is another important determinant of revenue as more and more people are employed in this sector due to lack of industrialization.

Regarding the impact of the consumer price index on the State revenue, it could be explained by the fact that a substantial portion of the State taxes are derived from the taxes on cash consumption of commodities, many of which enter into everyday consumption.

To conclude, it may be pointed out that the variables which determine both public expenditure and revenue in the State of Meghalaya are per capita income, consumer price index, primary sector income and the tertiary sector of the economy. However, public expenditure is more responsive than revenue to the changes in the net state domestic product. As a result, due to the lack of flexibility in the taxation system which is necessary to finance the explosive growth of public expenditure, it has led to a situation of poverty that the State finds itself today.

6.6 References

1. Hoffman, R.F. (1969): 'A Systematic Approach to a Practicable Plan for State Aid to Local Governments', *Public Finance/Finances Publiques,* Vol. XXIV, No. 1
2. Rao, M. Govinda (1981): *Political Economy of Tax and Expenditure Determination*, Allied Publishers Pvt. Ltd., New Delhi-110 064, pp.51-53

3. Ahmed, Qazi Masood, Sohali Javed and Akhtar Lodhi (2000): *The Determinants of Public Expenditure: A Simultaneous Approach – An Experience from Selected Developing Countries,* The Indian Economic Journal, Vol. 48, April-June 2000-01, Bangalore 560 004, 2001, pp.58-64

4. Rao, M. Govinda (1981): *Political Economy of Tax and Expenditure Determination*, Allied Publishers Pvt. Ltd., New Delhi-110 064, p. 42

CHAPTER VII

MAJOR FINDINGS AND CONCLUSION

7.1 Introduction

The previous chapters were an attempt to study the intricacies of public expenditure in terms of its growth, pattern and determinants. In the foregoing chapters, we made an attempt to uncover the problems at hand and tried to indicate the spheres in which solutions are necessary to contain these problems. In the process, we have neither undertaken an elaborate study of each of the aspects of the problem nor have we gone in minute details into the considerable statistical materials presented in the tables. As the main objective of our study is to screen and analyze the determinants of public expenditure in Meghalaya, we tried to restrain ourselves from minute exercises lest it may sidetrack the scheme of the present study. To that extent we can say that the present study has been exhaustive in raising the issues but may not be exhaustive in treating them.

With these limitations in mind, an attempt is made in this chapter to give a comprehensive account of the major findings of the entire study. The chapter is divided into two parts. In part I, we present the summary of the findings and part-II is an attempt to put forward certain policy implications in the light of the findings of the study.

7.2 **Summary of the Findings**

In this section, an attempt is made to list the major findings of our study in a more coherent manner.

Chapter I is introductory in nature. In this chapter, an attempt was made to formulate the problem of our study by highlighting the intricate problems of the growth, pattern and determinants of public expenditure in the State of Meghalaya. This chapter also incorporates a description of the methodology followed in this study and the sources and limitations of the data.

The foregoing discussions in this chapter revealed that there had been a tremendous increase in the developmental expenditure in the State over the years covered by our study. This increase in developmental expenditure was accompanied by increased expenditure on non-developmental activities as both of them go side by side. As a result, this has led to an explosive cycle of public expenditure growth in the State in the recent years. On the other hand, the tax policies and other attempts at resource mobilization did not seem to have changed much during the period under our study. Eventually, it has created a situation of fiscal crisis in the State. In order to overcome this situation, the alternatives that we spelt out run in terms of either a compression measure of public expenditure or a rapid mobilization of adequate

resources by the State government. In an economy, with a subsistence agricultural sector, non-existence of industrialization and a lower degree of monetization, the attainment of the second objective becomes a Herculean task. So, it is clear that the only alternative that is left to the State government is to compress its level of public expenditure. And any policy measure to compress the level of public expenditure must be based on *a priori* information as regards to the growth, pattern and determinants of public expenditure.

Further, the study revealed that the State of Meghalaya had been plagued by an acute resource crunch since the inception of its statehood in 1972. Though the State Government had initiated various measures with a view to mobilizing additional resources to finance the mounting pressure of public expenditure, the State continues to suffer from resource inadequacy on all the fronts. Thus, massive fiscal deficits have become a regular feature of the State finance particularly in the recent years. This background of the State's fiscal scenario no doubt provides a solid ground to examine the intricacies of public expenditure growth from various angles.

Keeping in mind the end objectives of our study, we thought it imperative to have an idea about the major conceptual and empirical issues relating to the analysis of the growth, pattern and determinants of

public expenditure. This necessitated us to carry out a detailed review of the existing literature on the problem at hand. And, Chapter II was an attempt at this direction. We carried out the exercise both at the International and National level with a motive to improve upon the existing models of growth, patterns and determinants of public expenditure by providing suitable economic justification to the selection of the various explanatory variables.

It is observed that almost all the studies at the international level take into consideration a number of variables that determine both the growth and pattern of public expenditure. For instance, the most usual variables being used and found statistically significant are per capita income, demographic factor, degree of openness and degree of urbanization. Similarly, it is observed that changes in technology, societal and cultural values favourably affect the level of government expenditure. Those studies that include federal grants to State as explanatory variable stress on the federal grants as the only factor which significantly affect changes in State and local per capita expenditure by subscribing to the proposition that the amount of expenditures demanded is related to the amount of federal aid received. Administrative re-arrangement is also found making for increased public expenditure in many studies. Moreover, it is observed that the

economic growth, which is the product of growth of public expenditure permits the generation of the revenues necessary to finance a larger public sector.

Review of the studies carried out at the national level show that changes in population growth and the general price index are mostly responsible for the growth of public expenditure in India. As far as political factor is concerned, political philosophy of a State is found to be one of the major determinants of inter-State government expenditure differential. And, the changes in political party in power exhibit significant influence on the size of public expenditure. Moreover, less stable governments tend to push up the level of public expenditure compared to more stable governments.

Thus we may conclude that the broad determinants of public expenditure that emerge from the review of various studies are increased allowance for social consideration, political ideology, social upheavals, interest groups/pressure groups, stability of government, economic infrastructure, per capita income, adjustment of income distribution, reduction of regional disparities, public capital formation, agricultural income, consumer price index, imports, besides some economic-political factors such curtailment of non-development expenditure and decentralization of expenditure decisions. The choice

from among these variables as it is understood from the various studies depends upon the availability of data and their amenability to various kinds of adjustment.

No doubt, the studies that we have reviewed in this chapter have made a substantial contribution in identifying some important variables that affect the growth and pattern of public expenditure. But, the influences of the determinants indicated by different studies differ significantly across countries and in a country over time. And it is rather surprising that, in many of the studies that we have reviewed, no attempt has been made by the researchers to specify the reasons for a selection of the variables, either on theoretical or statistical grounds. Keeping these problems in mind, an attempt is made in the Chapter III to develop an alternative model in order to overcome the deficiencies of the earlier models as regards to the problems of growth, pattern and determinants of public expenditure.

Chapter III was an attempt at providing the methodology and conceptual orientation to the study. It was found that the models adopted by earlier researchers suffer from some kind of hidden statistical inadequacy. Further, we pointed out that public revenue cannot be taken as a determinant of public expenditure due to the obvious nexus between them. Further, although the variance and

co-variance technique can be used in explaining the determinants of public expenditure, we fail to use this technique due to lack of data set that is required to carry out this type of analysis. Hence we decided to adopt an alternative model which we believe would be more appropriate for our study. Our model which was of a global nature run in terms of the following equation:

$$Y = a_0 + a_1 NSDP + a_2 Y_C + a_3 CPI + a_4 CrA + a_5 PVeh + a_6 GVeh + a_7 RL + a_8 Emp + a_9 HB + a_{10} Doct + a_{11} SP + a_{12} SPS + a_{13} t$$

where, Y = Public expenditure/Revenue, $NSDP$ = net state domestic product, Y_C = per capita income, CPI = consumer price index, CrA = area under crop, $PVeh$ = passenger vehicles per 1000 population, $GVeh$ = goods vehicles per 1000 population, RL = road length per 100 Km^2, Emp = employment, HB = hospital beds per 1000 population, $Doct$ = doctors per 1000 population, SP = enrolment at schools, SPS = enrolment at post school level, t = trend variable.

The global model presented above was used for empirical analysis. However for empirical analysis we used a number of combinations of the independent variables according to the results of the empirical findings depending on the availability of data. In the selection and the final retention of the independent variables in our

final analysis, we made use of the technique of confluence analysis. This helped us to move from a global model to a micro model. The intention was to observe whether the dis aggregative result of the analysis coincides or support the aggregative result of the global model or it diverges from them.

Having examined the global model, we thought it imperative to estimate public expenditure of Meghalaya as a function of net state domestic product alone and as well as the function of sectoral incomes of the economy as given by:

$$Y = a_0 + a_1 NSDP + U$$

and

$$Y = a_0 + a_1 Y_P + a_2 Y_S + a_3 Y_T + U$$

where

Y = public expenditure/revenue,

$NSDP$ = net state domestic product

Y_P = primary sector income,

Y_S = secondary sector income and Y_T = tertiary sector income.

It may appear that all the empirical equations that we have discussed in this chapter may not be necessary for prediction purposes or for using as forecasting models of the Meghalayan economy. We shall see later that some of these variables may be redundant while

empirically tested. This could only be affirmed in Chapter VI.

Chapter IV was an attempt to carry out the analytical and critical evaluation of the growth and pattern of public expenditure in the State of Meghalaya. The major findings of this chapter are as follows:

(1) The analysis of the average annual growth rates of total public expenditure, net state domestic product and per capita expenditure showed that over the years, the average annual rate of increase of total public expenditure has surpassed the average annual rate of increase of net state domestic product and per capita expenditure. The average annual rate of growth of total public expenditure, net state domestic product and per capita expenditure were observed to be in the order of 175.63 percent, 100.30 percent and 70.32 percent respectively. The extraordinary growth of public expenditure in relation to the net state domestic product may be attributed to the massive involvement of the government in the overall developmental activities of the state in the presence of a highly expanded service sector and a non-existence industrial sector. In a state where the average annual rate of growth of public expenditure tends to be near about double than the average rate of

growth of net state domestic product, raises serious doubt about the productivity and efficiency of the public expenditure programmes in the face of a subsistence agricultural sector and low per capita income.

(2) Further, the analysis on the revenue expenditure exhibited an increasing trend during the thirty-year period of our study. The trend showed that revenue expenditures, which were Rs 18.18 crores in the year 1972-73, rose to Rs 1354.83 crores in the year 2001-02 thus recording an average annual rate of increase of 245.08 per cent. When revenue expenditure was taken as a percentage to total public expenditure, it was found that for most of the years, revenue expenditure constituted more than 70 per cent of total public expenditure. Further, when we considered revenue expenditure as a percentage of net state domestic product, it was found that out of the total thirty years of our study, revenue expenditure constituted 20 per cent in the initial years and jumped to more than 40 per cent of the net state domestic product in the later years. This increase of revenue expenditure of the State government clearly exhibited the pattern and direction of public expenditure whereby the State had failed miserably in building up its capital base for further development. This clearly shows that over the years, a large chunk of public investment has entered into the unproductive channels, as it is evident from its high percentage share in

net state domestic product.

(3) The analysis of capital outlay as a percentage of total public expenditure enabled us to find the trend of public investment taking place in the State during the period of our study. It was observed that capital expenditure constituted less than 30 per cent of total expenditure for most of the years of our study. A distressing feature that emerged from the analysis was the declining trend of capital expenditure over the years. This only proves that the State has not been able to pursue expenditure policies in consonance with the achievement of long term goals and objectives.

(4) The analysis of the pattern of public expenditure in the State of Meghalaya, based on the sector-wise analysis of revenue expenditure indicated that the expenditures on social services accounted for the maximum annual compound rate of growth of 15.93 per cent while the general services recorded 15.78 per cent and the economic services showed 13.41 per cent. The above growth rates indicate that the revenue expenditures on social services account for the maximum rate of growth followed by the revenue expenditures on general services and economic services. This has resulted in a disproportionate growth of the service sector. The disproportionate growth of the social sector has not only absorbed most of the public investment funds over the years, but also

has given rise to a weaker linkage between the different sectors of the economy. The weak linkage is not a healthy sign from the point of view of sustainable economic development and also from the point of view of domestic resource mobilization.

(5) Further, the analysis on the sector-wise capital expenditure indicated that the capital outlay on social services accounted for the maximum annual compound rate of growth of 15.93 per cent followed by the capital outlay on general services which recorded 10.61 per cent and economic services exhibited 13.41 per cent. This trend no doubt substantiate our earlier finding that it is the social sector which has received much attention in the various plan periods of the State. This indicates that the Government has followed a policy of appeasement by providing immediate employment opportunities without taking proper measures to expand the industrial sector and the industrial base of the economy. It may be argued that it is the deliberate policy accomplishment of the government, which is responsible for the deplorable condition of the economic sector. We believe that this lop-sided planning has given a serious blow to the development of agriculture, trade and industries in the state.

(6) A dis-aggregation of total public expenditure into developmental and non-developmental expenditure revealed that

throughout the consecutive five-year plans, there was an increase by leaps and bounds, in both the developmental and non-developmental expenditures in absolute terms. However, it is alarming to note the declining trend of the developmental expenditure which was 72.44 per cent of the total expenditure in 1972-73 came down to 62.32 per cent in 2001-02. On the other hand, the non-developmental expenditure showed an increasing trend as it was 27.56 per cent in 1972-73 and increased to 37.68 per cent in 2001-02. The increase in non- developmental expenditure over the years may be attributed to the rising trend of interest payments and repayment of loans made by the state government. We believe that this rising trend of non-developmental expenditure implicitly talks about the means and ways of financing increased volume of public expenditure in the state. It may be pointed out that unless this trend is arrested, it may jeopardise the growth efficiency of the State.

(7) A close perusal of the growth of per capita expenditure in terms of both human and physical capital showed that all through the period, significant stress was laid more on human capital. This is shown by the fact that per capita expenditure on human capital which was Rs. 59.07 in the year 1972-73 went up to Rs. 2075.74 in the year 2001-02 while per capita expenditure on physical capital increased from Rs.

67.49 to Rs. 1442.37 during the same period of our study. It is quite distressing to accept the incompatible fact that in spite of this greater expenditure on human capital, the number of people living below the poverty line is still very high. Further, it may be pointed out that a greater emphasis on the growth of human capital in relation to the growth of physical capital has resulted in an economic incompatibility between employment generation and employment absorption.

(8) Further, in order to ascertain the responsiveness of public expenditure to the changes in the net state domestic product, we carried out an analysis of income elasticity of total public expenditure. An analysis of the time-point elasticity of total public expenditure with respect to net state domestic product exhibited a negative income elasticity coefficient – 6.189 in the year 1973-74 due to the steep decline in the revenue expenditure on general services and thereafter the income elasticity coefficient became positive and stood at 2.475 in the year 2000-2001 indicating the fact that for most of the years income elasticity of total public expenditure was greater than unity. As a result, total public expenditure on the whole was responsive to the increase in net state domestic product. When we carried out the similar exercise in case of revenue expenditure, it was found that for the entire period of our study the coefficients of elasticity of revenue expenditure were 2.4244

in the year 1973-74 and 2.0793 in the year 2000-2001, thereby exhibiting the relatively elastic nature of revenue expenditures to the State income. We may call this trend as the manifestation of the short-term plan objectives accomplishments of the government over the years. It may be pointed out that the negative elasticity (–0.1784) of the revenue expenditure for the year 1978-79 was brought about by a big cut in the expenditure on general services as compared to the previous year. Similarly the year 1994-95 witnessed a negative elasticity (–0.4876) of the revenue expenditure as a result of the trimming in the expenditure on general economic services as well as social and community services. Our analysis of capital expenditure elasticity with respect to net state domestic product indicated that initially it was negative (–16.5572) due to the steep decline in capital outlay on social and community services. After that, the income elasticity of capital expenditure became positive due to greater outlay being incurred by the government on social and community services as well as the increased capital outlay on the economic services recording 1.4378 in the year 1974-75 and 1.5491 in the year 2001-02. Therefore, an analysis of the time-point elasticity of total public expenditure, revenue expenditure and capital expenditure clearly indicated the explosive growth of public expenditure vis-à-vis the growth of net state domestic product in the state of Meghalaya.

(9) In order to ascertain the degrees of fluctuation in the values of the parameters as shown by the time-point elasticity, an analysis of constant base elasticity of total public expenditure, revenue expenditure and capital expenditure with respect to net state domestic product was carried out. The result of the constant-base elasticity of total public expenditures showed that it was highly responsive to changes in net state domestic product. This was evident from the coefficients of income elasticity of total public expenditure which remained more than unity for almost the entire period of our study recording 1.835 in the year 2000-2001. However, it may be noted that for the initial year of our study viz., 1972-73, the coefficient of elasticity was negative (–6.189) owing to the decline of public expenditure brought about by the fall in capital outlay on the social and community services during these years. However, on an average, total expenditures had been growing faster than net state domestic product as evident from the analysis. The results of constant base elasticity of revenue expenditure showed that the State had been experiencing an elastic trend of revenue expenditures for the whole period of our analysis. The coefficient of elasticity was 2.4244 in the year 1973-74 and remained at 2.4434 in the year 2000-01. It may be stated that increasing trend of revenue expenditure reflects the optimisation of the short-run goals of the society at large. The constant

base income elasticity of capital expenditure was negative for the first seven years due to the decline in capital expenditure on social and community services and economic services during these years. Thereafter, the constant base income elasticity of capital expenditure became positive at 2.5310 in 1980-81 and 0.9157 in 2001-02. A closer comparison of the constant base elasticity of both revenue and capital expenditures exhibited that the value of elasticity of capital expenditure was less than the revenue expenditure thereby giving rise to an apprehension that over the years, a larger share of public expenditure had entered into the current consumption streams thereby leaving no rooms for necessary capital accumulation to take place. This itself talks about the poverty of the State. It was further observed that the revenue expenditure of the State government of Meghalaya has grown at a very fast rate compared to the growth of the net state domestic product, thereby making the revenue expenditure growth a self-propelling one.

Thus, the higher growth of revenue expenditure has brought about an explosive cycle of expenditure growth. So, the problem is how to contain the explosive cycle of expenditure growth. Since the size of public expenditure determines the size of tax revenue of the government, therefore it was necessary to find out how far the mobilization of resources (both tax and non-tax) by the government has

been responsive to the changing patterns of growth of public expenditure. This necessitated a detailed analysis of the problems and prospects of internal resource mobilization in the context of the explosive cycles of public expenditure growth in the State, which we carried out in chapter-V.

Chapter V was an attempt to examine the problems of resource constraint and the prospects of internal resource mobilization in the State during the last thirty years of our study. The purpose of this exercise was to ascertain the degree of responsiveness of State's revenue to the changes in the quantum of public expenditure for determining the degree of financial self-reliance of the State. This chapter exhibited the following findings:

An analysis of the exponential growth rate of State's own tax revenue showed that it was 16.71 per cent per annum during the period of our study. This increase of State's own tax revenue over the years may be attributed to the expansion of the economic base of these taxes with the gradual growth of the economy over the years. Similarly, an upward trend of the growth of total tax revenue was also observed from the analysis. The exponential growth rate of the total tax revenue of the State worked out to be approximately 18.59 per cent per annum. Since the total tax revenues include shared taxes, the higher exponential

growth rate may be ascribed to the better tax mobilization efforts made by the Central Government from time to time resulting in a larger devolution of resources from the Centre to the State. Further, the net state domestic product showed an annual compound rate of growth of about 12.61 per cent. This increase in net state domestic product during the period of study was the result of the relative greater contribution of the primary and tertiary sectors to the State income. Given the exponential growth rates of State's own taxes and the net state domestic product, it may be observed that the growth rate of State's own taxes had continually outpaced the growth of net state domestic product.

An analysis of the percentage share of state's total tax revenue and shared taxes in the net state domestic product exhibited some disturbing results. The percentage of State's own tax revenue to net state domestic product, increased slowly over the years from 1.15 per cent in the year 1972-73 to 4.30 per cent in the year 2001-02. If, we judge the performances of the State's own tax revenue on the basis of its contribution to State income, then the performances of the State's own tax revenue presents a poor picture altogether. From this point of view, the State's own tax revenue has been increasing at a very slow rate during the period of our study. Moreover, the percentage of total tax revenue to net state domestic product which was 3.17 per cent in the

year 1972-73 gradually increased to 18.03 per cent in the year 1999-2000. If we visualize tax-income ratio as the simplest measure of tax burden or sacrifice then the analysis revealed that the ratio which stood at 0.03 in 1972-73 slightly increased to 0.10 in 2001-02 implying thereby the existence of a static tax structure over the years. This only proves that the State of Meghalaya fares rather poorly on this count.

The analysis of the ratio of the State's own tax revenue to the total tax revenues accruing to the State was an attempt to ascertain the degree of tax efforts of the government during these years. It was observed that the ratio, which was 0.36 in the year 1972-73, sluggishly grew to 0.43 in the year 2001-02. It is quite disheartening to note that the ratio nearly remained stagnant during the period of our study. In the light of the above finding, we may conclude that the State had neither put in extra efforts in raising its own tax revenue in a much more efficient way nor had it made any sincere effort to tap more resources during the period covered by our study. We believe, this might have been one of the factors responsible for the explosive cycles of public expenditure growth.

In order to ascertain the relative share of State's total tax and State's own tax revenue in the total public expenditure, we carried out an analysis of tax-expenditure ratio. It was observed that State's own tax

revenue as a ratio of total public expenditure stood at 0.04 in the year 1972-73, and slightly increased to 0.08 in the year 2001-02 implying thereby the low capacity of the State economy to withstand the explosive growth of public expenditure. From the above findings, we may be tempted to draw two inferences. First, in the absence of any cohesive additional domestic resource mobilization programmes, financing of ever increasing public expenditure has led to the dependency syndrome of the State on the Centre for higher grants-in-aid. Secondly, the non-existence of a vibrant tax structure in order to finance the increased volume of public expenditure has placed the State at the mercy of market forces in terms of public borrowings. Judged from the angle of sound fiscal ethics, the performance of the State government to this effect seems to be unreasonable. The observation on total tax revenue as a ratio to total public expenditure showed a ratio of 0.10 in the year 1972-73 which, slowly increased to 0.37 in the year 1999-2000. This clearly indicates the failure of the State government over the years in mobilizing adequate resources of its own to counter the pressure of rising public expenditure. From the above observations, it is very difficult to accept the hypothesis that the level of public expenditure depends much more heavily on the tax system

prevailing in the State so as to place the required revenues at the disposal of the government.

In order to find out the extent of dependency of the State on the contribution of Central taxes, an analysis of the shared taxes in the total tax revenue of the State revealed that the shared taxes increased from 49.77 per cent in the year 1972-73 to 64.65 per cent in the year 2001-02. A striking feature of the State's taxation as revealed by our analysis was the phenomenal increase in contribution of the shared taxes to the total tax revenue of the State. It was observed that over the years, there has been a continual outpacing of the State's own tax revenue by the shared taxes. This indicated that the relative importance of the State's own taxes has been much less than it has been in the case of shared taxes as a component of total tax revenue of the State during the period of our study. As a result, the State has cut a poor figure with regard to the efforts put in by it during the last thirty years of our study to mop up additional resources from its own sources. The increasing dependence of the State on the share of Central taxes might partly be due to the ever-increasing pressure of the State on the Central Government to widen the pool of shareable taxes and partly due to the greater in-built flexibility that has been brought into these taxes thereby making them more elastic than the State's own taxes.

In order to ascertain the pattern of taxes in the overall schemes of resource mobilization programme of the State, we carried out an analysis of direct and indirect taxes in terms of their relative growth over the years. It was observed that the indirect taxes contributed a larger share to the increase in tax revenue of the State over the years. The State's own indirect taxes exhibited an annual exponential growth rate of 16.85 per cent while the State's own direct taxes grew at a lower rate of 11.32 per cent. This showed that indirect taxes occupy a predominant position in the total tax structure of the State. A closer scrutiny of the ratio of indirect taxes to net state domestic product revealed that the overall incidence of indirect taxes increased more than ten times during the period of our study. Further, it was observed that the pattern of State's indirect taxes changed significantly in relative terms, i.e., there was a tremendous increase in taxes on commodities and services. That is, with the gradual commercialization and modernization of an economy, it becomes possible for a developing economy to collect more taxes on commodities and services. However, from the point of view of productivity, the State cannot depend entirely on this latter group of taxes. On the other hand, the poor performances of the direct tax may be ascribed to the inadequate coverage of these taxes and the existence of a predominant subsistence sector in the state. Further, if we rationalize the

insignificant role of the direct taxes, then this may be sought in terms of the existence of mass poverty and the prevalence of self-employment, which has kept many people away from the direct tax net. Under these circumstances, we believe that the Government has opted for institutionalization of the direct taxes. Therefore, from the above findings it may be remarked that the State has not succeeded to enhance the role of indirect taxes in the process of resource mobilization and failed to take bold decisions in order to widen the net of direct taxes so as to make the attempt at generating more resources more meaningful in the light of explosive growth of public expenditure.

In order to find out the relative importance of the individual taxes in the overall tax structure of the State, we carried out an analysis of compositional pattern of the State tax revenue. The compositional pattern of taxation of the State showed that over the years, the percentage contribution of sales tax to total tax revenue was 45.45 per cent in the year 1972-73 which grew to 52 per cent in the year 2001-02. Hence, sales tax has remained the pride of the State in terms of its resource mobilization capacity. The growing importance of sales tax might be due to the expansion of the tax base, an upward revision of the tax rate and the extension of its coverage. State excise occupied a second place of importance in terms of revenue generation. The percentage

contribution of state excise to total tax revenue of the State was 14 per cent in the year 1972-73, which grew to 38 per cent in the year 2001-02. This increase could be explained by the fact that the State does not follow some other States in the country in implementing the policy of prohibition. The other taxes which contributed less than 2 per cent to the total tax revenue of the State such as the Duties on Electricity, Motor Vehicle Tax, Entertainment including Betting Taxes showed a declining trend during the period of our study. Therefore, the declining trends are an indicator that the State has not been able to rationalize its tax structure throughout the period of our study.

Based on the above exercises, we may be tempted to conclude that, the trend observed from the pattern of the composition of the State's taxes is not at all warranted from the point of view of a healthy fiscal economy. The reverse would have been commendable in the context of the State's efforts at achieving self-reliance with regard to resource mobilization of sufficient resources for implementing several developmental programmes.

From the above analysis, one could see the dismal performance of the State government in generating adequate resources from the sources at its disposal. Hence, an attempt was made to analyze the amount of funds transferred from the Centre to the State in order to find

out the extent of dependency of the State on the Union Government. The total Central resources transferred to the State constituted near about 65 per cent of the total fiscal resources of the State. The ratio of Union resources transferred to aggregate State's expenditure was 62.29 per cent in the year 1972-73 which increased to 63.65 per cent in the year 2001-02. The State's share of divisible taxes and duties has increased both in absolute and in relative terms. This trend without any doubt has brought about a plausible deleterious effects on the growth and sustenance of the taxation efforts of the State in recent times. Given the level of resource mobilization effort of the State and given its degree of dependence on the Centre, we can hypothesize that the State will continue to depend heavily on the Central transfers, in the years to come unless it goes for an immediate rationalization of its tax structure. Therefore, in the absence of additional means to mop up adequate revenue, the State of Meghalaya is far from the goal of financial self-reliance. As a consequence of the devolution of increasing developmental responsibilities to the State on the one hand and at the same time the allocation of relatively inelastic sources of revenue on the other, there has been a growing and widening gap between the State's own financial resources and its expenditure requirements. This has augmented the need for increasing transfers of funds from the Centre to

the State.

It was observed that since the State has very low taxing capacities and a narrow tax base, an attempt was made to analyze the statutory grants made available by the Finance Commission to the State in order to determine their relative magnitude in the overall fiscal armoury of the State. However, it may be noted that the significance of the statutory grants had been declining from 63.88 per cent of the total resources transferred in the year 1972-73 to 51.39 per cent in the year 1999-2000. The important factor could be found in the nature of central planning process that the economy has adopted. On the other hand, the increasing dependence of the State government on the non-statutory grants (although this percentage shows a declining trend, in comparison to the statutory grants) cannot remain the trend in order to maintain the financial autonomy of the State. This clearly shows that the over dependence of the State government on Central grants and aids may not be conducive to the financial health of the State economy. Further, if the pattern of the composition of federal transfers is to be taken as the yardstick to measure the relative degree of self-reliance of the State, then the findings corroborate the inference drawn earlier that the degree of self-reliance in Meghalaya is exceptionally low.

It is evident from the above discussions that the State has failed

miserably on the front of internal resource mobilization thereby giving rise to a situation of explosive cycle of expenditure growth. It is a well-known fact that the capacity of the Government to execute development programmes in the State depends upon its willingness and capacity to generate the necessary resources. From the above observations, it is very difficult to accept the hypothesis that the level of public expenditure depends much more heavily on the tax system prevailing in the State so as to place the required revenues at the disposal of the government.

Keeping in mind the constraints of the growth of State's tax revenues over the years which we believed gave rise to an explosive cycle of public expenditure growth, an appraisal of the constituent expenditure instruments in terms of determinant study assumed great importance. Such a study, we believed, would help in identifying the factors responsible for the observed anomaly. An attempt therefore was made to look into this intrinsic issue in terms of determinant analysis, in the next chapter.

Chapter VI was an attempt to carry out an empirical analysis of the determinants of public expenditure in Meghalaya in order to ascertain the factors responsible for the resultant anomalies in the public expenditure front. Since we have already argued earlier that both public

expenditure and taxation are two sides of the same coin, we believe an analysis of the determinants of public expenditure in isolation from the determinants of revenue may give a partial picture of the wider problem of explosive cycle of expenditure growth. So, an attempt was made in this chapter to analyze the determinants of both public expenditure and taxation by giving more weight-age to expenditure side of the problem as the main objective of our study is to focus on the determinants of public expenditure.

When we applied global model of public expenditure which incorporates twelve explanatory variables as discussed in chapter III to the empirical data, we found that the pure economic variables viz., per capita income, net state domestic product and consumer price index having poor fit to the data, whose parameter estimates were reported to be insignificant in a simple linear version. Therefore we were tempted to carry out a log linear version of the global model with a motive to get better result out of it. However, the result showed that only the passenger vehicles as a parameter of the estimate happened to be significant. The result indicated the incongruous fact that in a state like Meghalaya where the per capita income is very low, yet the number of passenger vehicles is very high as to influence the level of public expenditure in the State. Under such circumstance, the above estimating

equation becomes redundant and cannot be used as an indicator of future demand for public expenditure.

In order to get better result of the estimating equation we thought it imperative to drop the variables having insignificant estimates of parameter. So, in the second phase of our analysis, an attempt was made to retain the explanatory variables such as per capita income, consumer price index, passenger vehicles, goods vehicles and doctors per thousand population in the global model. The estimating equation showed that consumer price index emerged as one of the most reliable variables influencing the level of public expenditure. This could be explained by the fact that a substantial portion of the State's expenditures are channelised to the payments of 'wages and salaries' which may have a positive pressure on the consumption expenditure and implicitly on the consumer price index. Therefore, our analysis proved the hypothesis that in Meghalaya, the consumer price index has a positive influence on the growth of public expenditure as demonstrated by the increasing cost of providing public services. This finding also justifies that public expenditure in the State over the years has tilted towards the expansion of the service sector. This also supports our earlier findings that public expenditure has grown at the cost of the other two sectors of the economy.

Further, in order to ascertain whether per capita income exerts any pressure on the determinants of public expenditure, we considered public expenditure as a simple function of per capita income as the only explanatory variable. The result showed that the estimate of the parameter of per capita income was highly significant. This, no doubt testifies the findings of the earlier studies which exhibit a direct relationship between them.

However, in our further attempt to estimate public expenditure we took net state domestic product as the only explanatory variable. The estimating equation exhibited an R^2, which was equal to nearly 0.98. The result indicated that the impact of net state domestic product on public expenditure during the period of our study had been not only positive but also highly significant. This only proves our hypothesis that the level of public expenditure responds freely to the rise in the level of net state domestic product resulting in the explosive cycles of public expenditure growth.

In an attempt to estimate public expenditure, we utilized another model of the earlier studies by taking primary sector income, per capita income and consumer price index as the independent variables. The result exhibited positive sign for all the estimates of the parameters of the independent variables; except for the per capita income, the other

two estimates of the parameters of primary sector income and consumer price index were significant. When we took the log linear version of the same model, the analysis yielded better result, which showed that per capita income was less significant in comparison to the other two variables viz., primary sector income and consumer price index. The result showed the importance of the primary sector income in the estimation of public expenditure in the State, which indicated the fact that the State had not been able to effect structural changes in the predominant agrarian economy during the period of our study. It may be concluded, therefore, that the quantity of public services provided has not increased much during the period of our study. In other words, the analysis has proved the hypothesis that in Meghalaya, there exists a functional relationship between the growth of the State's public expenditure and the changes in the quantity of public services provided.

In another attempt to estimate public expenditure we took per capita income and consumer price index as two explanatory variables. The result showed that per capita income bore a positive sign. Further, the log linear version of the same model, yielded the result which indicated that the consumer price index was a prominent contributor to public expenditure.

While analyzing public expenditure as a function of primary

sector income and per capita income, the result showed that the estimate of parameter for per capita income bore a negative sign while the primary sector income not only bore a positive sign but the estimate of a parameter was highly significant. However a log linear version of the same model gave the result which indicated that the estimate of the parameter of primary sector income was highly significant.

Lastly, we considered another model used by the earlier studies by taking per cent of income originating in the primary, secondary and tertiary sectors as the explanatory variables in the estimation of public expenditure. The result showed that only the tertiary sector, which was highly significant at least at 99 per cent level of probability. The fact that the tertiary sector has become very prominent in the estimation of public expenditure only indicates the weakness of the secondary sector due to the lack of efforts on the part of the government to bring about industrialization in the State.

As we have noted above, the empirical analysis on public expenditure in isolation from revenue would not give us the complete picture of the problems related to public expenditure. Hence, in order to get a better perspective of the problems at hand, we also attempted to analyze the factors that influence revenue in the State.

In our analysis of the global model of twelve variables for

estimating revenue of the State it was found that among the pure economic variables viz., per capita income, net state domestic product and consumer price index, the estimate of the parameter of the net state domestic product was highly expected by us to contribute positively towards revenue but showed that it was negative. The estimate of the parameter of per capita income rightly bore a positive sign and the consumer price index bore a positive sign with a highly statistically significant estimate of the parameter. The log linear version of the same model indicated that only two independent variables viz., net state domestic product and consumer price index bore the estimates of the parameters which were statistically significant. The importance of net state domestic product in the estimation of revenue could be explained by the fact that with the expansion of the economic activities in the economy, the level of revenue tends to increase. Regarding the impact of the consumer price index on the State revenue, it could be explained by the fact that a substantial portion of the State taxes were derived from the taxes on cash consumption of commodities, many of which enter into everyday consumption.

In another model where we considered per capita income, consumer price index, passenger vehicles, goods vehicles and doctors per thousand population as the explanatory variables, it was found that

passenger vehicles, goods vehicles and medical doctors appeared to be more dominating variables in estimating the revenue of the State. The contribution of the transport sector and that of the medical doctors towards the revenue of the State is questionable as the State has neither been able to consolidate the economic infrastructure like the transport sector nor enhance the social infrastructure like the medical doctors.

Further, we attempted to estimate the revenue of the State by taking per capita income, consumer price index and passenger vehicles as independent variables. The result showed that although the magnitude of the parameter estimates of per capita income and consumer price index were not so high yet they contributed positively towards the revenue of the State. This indicates the fact that with the increase in per capita income, the capacity of the State fetch tax revenue increases.

In another model for estimating revenue, we considered per capita income, consumer price index and medical doctors as explanatory variables. It was found that the parameter estimate of consumer price index was highly significant in the estimation of the revenue of the State.

However, by taking revenue as a function of passenger vehicles and goods vehicles, the result showed that the coefficient of the

passenger vehicles had a positive contribution towards the realization of revenue. On the other hand there was a negative influence in so far as the contribution of goods vehicles was concerned towards the realization of revenue of the State.

Further, in our attempt to estimate revenue, we took per capita income as the explanatory variable as used by many researchers. From the analysis it was detected that the parameter estimate gave us a very highly significant value. From this model we can infer that even in the absence of other explanatory variables, per capita income was a judicious and reliable variable in order to explain the revenue of the State. However, by taking net state domestic product as the only independent variable, it was found that net state domestic product was less reliable than per capita income in estimating the revenue of the State.

In another model for estimating revenue, we took primary sector income, per capita income and consumer price index as independent variables. The result of the estimating equation showed that the parameter estimate of primary sector income came out to be significant. The log linear version of the same model showed that all these explanatory variables contributed positively towards the estimation of revenue. The impact of the primary sector income on the estimation of

revenue of the State only indicates the fact that the State had not succeeded to change the predominant agrarian structure of the economy during the period of our study.

Further, in our attempt to estimate revenue, two explanatory variables were used viz., per capita income and consumer price index. The analysis revealed that as in the previous cases, the per capita income had a negative sign while the consumer price index had a positive sign, which was also significant. By using a log linear version of the same estimating equation the result revealed that the parameter estimate of consumer price index was highly significant.

We considered primary sector income and per capita income as two other explanatory variables in order to estimate revenue. The estimating equation exhibited that the estimate of parameter for per capita income bore a negative sign although the estimate was significant. The primary sector income came out to be a positive contributor to revenue as the estimate of this parameter was very highly significant. From the log linear version of the same estimating equation it was found that both the primary sector income and the per capita income had a positive influence upon revenue. However, the estimate of the parameter of primary sector income was very highly significant.

Finally, in our attempt to estimate revenue we took per cent of

income originating in the primary, secondary and tertiary sectors as the explanatory variables. The estimating equation indicated that the estimate of the parameter of the income originating in the tertiary sector was of a large magnitude; it was very prominent and influential in estimating the revenue of the State than the other two sectors of the State economy. The model was a reliable one for explaining the current situation but not reliable for prognosis purposes. If the income originating in the tertiary sector could influence so much the level of revenue in the State, it only indicates that the industrial sector has been pushed to the insignificant position due to lack of industrialization taking place in the economy.

Hence, from the empirical analysis carried out in this chapter, it was found that in Meghalaya, the rise in the level of per capita income influenced the level of public expenditure as usually found in most empirical analyses. Further, the result of our analysis showed that net state domestic product was highly significant in the estimation of public expenditure in the State. Therefore the above analysis only proves our hypothesis that the level of public expenditure in the State of Meghalaya responds freely to the rise in the level of net state domestic product thereby giving rise to the explosive cycles of public expenditure growth.

However, it was found that the consumer price index proved to

be another important determinant of public expenditure in the State. This could be explained by the fact that a large portion of the State's expenditures are constituted by 'wages and salaries' which may reasonably be presumed to increase proportionately with consumer price index as the State government employees belong to the organized sector. Therefore, our analysis proved the hypothesis that in Meghalaya, the consumer price index has a positive influence on the growth of public expenditure as demonstrated by the increasing cost of providing public services. Further, it was observed that the primary sector income was a significant determinant of public expenditure; this may be inferred that the State has not been able to effect structural changes in the predominant agrarian structure of the economy during the period of our study. It may be concluded, therefore, that the quantity of public services provided had not increased much during the period of our study.

On the basis of the model used by the earlier studies it was found that the tertiary sector was another important factor, which determined public expenditure. This could be explained by the fact that in the absence of industrialization taking place in the State during the period of our study, the tertiary sector had become very prominent in the determination of public expenditure. Again passenger vehicles rather

than goods vehicles exerted greater impact on public expenditure in the State. This could be explained by the incompatible fact that Meghalaya a poor and backward State with very low per capita income could have a very high number of passenger vehicles.

Similarly, on the revenue front, the level of per capita income could still be considered as a judicious and reliable variable in the estimation of revenue of the State. However, the important role played by the primary sector income in the determination of revenue indicated that the State had not been able, in the last thirty years of statehood, to bring about changes in the agrarian structure of its economy. The State economy had remained stagnant, otherwise as the State develops, the share of primary sector income was expected to decline. The tertiary sector was another important determinant of revenue due to lack of industrialization taking place during the period of our study.

Regarding the impact of the consumer price index on the State revenue, it could be explained by the fact that a substantial portion of the State taxes were derived from the taxes on cash consumption of commodities, many of which enter into everyday consumption.

Based on our observations about the factors responsible for the growth of public expenditure and revenue in the State we may put forward the common variables which determine both public expenditure

and revenue in the State of Meghalaya viz., per capita income, consumer price index, primary sector income and the tertiary sector of the economy. However, it is curious to note that public expenditure of the State was very much influenced by the net state domestic product. As a result, this has brought about the explosive cycle of public expenditure growth. On the other hand, it was found that revenue of the State although affected by net state domestic product, yet the State had not been able to mobilize adequate resources as the tax system of the State lacks in-built flexibility as well as automatic response and discretionary response. This necessarily implies that the State has not made whole-hearted efforts at taking away a major portion of the incremental income resulting from the increase in public expenditure over the years to the State coffers. The failure of the State on this front we believe is mainly responsible for getting a distorted picture of explosive growth in public expenditure. As a result the State found it difficult to bridge the gap between public expenditure and revenue, thereby giving rise to a situation of poverty that the State finds itself today.

The overall picture that emerges from our analysis of the growth, pattern and determinants of public expenditure is not at all encouraging. The fact remains that unabated growth of public expenditure with a non-responsive tax system has resulted in not only an explosive cycle of

expenditure growth but also a paradoxical economic development. We call it a paradoxical economic development, because if it is presumed that public expenditure is carried out to meet the economic objectives of income distribution, resource allocation, and employment generation for effecting the steady economic growth, then paradoxically it has resulted in the poverty of the State culminated in the form of low per capita income, low level of state domestic product, low level of employment and low level of economic activity. We believe that the resultant paradox in the context of Meghalaya has arisen due to the failures of public expenditure policies to address themselves to the right set of objectives. This provides us enough temptation to spell out certain positive policy prescription to overcome the deficiencies of the present public expenditure policy of the State. Section II is an attempt in this direction.

SECTION –II

7.2 Policy Implications

From the given trend and pattern of public expenditure, it is found that the Government has laid emphasis on the expansion of the service sector and generation of employment. The expansion of the service sector over the years has become self-defeating in the absence of sound infrastructure footing. In order to overcome this, we suggest a

balanced expenditure growth to take place.

The tremendous increase in revenue expenditure of the State government has brought about the explosive cycle of growth in total public expenditure. In order to contain this problem, the public expenditure policy would have to be directed into three important areas: (i) allocation of more resources to the critical sectors with a view to raising the productivity and growth of the State economy (ii) economy in government expenditure, and (iii) shifting of resources from less desirable to more desirable uses from both social and economic point of views.

In order to achieve the first objective, two implications should be taken into consideration: (a) changing the existing overall mix of the aggregate government expenditure. For instance, a greater emphasis may be required to be given to the developmental activities. In Meghalaya, we have seen that, as the developmental expenditures in absolute figures have been pushed up to remarkably high levels during the plan period, so also the non-developmental expenditures on revenue account have witnessed a steady increase. With additional increase in the volume of developmental expenditures, the non-developmental expenditures also tended to increase, mainly on account of increasing burden of administrative machinery of the State to shoulder heavier load

of economic activities. However, care should be taken that with every increase in developmental expenditure, the additional non-developmental expenditures should comparatively decline so as not to pull down the growth efficiency. (b) In order to overcome the problem of resource shortage to finance the mounting pressure of public expenditure, taxation and borrowing are the two vital sources of development finance. However, both the sources of revenue have their own attractions and limitations and policy makers would have to strike a balance between these two sources of revenue so as to give an incentive to the private sector also to flourish.

Further, it is of utmost significance to ensure economy in government expenditure. Regular feature of high levels of non-developmental expenditures need close scrutiny. The current practice of incremental budgeting under which the current levels of expenditures largely depend on the levels prevailing in the earlier period is quite detrimental to the interests of any rational government expenditure policy. In this context, the introduction of quarterly budgeting is well in line with the policy of sound fiscal management. This requires the identification and sharpening of objectives; examination of various alternatives of achieving these objectives; selecting the best alternative through cost-benefit analysis and cost

effectiveness analysis; prioritization of objectives and programmes; switching of resources from programmes with lower priority to those with higher priority; and identification and elimination of programmes which outlived their utility. The method requires expenditures on even the on-going projects to be justified. It is applied to both developmental and non-developmental expenditure. Quarterly budgeting aims at developing a system which will ensure that government departments spend money on plan schemes according to schedule. It requires checking on quarterly basis so that any money which remains unspent in a particular quarter could be made available to other schemes. This rescheduling of flows of funds would also help in bringing about economy in government plan expenditure. Quarterly budgeting is an extremely useful tool of fiscal management and financial control. Policy makers have to ensure that the rules are properly implemented.

Regarding the shifting of resources from less desirable to more desirable uses, it may be pointed out that more of government expenditure be channeled to extending and strengthening of the capital base. It is a known fact that the objective of capital formation is achieved to a lesser extent from the expenditure on social and community services. Hence higher allocations should be made to those sectors which will provide the required infrastructure for rapid economic

development.

It may be noted that economists are normally in favour of a shift in the structure of the economy, from agrarian to non-agrarian. But in our opinion, a balanced growth is more practical for a State like Meghalaya. In other words, Meghalaya has a comparative advantage in agro-based industries for which, the State Government is also implementing various schemes for improving the productivity of horticulture and agriculture. In consonance with this emphasis, the State Government should continue giving priority to agro-based industries which, will not only further strengthen the agricultural sector of the State, but also generate more employment opportunities. This would further ensure the efficiency of the service sector and thus appropriate balanced growth is maintained. To achieve this objective, it is imperative to adopt an integrated approach to an over-all development of the State irrespective of ideological differences and stability consideration of the policy makers.

Normally, the public sector is considered as an important agent in promoting balanced growth with social justice. However, in the context of the on-going changes in the public sector policy of the Government of India, there is an urgent need to mitigate the growing problem of unemployment and the constraints on budgetary resources. This can be

achieved only if the State Government encourages the private sector investment in order to accelerate industrial growth in the State. In order to materialize this objective, it is necessary that the Government provide the need-based budgetary support wherever required.

In pursuance of this policy, the State should identify the sick units of public sector undertakings that can be made viable and provided with a comprehensive package of assistance for their survival and help in conducting diagnostic studies with a view to taking drastic decisions within a specific time frame regarding the future of such units. The other alternative for the Government is to examine the feasibility of privatization or corporatisation of such sick units. This measure would definitely rationalize public expenditure of the State and would help to divert resources into other productive lines.

Keeping in view the increasing budgetary deficit of the State, as a consequence of increasing debt service burden and spiraling establishment cost, the State will have to intensify measures for resource mobilization. Since the per capita income is very low, the State will continue depending on indirect taxation for many years to come. As a result, the tax structure has to be rationalized in order to make it more buoyant and elastic. Certain ways and means will have to be found out in order to reduce the number of sales tax and levy uniform tax rates in

respect of some important commodities. This will reduce both administrative and compliance costs significantly. Since State excise is a major source of revenue for the State, following steps are suggested: (a) enhancement in the rates of State excise (b) vigorous tax efforts on the part of the State Excise Department (c) stoppage of pilferage and (d) vigorous efforts to stop illicit distillation and breweries. The taxes on entertainment including betting should be brought under stricter tax compliance in order to make them more buoyant and elastic.

The success of these ambitious measures, however, will be determined to a great extent by the ability to generate resources from the sources at the disposal of the State Government. The next related issue of concern, therefore, being the resource inadequacy of the State, which in turn has led to fiscal imbalances in the State over the years. The inadequate State's own tax revenue on the other hand, as pointed out earlier, is the result of twin factors such inadequate tax effort on the part of the State Government and the relative inelastic nature of State's own tax. In spite of these constraints, the State Government is expected to raise more and more internal resources from sources other than internal debts to successfully implement the planned targets. Thus, rationalization of the tax system would serve to resolve the problem and should be carried out whole-heartedly by the government.

With a view to simplifying the indirect taxes and reduction in evasion of tax as well as to ensure tax transparency, the Government of India has initiated a policy to replace Central Excise and the State's Value Added Tax system by a unified Value Added Tax Scheme by April 2003. To this end at least twelve states of the country have already agreed to introduce a Value Added Tax System in place of Sales Tax. This mechanism would indeed reform our tax system to the extent that it would do away with the confusion of tax on intra-state transactions. We, therefore, suggest to the State Government to set up a committee to examine the feasibility of such policy of tax system in Meghalaya at the earliest possible time.

Apart from relative inelastic source of State's own tax, laxity of tax efforts and limited source of tax revenue has been the causes of resource inadequacy in the State, greater effort, therefore, is called for ploughing back the incremental income resulting from economic growth. This can be achieved from a sustained increase in the tax-base, which would entail an expansion of coverage, a regular adjustment in the rates of inflation and minimization of collection lags.

Lastly, to counteract the erratic economic fluctuations, a rational approach to the assessment of public expenditure programmes and forecast of prospects and resource potential of the State is needed, as it is

being done in most of the States. For this purpose, establishment of a research cell with all the basic facilities is of utmost importance. While formulating expenditure and taxation policies, the policy makers must take into account the statistical method of economic forecasting at least for a period of five years.

We believe that the above suggested measures would definitely improve the efficiency of public expenditure of the State, and gradually these measures would usher in a transformed economy: a self-sufficient and self-reliant economy to fulfil the aspirations of the people of the State.

BIBLIOGRAPHY

Abizadeh, Sohrab and Yousefi, Mahmood (1988): 'Growth of Government Expenditure: The Case of Canada,' *Public Finance Quarterly,* Vol. 16, No.1, January

Adam, R.F. (1965): 'On the Variation in the Consumption of Public Services,' *Review of Economics and Statistics,* 47

Ahmad, Ehtisham and Stern, Nicholas (1991): *The Theory and Practice of tax reform in developing countries,* Foundation Books, Cambridge University Press, New Delhi - 110022

Ahmed, Qazi Masood, Sohali Javed and Akhtar Lodhi (2001): 'The Determinants of Public Expenditure: A Simultaneous Approach – An Experience from Selected Developing Countries,' *The Indian Economic Journal,* Vol. 48, April-June 2000-01, Bangalore - 4

Andie, S. and J. Veverka (1964): *The Growth of Government Expenditures in Germany since Unifications,* Finanzarchiv, N.F. Band

Andre, C. and Delorme R. (1978): 'The Long Run Growth of Public Expenditure in France,' *Public Finance,* XXXIII(1-2)

Ansari, M.M. (1984): 'Resource Mobilization through Taxation,' *Yojana,* Vol. XXVIII, No. 16, September 16-30

Atkinson, A.B. and Stiglitz, J.E. (1980): *Lectures on Public Economics,* McGraw Hill, New York

Auld, D.A.L. (1976): 'Provincial Grants and Local Government Expenditures,' *Public Finance Quarterly,* Vol. IV, No.13

Auten, G.E. (1974): 'The Distribution of Revenue-Sharing Funds and Local Expenditure Needs,' *Public Finance Quarterly,* Vol.2, No.3

Bahl, R.W. (1971): 'A Regression Approach to Tax Effort and Tax Ratio Analysis,' *IMF Staff Papers,* XVIII(3), November

Bahl, R.W. (1972): 'A Representative Tax System Approach to Measuring Tax Effort in Developing Countries,' *IMF Staff Papers,* XIX(1), March

Bansal, R.K. (1988): *Raising additional Resources in the States*, Atlantic Publishers and Distributors, New Delhi 110 027

Basu, Anuradha (1995): *Public Expenditure Decision Making, The Indian Experience,* Sage Publications India Pvt. Ltd., New Delhi – 48

Baumol, W.J. (1967): 'Macroeconomics of Unbalanced Growth : The Anatomy of Urban Crisis,' *American Economic Review,* LVIII (3), June, 1967

Beck, M. (1976): 'The Expanding Public Sector: Some Contrary Evidence,' *National Tax Journal,* XXIX (1), March

Bez, K. (1990): *Quantitative Techniques in Economics,* Kalyani Publishers, New Delhi

Bhargava, R.N. (1967*): The Theory and Working of Union Finance in India,* Chaitanya Publishing House, Allahabad

Bhat, Sham K. and Patnaik, Uma Shankar (1991): 'Political Economy of Public Expenditure Determination in Indian States,' *Indian Journal of Economics,* Vol.LXXI, Issue No.283, April, 1991

Bhat, Sham K. and Varalakshmi, S. (1994): 'The Impact of political Economy on Public Expenditure in Indian States,' *The Indian Journal of Economics,* LXXIV, Part IV, No. 295

Bhuyan, Prafulla Kumar (1984): *Regional Fiscal Economics of Assam*, Chugh Publications, Allahabad

Bird, R.M. (1970 'b'): *Taxation and Development: Lessons from Colombian Experience,* Harvard University Press, Cambridge Mass

Bird, R.M. (1976): *Charging for Public Services*, Canadian Tax Foundation, Toronto

Bird, R.M. and John G. Head (Ed.) (1972): *Modern Fiscal Issues, Essays in Honour of Carl S. Shoup,* University of Toronto Press, Canada

Bishop, G.A. (1964): 'Stimulative versus Substitutive Effects of State and Local Aid on New England,' *National Tax Journal,* Vol. XVII

Blinder, Alan S. (1974): *The Economics of Public Finance,* The Brookings Institution, Washington D.C., 20036

Booms, B.H. (1966): 'City Government Form and Public Expenditure level,' *National Tax Journal,* XIX

Booms, B.H. and Hu Teh, W. (1971): 'Towards a Positive Theory of State and Public Expenditure,' *Public Finance International Quarterly Journal,* XXVI/XXVI

Bosch, Nuria and Pandiello, Javier Suarez (1995): 'Seven Hypotheses About Public Choice and Local Spending (A Test for Spanish Municipalities),' *Public Finance,* Vol. 50(1)

Brown C.V. and Jackson, P.M. (1990): *Public Sector Economics,* Basil Blackwell Ltd., Oxford

Burkhead, Jessse and Miner, Jerry (1971): *Public Expenditure*, Macmillan, London

Chadrashekhar, S. (1968): 'Inter-State Disparities of Tax Incidence in India,' *Economic and Political Weekly,* Vol. III, No. 22, June 1

Chelliah, Raja, J. (1971): *Fiscal Policy in Underdeveloped Countries,* George Allen & Unwin (India), Bombay

Chelliah, Raja, J. and Ram N. Lal (1973-74): *Incidence of Indirect Taxation in India 1973-74,* National Institute of Public Finance and Policy, New Delhi

Clark C. (1970): *Taxmanship: Principles and Proposals for the Reform of Taxation,* Institute for Economic Affairs, London

Clarke, Sir Richard (1978): (Edited by Sir Alec Cairncross), *Public Expenditure, Management and Control,* The Development of the Public Expenditure Survey Committee (PESC), The Macmillan Press Ltd., Hongkong.

Cnossen, S. (1981): 'Specific Issues in Excise Taxation: The Alcohol Problem,' in K.W. Roskamp and F. Forte, eds. *Reform of Tax System,* Detroit: Wayne State University Press

Culbertson, J.M. (1953): 'The Growth of Public Expenditure in the United States 1890-1948,' *National Tax Journal,* June 1953

Cullis, John G., Philip R. Jones and Philip R. (1992): *Public Finance and Public Choice, Analytical Perspectives,* McGraw-Hill Book Co., London

Dalton, Hugh (1970): *Principles of Public Finance*, Allied Publishers (Pvt.) Ltd., London

Dar, Usha (1964): *Public Expenditure Control*, Chaitanya Publishing House, Allahabad,

Datta Ray, B. and Agrawal, S.P. (Editors) (1996): *Reorganization of North-East India Since 1947,* Concept Publishing Company, New Delhi 110 059

Desai, S.A. (1976): 'Determinants of Inter-State Government Expenditure Differentials in India,' *Indian Journal of Economics,* LVI

Diamond, Lord (1975): *Public Expenditure in Practice,* George Allen & Unwin Ltd., London

Diamond, J. (1977 'a'): 'Wagner's Law and the Developing Countries,' *Developing Economies,* XV(1)

Diamond, J. (1977 'b'): *Econometric Testing of the Displacement Effect: A Reconsideration,* Finanzarchiv, N.F. Band 35(3)

Donoghue, M.O. and Tait, A.A. 'The Growth of Public Revenue and Expenditure in Ireland' in *Studies in the Long-term Development of Fiscal Systems,* No.9 Institute of Social and Economic Research, University of York

Dutta, Sibani (1985): *Public Expenditure and Economic Development*, Ashish Publishing House, New Delhi-110 026

Eckstein, Otto (1973): *Public Finance,* (Foundations of modern economic series), Prentice-Hall, Inc., New Jersey

Emi, K. (1963): *Government Fiscal Activity and Economic Growth in Japan: 1888-1960*, Kinokuniya Book Store Co.Ltd., Tokyo

Enwenze, C. (1973): *Structure of Public Expenditure in Selected Developing Countries: A Time Series Study,* Manchester School of Economics and Social Studies, XXXXI (4)

Eshag, Éprime (1983): *Fiscal and monetary policies and problems in developing countries,* Cambridge University Press

Fabricant, Solomon (1952): *The Trend of Government Activity in the United States Since 1900,* National Bureau of Economic Research, Inc., New York

Finance (Economic Affairs) *Meghalaya Budget at a Glance, 1999-2000,* Govt. of Meghalya

Fisher, Glenn (1964): 'Inter-State Variations in State and Local Government Expenditure,' *National Tax Journal,* Vol. XVII, No.1

Forte, Francesco and Peacock, Alan (1985): *Public Expenditure and Government Growth,* Basil Blackwell Ltd., Oxford

Galbraith, J.K. (1962): *The Affluent Society*, Pelican Edition

Gerking, Shelby and Morgan, William (1998): 'State Fiscal Structure and Economic Development Policy,' *Growth and Change,* Vol.29, Blackwell Publishers, Lexington KY, Spring 1998

Goffman, I.J, and Mahar, D.J. (1971): 'The Growth of Public Expenditures in Selected Developing Nations: Six Caribbean Countries, 1940-65,' *Public Finance,* XXVI (1)

Goswami, P. C. (1994) *The Economic Development of Assam*, Kalyani Publishers, New Delhi 110 002

Groves, Harold M. and Robert L. Bish (1973): *Financing Government,* Holt, Rinehart and Winston, Inc., New York

Gupta, Shibshankar P. (1967): 'Public Expenditure and Economic Growth - A Time Series Analysis,' *Public Finance,* XXII (4)

Gupta, Shibshankar P. (1968): *Public Expenditure and Economic Development – A Cross Section Analysis,* Finanzarchiv, October

Harris, C. Lowell: 'Public Finance, A Survey of Contemporary Economics,' Vol. II, *American Economic Association*, edited by B.F, Hally

Harris, J.E. (1980): 'Taxing Tar and Nicotine,' *American Economic Review,* 70

Haveman Robert K. and Julius Margolis (1970): *Public Expenditure and Policy Analysis*, Markham Publishing Company, Chicago

Harberger, A. (1964): *Taxation, Resource Allocation, and Welfare*, in The Role of Direct and Indirect Taxes in the Federal Revenue System, New York: National Bureau of Economic Research

Head, John G. and Richard M. Bird (1983): 'Tax policy options in the 1980s in Cnossen,' Sijbren (Ed.), *Comparative Tax Studies,* North Holland Publishing Company, Amsterdam

Henderson, J.M. (1968): 'The Local Government Expenditures: A Social Welfare Analysis,' *Review of Economics and Statistics*

Henning, J.A. and Tussing, A.D. (1974 'a'): 'Income Elasticities of the Demand for Public Expenditures in the United States,' *Public Finance,* XXIX (3-4)

Henrekson, M. (1990): *Wagner's law: a spurious relationship?* Memorandum no. 131, January, Trade Union Institute for Economic Research, Stockholm, Sweden

Hey, L. (1972): *Economics of Public Finance*, Pitman Publishing, London

Hicks, Ursula K. (1963): *British Public Finances*, Oxford University Press, Oxford

Hicks, Ursula K. (1961): *Development from Below,* Oxford University Press, Oxford

Hicks Ursula K. (1961): *Public Finance*, Cambridge University Press

Hinrichs, H.H. (1965): 'Determinants of Government Revenue Shares Among Less Developed Countries,' *Economic Journal,* 75(1), September

Horowitz, A.R. (1968): 'A Simultaneous Equation Approach to the Problem of Explaining Inter-State Difference in State and Local Expenditure,' *Southern Journal of Economics,* 34(3), No.1

Islam, Anisul M. (2001): 'Wagner's law revisited: cointegration and exogeneity tests for the USA,' *Applied Economics Letters,* No. 8

Jain, M.M. (1969): 'Income Elasticity of Indian Tax Structure 1955-56 to 1965-66,' *Economic and Political Weekly,* Vol. IV, No. 18

Jain, Rajendra (1972): *State Taxation in India,* Progress Publishers, Motia Park, Bhopal

Joulfaian, David and Mookerjee, Rajen (1990): 'The Government Revenue-Expenditure Nexus: Evidence from a State,' *Public Finance Quarterly,* Vol. 18, No.1, January

Kee, W.S. (1965): 'City Expenditures and Metropolitan Areas: Analysis of Intergovernmental Fiscal System,' *The Journal of Finance,* XX, No.3

Kelly, Trish (1997): 'Public Expenditures and Growth,' *The Journal of Development Studies,* Vol.34, No.1, Frank Cass & Co. Ltd., London, Oct. 1997

Keynes, J.M. (1936): *The General Theory of Employment, Interest and Money,* Harcourt, Brace, & World, New York

Kurnow, E. (1963): 'Determinants of State and Local Expenditures Re-examined,' *National Tax Journal,* Vol. XVI, No.3

Lall, S. (1969): 'A Note on Government Expenditures in Developing Countries,' *The Economic Journal,* No. 79

Lewis, S.R. Jr. (1963): *Government Revenue from Foreign Trade: An International Comparison,* Manchester School of Economics and Social Studies, XXXI (1), January

Lotz, J.R. and Morss, E.R. (1967): "Measuring Tax Effort in Developing Countries", *I.M.F. Staff Papers,* Vol. XIV, No. 3

Madalgi, S.S. (1966): 'State Governments' Expenditures 1951-52 to 1965-66', *R.B.I. Bulletin,* June 1966

Madhavachari, R. (1982): 'Wagner's Law of Public Expenditure: An Empirical Test', *Margin,* Quarterly Journal of NCAER, 14(2)

Mahar, D.J. and Rezende, F.A. (1975): 'Growth and Pattern of Public Expenditure in Brazil, 1920-1969,' *Public Finance Quarterly,* 3(4), October

Mann, A.J. (1980): 'Economic Development and Tax Structure Change: Mexico, 1950-1975,' *Public Finance Quarterly,* 8(3), July

Mann, A.J. (1980): 'Wagner's law: an econometric test of Mexico, 1925-1976,' *National Tax Journal,* No.33

Mann, Arthur J. and Schulthess, Walter E. (1986): 'Long-run Expenditure Constraints in Argentina,' *Public Finance Quarterly,* Vol.14 No.1, January

Martin, Alison and Lewis W. Arthur (1956): *Patterns of Public Revenue and Expenditure*, Manchester School of Economics and Social Studies, September

Mathew T. (1972): *Economics of Public Expenditure*, Vora & Co., Publishers Pvt. Ltd., Bombay-2

Mclead, D. (1973): 'Determinants of Jamaican Government Revenue Shares,' *Journal of Development Studies,* 9(3), April

Michael, S. and Lewis-Beck and Rice, T.W. (1985): 'Government Growth in the United States,' *Journal of Politics,* 47, No.1-2

Millward, Robert (1971): *Public Expenditure Economics,* McGraw-Hill, London

Mishra B., (1996), *An Economic Study of Buoyancy and Elasticity of Orissa's Tax System,* Utkal University, Bhubaneswar

Morss, E.R. (1967): 'Some Thoughts on the Determinants of State and Local Expenditures,' *National Tax Journal,* Vol. XIX, No.1

Morss, E.R., Fredland, E.J. and Hymans, S.H. (1967): 'Fluctuations in State Expenditures: An Econometric Analysis,' *Southern Economic Journal,* Vol. XXXIII, No.4

Murthy, N.R.V. (1981): 'Wagner's Law of Public Expenditures: An Empirical Investigation of the Indian Economy Using the Appropriate Measure for a Valid Test,' *The Indian Economic Journal,* Vol. 28, Jan-March 1981, No.3

Murthy, N.R.V. (1982): 'Endogenous Government Consumption Expenditure: Some Econometric Evidence for the Indian Economy,' *The Indian Economic Journal,* 30, No.1

Musgrave, Richard A. (1969): *Fiscal Systems,* New Haven: Yale University Press

Musgrave, Richard A. and Musgrave, Peggy B. (1989): *Public Finance in Theory and Practice*, McGraw Hill Book Co, Singapore

Myles, Gareth D. (1995): *Public Economics*, Cambridge University Press, Cambridge

Nagaraja, N. (1965): 'Tax Revenue in a Developing Economy,' *AICC Economic Review,* Vol. XVI, Nos. 13-15, January, 6

Nagarajan, P. (1979): 'Economic Testing of the Displacement Effect Associated with a Non-global Social Disturbance in India,' *Public Finance,* XXXIV(1)

Nambiar, K.V. and Rao, M. Govinda (1972): 'Tax Performance of States,' *Economic and Political Weekly,* Vol. VII, No. 21

Naresh, Gautam, (1997): 'Expenditure Function of A Local Body in India: Estimates of Response Parameters of Municipal Corporation of Delhi,' *The Indian Journal of Economics,* No.308, Vol. LXXVIII, July

North Eastern Council (1995): *Basic Statistics of North Eastern Region,* N.E.C. Secretariat , Shillong

Oates, W.E. (1968): 'The Theory of Public Finance in a Federal System,' *The Canadian Journal of Economics,* Vol. I, No.1

Odedokun, M.O. (1993): 'An Econometric Analysis of Sectoral Financial and Expenditure Flows in LDCs: Evidence from Flow of Funds Data,' *Indian Economic Review,* XVIII, No.1

Oshima, H.T. (1957): 'Share of Government in Gross National Product in Various Countries,' *American Economic Review,* June 1957

Osman, J.W. (1962): 'The Dual Impact Aid on State and Local Government Expenditure,' *National Tax Journal,* XV, No. 4

Patil, J. F. (1983): 'Central Taxation I – Level Composition in States,' *The Economic Times,* November 16

Patil J. F. (1983): 'Central Taxation II – Per Capita Revenue from Shared Taxes Received by States,' *The Economic Times,* November, 17

Peacock, A.T. (1959): 'The Public Sector and the Theory of Economic Growth,' *Scottish Journal of Political Economy,* X

Peacock, A.T. and Wiseman, J. (1961): *The Growth of Public Expenditure in the United Kingdom,* Princeton University Press, Princeton

Peacock, A.T. (1963): 'Economic Analysis and Government Expenditure Control,' *Scottish Journal of Political Economy,* X

Peacock, A.T. and Ricketts, M. (1975): 'International Linkage Models and the Public Sector,' *Public Finance* XXX (3)

Peacock, A.T. and Stewart, I.G. (1958): 'Fiscal Policy and the Composition of Government Purchases,' *Public Finance* XIII (2)

Peacock, A.T. (1979): 'Approaches to the Analysis of Government Expenditure Growth,' *Public Finance Quarterly,*7 (1)

Peacock, Alan and Forte, Francesco (1981): *The Political Economy of Taxation,* Basil Blackwell, Oxford

Peters, G.H. (1971): *Private and Public Finance,* Fontana/Collins, London

Pigou, A.C. (1947): *A Study in Public Finance,* Macmillan Co. Ltd., London

Pillai, V. (1981): 'Fiscal Policy and Political Change in a Democratic Society: The Case of Indian States,' *The Indian Journal of Economics,* LXI

Pluta, J.E., (1979): 'Wagner's Law, Public Sector Patterns and Growth of Public Enterprises in Taiwan,' *Public Finance Quarterly* 7(1), January

Pluta, J.E. (1981): 'Real Public Sector Growth and Decline in Developing Countries,' *Public Finance,* XXXVI (3)

Pogue, T.F. and Sgontz, L.G. (1968): 'The Effect of Grants-in-Aid on State-Local Spending,' *National Tax Journal,* Vol. XXI

Pocket Statistical Hand-Book Meghalaya (1996): Directorate of Economics & Statistics, Govt. of Meghalaya, Shillong

Prest, A.R. (1973): *Public Finance in Underdeveloped Countries,* Vikas Publishing House Pvt. Ltd., Delhi -6

Pryor, L. Frederic (1968): *Public Expenditures in Communist and Capitalist Nations,* George Allen and Unwin Ltd., London, Ch.1

Ram, R. (1987): 'Wagner's hypothesis in time-series and cross-section perspectives: evidence from 'real' data for 115 countries,' *Review of Economics and Statistics,* No. 62

Rao, K.B.K. (1969): 'Income Elasticity of Central and State Taxes,' *Margin,* Vol. I, No. 3, April

Rao, K.B.K. (1972): 'Does the Indian Tax Policy Have a Rationale?' *Margin,* Vol. 4, No. 3, April

Rao, M. Govinda (1979): 'Economic and Political Determinants of States' Tax Revenue: A Case Study of Four States,' *Economic and Political Weekly,* Vol. XIV, No.47, November 24

Rao, M. Govinda, (1981): *Political Economy of Tax and Expenditure Determination*, Allied Publishers Pvt. Ltd., New Delhi- 110 064

Rao, S.R and Rao, M.N. (1977): 'Inter Municipal Expenditure Variation: An Econometric Analysis,' *The Indian Journal of Economics,* LVII

Reddy, K.N. (1970): 'Growth of Government Expenditure and National Income in India, 1872-1966,' *Public Finance,* XXV (1)

Reddy, Kaipa Narayana (1972): *The Growth of Public Expenditure in India*, Sterling Publishers (P) Ltd., New Delhi-16

Reddy, K.N. (1975): 'Inter-State Tax Effort,' *Economic and Political Weekly,* Vol. X, No. 50, December, 13

Rosenfeld, B.D. (1973): 'The Displacement Effects in the Growth of Canadian Government Expenditures,' *Public Finance,* XXVIII(3-4)

Sacks, S and Harris, R. (1964): 'The determinants of State and Local Government Expenditure and Inter-Governmental Flow and funds,' *National Tax Journal*, XXIV

Samuelson, P.A. (1954): 'The Pure Theory of Public Expenditure,' *Review of Economics and Statistics,* XXXVI, November, 1954

Samuelson, P.A. (1955): 'Diagramatic Exposition of a Theory of Public Expenditure,' *Review of Economics and Statistics,* XXXVI, November, 1954

Sandford, Cedric (1984): *Economics of Public Finance,* Pergamon Press Ltd., Headington Hill Oxford OX3 0BW, England

Sarma, Atul and Tulasidhar, V.B. (1984): *Economic impact of Government Expenditure*, Concept Publishing Company, New Delhi

Scott Lyngdoh, A.H. (2001): 'Review of the Implementation of Development Schemes and Programmes for 2000-2001,' *A Plan Supplement to the Budget Speech 2000-2001,* Government of Meghalaya, Planning Department

Sharkansky, I. (1967): 'Some More Thoughts About the Determinants of Government Expenditures,' *National Tax Journal,* Vol. XX, No.2

Sharma, G.D. (1977): 'City Size and Local Expenditure Pattern: A Study of Urban Centres in Rajasthan,' *Indian Dissertation Abstracts*

Sarma, A., Parek, K.M. and Singh, L.T. (1974): 'Determinants of Urban Local Expenditure: An Exploration in Gujarat Context,' *Anvesak*, 4 No.2

Singh, Gulab (1997): 'Wagner's Law - A Time Series Evidence from the Indian Economy,' *The Indian Journal of Economics,* No.306, Vol. LXXVII, January 1997

Singh, Mahendra Pratap (1988): *Economics of Government Expenditure Growth,* Reliance Publishing House, N. Delhi 110 008

Solano, P.L. (1983): 'Institutional Explanation of Public Expenditure Among High Income Democracies,' *Public Finance International Quarterly Journal,* XXXVIII No.1

Spann, R.M. (1977): 'The Macroeconomics of Unbalanced Growth and the Expanding Public Sector: Some Simple Test of a Model of Government Growth,' *Journal of Public Economics,* 8

Srivastava, R.L. (1964): 'Taxation in Underdeveloped Countries with special reference to India,' *AICC Economic Review,* Vol. 16, No. 11, November, 10

Srivastava, Suresh Chandra (1970): 'Is India the Highest Taxed Country in the World?' *Capital,* Vol. 165, No. 4135, Oct.22

Strayer, Paul J. (1949): 'Public Expenditure Policy', *American Economic Review,* Vol. XXXIX, No.1, January

Subramanian, V.K. (1979): *The Indian Financial System,* Abhinav Publications, New Delhi - 110 016

Tarschys, D. (1975): 'The Growth of public expenditures – nine modes of explanation,' *Scandinavian Political Studies,* No.10

Taylor, Philip E. (1974): *The Economics of Public Finance,* Oxford and IBH Publishing Co., New Delhi 110 015

Thimmaiah, G. (1978): *Studies in Indian Public Finance*, Kalyani Publishers, New Delhi

Thimmaiah, G. (1984): *Perspectives on Tax Design and Tax Reform,* Ashish Publishing House, New Delhi 110 026

Thorn, R.S. (1967): 'The Evolution of Public Finance During Economic Development,' *Manchester School of Economic and Social Studies,* XXXV (1), January

Tripathy, R.N. (1968): *Public Finance in Underdeveloped Countries,* World Press

Tripathy, Ram Niranjan (1985): *Public Finance in Underdeveloped Countries,* Sterling Publishers Pvt. Ltd., New Delhi 110 016

Ubogu, Roland E. (1983): 'The Political Economy of Government Expenditure in Nigeria: An Econometric Analysis,' *Artha Vijnana,* June V 25 N 2

U.K. Hicks (1961): *Development from Below,* Oxford University Press, Oxford

Varma, C.R. Thiagaraja: 'Taxation in Developing Countries,' *Eastern Economist,* Vol. 58, No. 7, February, 18

Venkataraman, K. (1968): *States' Finances in India,* George Allen and Unwin Ltd., London

Veverka, Jendrich (1963): 'The Growth of Government Expenditure in the United Kingdom since 1790,' *Scottish Journal of Political Economy,* Vol. I

Vickrey, William (1994): *Public Economics,* Edited by Richard Arnott, Kenneth Arrow, Anthony Atkinson, Jacques Drèze, Cambridge University Press,

Wagner, Adolph (1883): Finanzwissenschaft, Part I, Third Edition, Leipzig, in Musgrave, Richard A. (1969): *Fiscal Systems,* Yale University Press, London,

Weicher, J.C. (1970): 'Determinants of Central City Expenditures: Some Overlooked Factors and Problems,' *National Tax Journal,* XXIII

Weiss, S.J. (1969): 'Factor Affecting the Government Revenue Share in Less Developed Countries,' *Social and Economic Studies,* Vol. 18

Wheatcroft, G.S.A. (1969): 'A Taxation Policy for Growth' in *Taxation Economics*, Edited by M. H. Cadman, Macmillan and Co. Ltd., London

Williamson, J.G. (1961): "Public Expenditure and Revenue: An International Comparison,' *Manchester School of Economic and Social Studies,* XXIX(1), January

World Development Report (1997): *The State in a Changing World,* The World Bank, Oxford University Press, N.Y. 10016

World Economic and Social Survey (1998): *Trends and Policies in the World Economy,* United Nations, New York 1998, Bookwell, New Delhi – 110 009

Zahir, Mohammad (1972): *Public Expenditure and Income Distribution in India*, Associated Publishing House, New Delhi

Bio-Data

1. Name : Shri Emilius Nongbri
2. Educational Qualification : M.A. (Economics), N.E.H.U., Shillong
3. Present Position : Lecturer, St. Edmund's College, Shillong
4. Experience : 19 (nineteen) years
5. Other Academic Activities: Member, Board of Under-graduate Studies, N.E.H.U., Shillong
   - Programme Officer, National Service Scheme, St. Edmund's College from 1984 to 2000