

# RAJIV GANDHI UNIVERSITY

THIRD YEAR

PAPER III



BA (Economics)



## PUBLIC FINANCE AND STATISTICS

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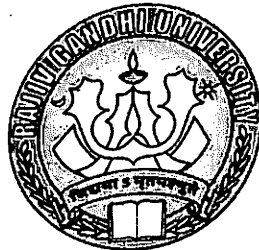
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# **PUBLIC FINANCE AND STATISTICS**

**BA [Economics]**

**Third Year**

**Paper - III**



**RAJIV GANDHI UNIVERSITY**  
Arunachal Pradesh, INDIA - 791 112



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## About the University

Rajiv Gandhi University (formerly Arunachal University) is a premier institution for higher education in the state of Arunachal Pradesh and has completed twenty-five years of its existence. Late Smt. Indira Gandhi, the then Prime Minister of India, laid the foundation stone of the university on 4th February, 1984 at Rono Hills, where the present campus is located.

Ever since its inception, the university has been trying to achieve excellence and fulfill the objectives as envisaged in the University Act. The university received academic recognition under Section 2(f) from the University Grants Commission on 28th March, 1985 and started functioning from 1st April, 1985. It got financial recognition under section 12-B of the UGC on 25th March, 1994. Since then Rajiv Gandhi University, (then Arunachal University) has carved a niche for itself in the educational scenario of the country following its selection as a University with potential for excellence by a high-level expert committee of the University Grants Commission from among universities in India.

The University was converted into a Central University with effect from 9th April, 2007 as per notification of the Ministry of Human Resource Development, Government of India.

The University is located atop Rono Hills on a picturesque tableland of 302 acres overlooking the river Dikrong. It is 6.5 km from the National Highway 52-A and 25 km from Itanagar, the State capital. The campus is linked with the National Highway by the Dikrong bridge.

The teaching and research programmes of the University are designed with a view to play a positive role in the socio-economic and cultural development of the State. The University offers Undergraduate, Post-graduate, M.Phil and Ph.D. programmes. The Department of Education also offers the B.Ed. programme.

There are fifteen colleges affiliated to the University. The University has been extending educational facilities to students from the neighbouring states, particularly Assam. The strength of students in different departments of the University and in affiliated colleges has been steadily increasing.

The faculty members have been actively engaged in research activities with financial support from UGC and other funding agencies. Since inception, a number of proposals on research projects have been sanctioned by various funding agencies to the University. Various departments have organized numerous seminars, workshops and conferences. Many faculty members have participated in national and international conferences and seminars held within the country and abroad. Eminent scholars and distinguished personalities have visited the University and delivered lectures on various disciplines.

The academic year 2000-2001 was a year of consolidation for the University. The switch over from the annual to the semester system took off smoothly and the performance of the students registered a marked improvement. Various syllabi designed by Boards of Post-graduate Studies (BPGS) have been implemented. VSAT facility installed by the ERNET India, New Delhi under the UGC-Infonet program, provides Internet access.

In spite of infrastructural constraints, the University has been maintaining its academic excellence. The University has strictly adhered to the academic calendar, conducted the examinations and declared the results on time. The students from the University have found placements not only in State and Central Government Services, but also in various institutions, industries and organizations. Many students have emerged successful in the National Eligibility Test (NET).

Since inception, the University has made significant progress in teaching, research, innovations in curriculum development and developing infrastructure.

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# SYLLABI-BOOK MAPPING TABLE

## Public Finance and Statistics

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Syllabi	Mapping in Book
<b>UNIT I</b> <b>Public Finance:</b> Meaning of Public finance: Differences between Public and Private Finance; Public Goods, Private Goods, Mixed Goods and Merit Goods; Dalton's Maximum Social Advantage.	<b>Unit 1: Public Finance</b> <b>(Pages 3-27)</b>
<b>UNIT II</b> <b>Public Expenditure:</b> Growth of Public Expenditure: Wagner's Hypothesis; Canons of Public Expenditure; Effects of Public Expenditure on Production and Distribution of Income.	<b>Unit 2: Public Expenditure</b> <b>(Pages 29-57)</b>
<b>UNIT III</b> <b>Public Revenue:</b> Sources of Public Revenue: Tax and Non-Tax, Direct and Indirect Taxes, Canons of Taxation; Ability to Pay and Benefit Approach of Taxation; Effects of Taxation on Production and distribution.	<b>Unit 3: Public Revenue</b> <b>(Pages 59-112)</b>
<b>UNIT IV</b> <b>Government Budget:</b> Revenue and Capital Budget; Revenue Expenditure and Capital Expenditure, Revenue Deficit, Fiscal Deficit, Primary Deficit; Counter Cyclical Fiscal Policy,	<b>Unit 4: Government Budget</b> <b>(Pages 113-135)</b>
<b>UNIT V</b> <b>Public Debt:</b> Differences Between Private and Public Debt, Sources of Public Debt, Effects of Government Borrowing on Aggregate Demand and Price Level.	<b>Unit 5: Public Debt</b> <b>(Pages 137-150)</b>
<b>UNIT VI</b> <b>Statistics:</b> Primary and Secondary Sources of Data, Collection and Tabulation of Data, Measures of Central Tendency: Mean, Median, Mode (Both Grouped and Ungrouped Data), Range, Mean Deviation and Standard Deviation as Measures of Dispersion.	<b>Unit 6: Statistics</b> <b>(Pages 151-190)</b>

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# INTRODUCTION

## NOTES

Public finance studies the role of the government in the economy. It is the definitive branch of Economics which assesses the government revenue and government expenditure of the public authorities and the adjustment of one or the other to achieve desirable effects and avoid undesirable ones. Public finance is a subject which has the distinction of intimate interaction between theory and practice. As such it acquires a meaning and usefulness only in the context of institutional framework of the economy with reference to which it is being studied. The theoretical concepts and policy applications in public finance feed upon and grow out of each other. No single theoretical model can adequately fit in the framework of every economy since its institutional framework is a thing unique to itself. It is important, therefore, that the discussion of public finance should be in the context of a single economy.

Recent years have witnessed a heated debate on several theoretical and policy issues covering several segments of public finance, including the role of fiscal policy. Pleas are being made for a thorough restructuring of its various theoretical and policy premises and the framework within which these should be conducted. Exponential growth and transformation in global financial system and worldwide meltdown caused by it have fuelled rethinking on the role of fiscal policy with a special focus on economic stability and growth—both in developed and developing countries. India, like the rest of the world, has also been deeply affected by these developments.

Statistics is considered a mathematical science pertaining to the collection, analysis, interpretation or explanation and presentation of data. Statistical analysis is very important for taking decisions and is widely used by academic institutions, natural and social sciences departments, governments and business organizations. The subject of statistics deals primarily with numerical data gathered from surveys or collected using various statistical methods. Its objective is to summarize such data, so that the summary gives us a good indication about some characteristics of a population or phenomenon that we wish to study. To ensure that our conclusions are meaningful, it is necessary to subject our data to scientific analyses so that rational decisions can be made. Hence, the field of statistics is concerned with proper collection of data, organizing this data into manageable and presentable form, analysing and interpreting the data into conclusion for useful purposes.

This book, *Public Finance and Statistics*, has been written in the Self-Instructional Mode (SIM) wherein each unit begins with an 'Introduction' to the topic followed by an outline of the 'Unit Objectives'. The detailed content is then presented in a simple and an organized manner, interspersed with 'Check Your Progress' questions to test the understanding of the students. A 'Summary' along with a list of 'Key Terms' and a set of 'Questions and Exercises' is also provided at the end of each unit for effective recapitulation.

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# UNIT 1 PUBLIC FINANCE

## Structure

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- 1.1 Unit Objectives
- 1.2 Meaning of Public Finance
- 1.3 Differences between Public and Private Finance
  - 1.3.1 Public Goods and Private Goods
- 1.4 Dalton's Maximum Social Advantage
- 1.5 Summary
- 1.6 Key Terms
- 1.7 Answers to 'Check Your Progress'
- 1.8 Questions and Exercises
- 1.9 Further Reading

## NOTES

## 1.0 INTRODUCTION

Public finance is the branch of economics which deals with the income and expenditure of the government of a country. It performs various functions like revenue raising, financial administration and financial control. It tries to protect the society against internal disruption and foreign aggression and brings together the various constituents of the public finance market. The constituents could be financiers, consultants and research professionals. In this unit, you will study about the meaning of public finance, difference between public and private finance, Keynes theory of public finance and Dalton's maximum social advantage.

## 1.1 UNIT OBJECTIVES

After going through this unit, you will be able to:

- Interpret the meaning of public finance
- Differentiate between public and private finance
- Define public and private goods
- Explain Dalton's maximum social advantage

## 1.2 MEANING OF PUBLIC FINANCE

The main difference between public and private goods as well as the concept of the public sector leads us to explore the vast field of public finance. Public finance is clearly related to the financing of State activities, and can be defined as a subject that discusses the financial operations of the public treasury of a nation. Earlier, writers on the subject defined public finance in a much narrower context than the writers of today. Public finance helps us study the financial aspects of the government. It helps us study the government policy, especially the expenditure and tax policy, which impacts the economy and the welfare of the country's citizens.

## Nature of Public Finance

To understand the meaning of public finance, it is first important to understand the meaning of the words 'public' and 'finance'. The word 'public' stands for a collection of individuals, whereas the word 'finance' means money resources or revenues. Therefore, 'public finance' means the resources of a public body.

Boundaries of the subject of public finance have undergone repeated revisions in line with developments in State activities and corresponding economic philosophy. Accordingly, over the years, the definition of public finance has expanded to cover ever-widening areas. In the early days of capitalism, it was widely believed that the private sector was always more efficient than the public sector. It, therefore, provided a theoretical basis for laissez-faire (doctrine of individualism). By implication, almost all economic decisions were to be guided by the market forces of demand and supply. The role of the government was not to interfere with the working of market forces but to limit its own activities to the barest minimum, including the following:

- Protecting the society against internal disruption, and ensuring that effective law and order situation prevailed. For this, the State was to maintain itself and create the needed administrative, judicial and police set-ups.
- Protecting the society against any foreign aggression that might take place. The State was to maintain armed forces to meet this objective.
- Stepping forth and assuming the responsibility of creating and maintaining social overheads, where the private sector found itself unable to create and run social overheads or infrastructural facilities for reasons of their commercial non-viability but was otherwise essential for efficient working of the economy. The argument for stepping in of the State was not that the public sector was more efficient than the private sector. The basic argument was that in the absence of the public sector, essential social overheads would not come into existence. In their case, the social marginal overheads usually exceed their social marginal cost. It, therefore, pays for the society to expand social overheads. Their private marginal benefit, however, is much less compared to the private marginal cost. As a result, the private sector is not ready to develop them. Accordingly, the State is expected to finance social overheads out of public funds and run them, if need be, at a commercial loss.

It must be noted that the State, according to the *laissez-faire* philosophy, was considered as something extraneous to the economy, which was more or less equated with its private sector only. It was, therefore, considered best that the public sector should help and supplement the private sector but never replace it. It was not thought desirable to have a planned economy even for tackling the problems of capital formation and economic growth.

Since activities of the State were to be tolerated only as a necessary evil and were to be reduced to the minimum possible scale, the real question was not to decide the basic allocation of economic activities between public and private sectors and to deal with the associated financial and allied problems, but rather to analyse the way the treasury should operate. With this philosophy in the background, the theory of public finance was obviously assigned a limited field. It was mainly considered a description of the way in which operations of the treasury interfere with the working of the private sector of the economy and the way in which it could keep such interference to the minimum.

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Similarly, Carl C. Plehn, author of *Introduction to Public Finance*, says that the term public finance 'has come, by accepted usage, to be confined to a study of funds raised by governments to meet the costs of government.'

## Scope of Public Finance

The scope of public finance involves a complete discussion of the influence of fiscal operations of the government at the level of overall activity, employment, prices and the growth process of the economic system as a whole.

Taylor says that—'Public finance deals with the finance of the public as an organized group under the institution of the government. It thus deals only with the finances of the government. The finances of the government include the raising and disbursement of government funds. Public finance is concerned with the operation of the *fisc*, or public treasury. Hence, to the degree that it is a science, it is the *fiscal* science; its policies are fiscal policies, its problems are *fiscal* problems.'

These days, the fact and need of interaction and interdependence between state and private sectors is duly recognized and, therefore, in a modern economy, the public sector is assigned a significant role, both in theory and in practice. This has meant a corresponding widening of the scope of public finance including the following:

- Measures for social security
- Checking trade cycles
- Reducing unemployment
- Bringing about distributive justice
- Helping capital accumulation and economic growth
- Removing regional disparities

Many governments also resort to formal planning and an extensive use of the public sector. Therefore, in line with this new approach we come across much wider definitions of public finance. Richard Abel Musgrave, author of *The Theory of Public Finance*, for example, says—'The complex of problems that centre around the revenue expenditure process of government is referred to traditionally as *Public finance* ... While operations of the public household involve money flows of receipt and expenditure, the basic problems are not *issues of finance* (emphasis supplied) ... we must think of our task as an investigation ... into those aspects of economic policy that arise in the operation of the public budget.'

Thus, the subject matter of public finance is logically, though not solely, concerned with the financial aspects of the business of government. Similarly, American economist, James M. Buchanan says—'The government, considered as a unit, may be defined as the subject of the study of public finance. More specifically, public finance studies the economic activity of government as a unit.'

The subject matter of public finance, thus, deals with not only the way in which public treasury operates, it also deals with the repercussions of alternative policies which the treasury might adopt and accordingly deals with the question of choice of these policies and operations. Musgrave has advocated an approach in which the state sector is viewed as a public household. Such a public household has certain objectives which can be grouped into categories of the following:

- Allocation of resources

## NOTES



## NOTES

- Adjustments in the distribution of income and wealth
- Stabilization of prices and employment.

These refer to the three objectives of budget policy, namely, the use of physical instruments:

- To secure adjustments in the allocation of resources
- To secure adjustments in the distribution of income and wealth
- To secure economic stabilization

We may add that the objectives covering capital formation, economic growth and the like should also be there. In any case, a detailed study of public finance brings in various aspects connected with the formulation and execution of budgetary policies such as the effects of taxation. Relevant conclusions in the theory of public finance can be drawn by bringing in the detailed discussion of not only the way in which public household should itself operate (such as in the field of public sector undertakings) but also the way in which private sector would react to alternative fiscal measures. Such fiscal measures would include, for example, those of taxation, expenditure and public debt. Accordingly, it may be emphasized that Musgrave's approach, though very useful in focussing our attention upon basic objectives of the public household and normative aspects of its working, cannot help us much unless we are equipped with detailed knowledge of the various components of fiscal policy and operations and unless our analysis takes into account the relevant institutional factors.

Since a modern government often operates at several levels (federal, state and local), the subject matter of public finance looks into the financial problems and policies of the government at different levels and also studies the inter-governmental financial relations.

The subject matter of public finance admits to alternative subgrouping with unavoidable areas of overlapping and interdependence. Moreover, each group or subgroup admits further details. It should also be kept in mind that the socio-economic dynamism of a typical modern economy, supplemented with exponential growth of the financial system and globalization, has added to the responsibilities of a modern state and its activities. Fresh issues and problems keep coming up and demanding attention. In the process, the resource needs of the State keep increasing. It also discovers new avenues of its disbursements as also additional policy weapons. All these developments have enriched and continue to rapidly enrich the discipline of public finance.

The scope of public finance may be divided into the following:

1. **The theory of public revenue:** The theory of public finance deals with alternative sources of State income. It discusses and analyses comparative advantages and disadvantages of various forms of revenue and the principles which should govern the choice between them. Of various sources of public revenue, taxation, non-tax revenues, public debt and creation of additional currency claim our special attention.
  - In the study of taxation, we cover various principles governing the choice of tax measures, the problems of incidence of taxation, and the effects of taxation on the working of the economy.
  - Non-tax revenue includes dividends and profits from public undertakings, grants, fees, fines, and interest receipts and so forth. Each of them is of significant importance in overall policies of the government in general and of fiscal policies in particular.

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- In modern times, it is helpful to study public debt problems separately.
- Resorting to the printing press by the authorities has its own advantages and disadvantages, dangers and limitations and deserves special attention.
- In some economies public sector undertakings provide a crucial policy and regulatory instruments in the hands of authorities. In such a case, it is imperative to ensure that they happen to be a source of strength rather than a weakness.
- With modern governments, public debt has become an important source of revenue, but that is not all. Its servicing causes disbursement of public funds and belongs to the side of public expenditure. Moreover, public debt has assumed the role of an important instrument for regulating the working of the economy.

2. **Theory of public expenditure:** Through public expenditure the government participates in and contributes to financial flows of the economy and influences its demand and supply patterns. It is also a major tool for implementing welfare, growth stabilization and other policies of the government.

3. **Financial administration:** All financial activities involve issues of financial administration including public budget, its passing, implementation, auditing and similar other matters. Without a study of relevant dimensions of financial administration the subject of public finance remains incomplete.

4. **Stabilization, growth and distributive justice:** These have become leading issues in economic policies of modern governments and, therefore, their financial implications deserve a separate treatment in the discussion of public finance theory.

5. **Federal finance:** Existence of a multilayer (or multi-level) system of government necessitates a corresponding division of functions and resources between different layers as also issues and problems relating to intergovernmental financial flows, financial imbalances and their rectification. Federal finance has, therefore, been an integral part of modern public finance.

6. **Issues of public policy:** A modern government is expected to deal with a host of socio-economic issues that keep cropping up continuously. Such issues are of diverse nature and financial implications. They may be treated on a standalone basis, or integral parts of other issues.

### Public Finance and the Economic System

The state sector is not just a necessary evil to be tolerated. It can be designed and operated as an effective set of tools for improving the performance of the economy in several ways.

The classical approach to the study of public finance did not accept this viewpoint. It assumed that private sector was always more efficient than the public one implying that to the extent possible, the economic activities should be entrusted to the private sector only. It was argued, accordingly, that the 'sound budgetary policy' of the government was that of balancing the budget. Running into deficits and creating public debt causes a financial burden upon the future public budgets and an 'undue' interference with the working of the economy. Therefore, any unavoidable deficit such as during a war should be redeemed as quickly as possible. There is another danger in the practice of budgetary deficits. It creates an atmosphere of financial indiscipline and imprudence within the government itself leading to irresponsible spending and inflationary pressures. Similarly, one can argue against surplus budgets. A surplus budget implies a heavier than

needed taxation, reduces effective demand in the market and results in unemployment and depression.

It was realized, in due course, that the market mechanism, which guides the working of the private sector is not an unmixed blessing. It leads to certain undesirable results also. These considerations strengthen the case for the public sector as an effective alternative to the private sector in many ways. Accordingly, the old dictum that the government must try to balance its budget as a sound budgetary policy stands discredited. It has given place to what is called the functional finance. According to it, what is needed is not a balanced or unbalanced budget as such, but stability and growth of income and employment in the economy. For this purpose, it may be necessary to add or subtract from the effective demand created by the private sector. If a particular tendency, such as a deficiency of effective demand, persists in the private sector, there would be no harm if the state sector repeatedly incurs a deficit. The emphasis here is on the relevance of the aggregate effective demand created by both public and private sectors instead of surplus or a deficit budget as such.

The concept of a balanced budget, in whatever way defined, becomes irrelevant in a policy of using financial operations of the government exclusively as instruments of economic and public policy.

This view is further strengthened by the recognition of the fact that public debt can be an important and effective instrument of economic policy, especially in stabilization. This view was emphasized by the Radcliffe Committee in England and is now well recognized in both academic and policy circles. The precise way in which public debt may be used as a stabilizing instrument is debatable, but its importance is beyond doubt.

Gurley and Shaw, in their famous book *Money in a Theory of Finance*, have provided a theoretical basis for creating public debt. According to this view, an economy can have a healthy growth only if it has a sound financial system in which public debt has an important and indispensable place, since the health of the financial system is dependent upon the provision and soundness of public debt (including currency supply).

### 1.3 DIFFERENCES BETWEEN PUBLIC AND PRIVATE FINANCE

By private finance, we mean the financial problems and policies of an individual economic unit (which does not form a part of State organs) as compared with those of the public authorities. It is a convention to look into similarities and dissimilarities between the two so as to provide an analytical foundation for the decision-making aspects of public finance.

#### Similarities

Modern economies are monetized. That is to say, most of their economic activities have financial counterparts involving creation and use of financial claims. Both private and public sectors are engaged in activities that involve purchases, sales and other transactions. Similarly, they are engaged in production, exchange, saving, capital accumulation, investment and so on. In order to finance these operations, the government, amongst other things, creates money (which is also a financial asset), raises loans and makes payments. Similarly, a private economic unit lends, borrows, receives payments, makes payments and so on. In this respect, therefore, both the public and private finances are quite similar to each other.

#### Check Your Progress

1. What does the term 'public finance' denote?
2. What does the scope of public finance include?

One may also point out that both sectors are engaged in satisfying the wants of the society by sharing economic activities. *Both have limited resources at their disposal and try to make their best by taking decisions such that the 'most important' wants are satisfied first.* In that sense, their problems and decisions are similar.

But the similarities between the two types of finances almost end here. In contrast, the differences between the two are quite sharp.

#### Dissimilarities

The dissimilarities between private and public finance may be summarized as follows:

1. To begin with, it may be stated that a *private economic unit has to live within its means*. Its deficit budgeting (that is spending more than the income) can be only for a limited period and only up to a limit. Given its economic standing, it can accumulate outstanding debt liabilities up to a limit and no more. But this constraint hardly applies to the State. It can plan to add to its outstanding debt with every budget, and may also succeed in doing so. A number of governments are virtually doing this. The result is that the public debt in many countries has become a high proportion of national income.
2. The distinction between private and public borrowings does not end with only *amounts of possible borrowings, but extends to their forms, rates of interest and other terms and conditions*. A private firm cannot raise non-repayable loans, but the State may and sometimes does. *The State can borrow both internally and externally*, that is, it can borrow from those who are subject to its authority and from those who are not. But a private economic unit (such as a firm) cannot raise an internal loan; all its loans have to be 'external'. Furthermore, high creditworthiness of the State enables it to borrow at rates much lower than the private economic units have to pay. It has the support of the central bank of the country as an agent and as an underwriter when its loans are floated in the market. It can draw upon the facilities of the banking and other financial institutions more liberally. In some cases, it may adopt indirect coercive methods to borrow at lower rates, as was done in India till the early 1990s.
3. The government or a competent authority on its behalf can *create legal tender currency*, that is, money which the creditors cannot refuse to accept in discharge of their claims upon their debtors. With the introduction of paper currency, the authorities in many countries have acquired an unbridled discretionary power to add to currency supply. Often the formal technical restrictions can be waived if the government so wants. Such types of restrictions mainly indicate procedural handicaps and not essential checks.

The upshot of the argument is that the government can just *create* purchasing power and add to the demand side of the market and take away a part of the national produce. It can leave the rest of the economy with more money and a smaller supply of goods than before. A private economic unit cannot do so. Its obligations can never become legal tender. A private economic unit is always expected to pay back its obligations. In contrast, obligations of public authorities via issue of currency need not be redeemed at all.

4. It is claimed that *private finance follows the 'market principle', or the principle of economic rationality; but public finance follows the budget principle*. It means that private economic units are guided by market signals and of market

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mechanism and their own economic interest. In contrast, the essence of the budget principle is that the services in this sphere are determined not by profit expectations and the willingness of the individuals to spend their money for the purchase of such services, but by decisions reached through political and administrative procedures and based on common social objectives. The State does not go by the principle of *quid pro quo*.

5. Quite often, in private finance, the view taken is a short-term one. In contrast, the State is expected to take a long-term view of the interests of the economy as a whole and be ready to suffer commercial losses for that purpose, both in the short run and in the long run. Also the State would keep in mind the fact that the society is a perpetual entity and for its welfare many activities are needed which have no immediate economic return, even to the society. An example in case is the investment of the State in removing untouchability.
6. It is generally pointed out that *while a private economic unit proceeds by first ascertaining its income and then determining its expenditure, the government first decides about its expenditure and then goes round to seek revenue for it. But, it is an erroneous idea based upon the outmoded thinking that the activities of the State would be confined to the minimum possible and that the State would then find out the best ways of financing them. However, these days, it is not so. It is realized that the activities of the State are not fixed ones. They are ever-widening and with the increasing complexity and growth of the society, the need to increase State activities is also going up. The government, therefore, has to expand its activities though such expansion is restricted, amongst other things, by financial considerations also. Though the State, theoretically speaking, has complete powers of raising additional receipts through taxation, confiscation, borrowing and printing notes, it would use these powers only within limits so that the fabric of the economy is not overstretched. For example, overborrowing by the State could starve the capital market and private investment. Too much of note printing would lead to inflationary pressures and other problems in the economy. Excessive taxation may discourage saving and investment and productive activities and so on. Therefore, in practice, the government does not use these powers indiscriminately. For example, most governments follow a system of progressive tax in which poorer sections of society are taxed lightly. All said and done, the expenditure programme of the government is, to a great extent, conditioned by the revenue considerations.*

*In the same manner, a private economic unit does not mechanically go about deciding how much to spend. The wants of a private economic unit would also be generally too many and within limits it has to work out the possible ways of increasing its income.*

*Thus, we note that in spite of some similarities between the public and private finance, there are some very important fundamental differences between them. In order to study public finance, we have to keep these basic differences in mind, since it is obvious that on their account a number of principles of private finance will not apply to public finance. Differences like the very objectives of private finance and public finance, or the ability of the authorities to create money, to borrow, to tax and so on cannot be ignored. But in order to appreciate the basic nature of public finance, it is equally essential to remember that the public sector is a part and parcel of the totality of the economy. The activities of*

the public and private sectors are interrelated and interdependent and involve a good deal of mutual transferring of resources. The policies adopted by the authorities have to be analysed in the light of these observations.

In order to understand the nature of public finance and its principles, one has to be equipped with the knowledge of the way the economy as a whole works, the way various financial flows take place in the economy and the corresponding economic activities that are there. The activities of the State bring about changes in these financial flows in their own ways and the subject matter of public finance has to be discussed in the light of all these implications.

### 1.3.1 Public Goods and Private Goods

The concept of public goods was introduced by Paul A. Samuelson in his famous contribution titled 'A Pure Theory of Public Expenditure'<sup>1</sup>. Over time, this concept has gained widespread currency and has been refined, extended and elaborated in several ways.

A distinction between private and public (social) goods can be made on the basis of presence or absence of the following two basic characteristics.

#### 1. Excludability

The first characteristic is that of excludability of a good. It means that it is possible to restrict the availability of a good to select users on a certain basis, such as, by making it a priced good. Only those users who have the capacity and willingness to pay its price can have it. In contrast, a non-excludable good is either available to all or to none. A good example of a non-excludable good is the defence of a country against foreign aggression. Once the country is provided this protection, no section of society can be deprived of enjoying its benefits. Defence services provided by the State cannot be priced and restricted to only those who pay for it. Similarly, in some cases a consumer cannot surrender the use of a service even if he wants to. An individual cannot ask to be left undefended by the defence arrangements of the State, or refuse the benefits of a reduction in air pollution or those of street lighting and so forth.

#### 2. Rivalry

The second characteristic to be taken into account is its being rivalrous or not. When a good is non-rivalrous, its use by some does not reduce its availability to others. In that sense, its use cannot be rationed between its users and it is, thus, indivisible. There is no 'overcrowding' of its users irrespective of their number. For example, any number of persons can tune in radio or TV programmes without reducing their availability to others. The use of a rivalrous good, however, reduces its availability to others.

Those goods which are both excludable and rivalrous are termed *private goods* or *pure private goods*. Their use can be rationed between their potential users. In contrast, goods which are both non-excludable and non-rivalrous are termed *public goods* or *social goods*.

The issue of financing the provision of a specific good or service is closely linked with it being a public good or a private good. Provision of a private good can be financed through its sales proceeds and can, therefore, be left in the hands of the private sector. In contrast, a public good is both non-excludable and non-rivalrous. Once it is provided, it is accessible to all. Consequently, its provision cannot be financed through its pricing

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and there is a risk that its users would not pay for it voluntarily. For example, in the case of defence service, every individual can argue that he would have access to it even if he does not pay for it. Its provision for him would not be affected by *his not paying for it*. Consequently, very few or even none may pay for it voluntarily hoping that the provision of the service would be ensured through the contributions and efforts of others. This phenomenon is referred to as the problem of *free riders*<sup>2</sup>, that is, the non-feasibility of financing the provision of a good on a *voluntary basis*. Therefore, the provision of such a good or service has to be financed through *compulsory contributions* (like taxation) by the members of the society. Their financing cannot be left to market mechanism.

It must be noted that the non-excludability of a public good does not necessarily imply that all members share it equally.<sup>3</sup> In case of a war, protection against enemy attack may, to some extent, depend upon one's places of residence and work. Similarly, people living near political boundaries of the country may, for obvious reasons, be comparatively less protected. People living near public parks derive more benefit from them even when all members of society are equally entitled to their use. Thus, the main criterion of non-excludability is that all member of society (or a section thereof) should be equally *entitled* to the use of the good in question irrespective of their ability or willingness to pay for it. The financing of the concerned activity has to be through *public expenditure* and not through market pricing.<sup>4</sup>

## Additional Characteristics

This leads us to look at some additional characteristics of public goods.

## Externalities

Pure public goods are characterized by the existence of externalities, that is, economic effects which flow from their production or use to third parties or economic units. Such economic effects may also be called spill-over effects, neighborhood effects or third party effects. They arise on account of interdependence of economic units via input-output relationships and may be in form of gains or losses. An externality may be pecuniary (that is, directly monetary) or technological. An externality affects the prices in the economy which in turn transmit their effects to production and consumption decisions of other economic units. This causes a divergence between the internal (or private) and social marginal costs (or benefits) of the good in question. Thus, for example, pollution caused by factories, power houses, railways, and transport vehicles is a cost to the society but not to the individual undertakings. Similarly, beneficial externalities of social overheads like roads and so forth cause a divergence between private and social marginal benefits.

These externalities are of two types.<sup>5</sup>

- (i) market external (or marketable external) effects; and
- (ii) non market external (or non-marketable external) effects.

In the case of *non-market external effects*, individual economic units cannot be identified and compensated for loss, nor can they be identified and charged for economic gains. In contrast, in the case of *market-external effects*, the losers (beneficiaries) can be identified and compensated (charged) for the same.

By implication, provision of public goods with non-market external effects should be preferably in the hands of the public authorities since they can provide them irrespective of their commercial profitability. In contrast, pure public goods with market external

effects may be left in the hands of the private sector (though even here their characteristic of non-excludability demands that they should be in the hands of the public sector only).

A pure private good is supposed not to have any externalities. In its case, there is no difference between private and social marginal costs of supply. Therefore its market price represents its social supply cost also. By implication, even in the hands of private sector, its supply would be at the socially optimum level. Ordinarily, therefore, the provision of pure private goods should be entrusted to the private sector. But on account of various reasons this may not be adhered to in every case. The government might decide to step in where *merit wants* are concerned or for other relevant considerations like the cost conditions, resource availability, social and political philosophy and so on.

## Marginal Cost

A likely characteristic of a pure public good is that its marginal cost is zero or close to zero. It means that an additional member of the society can be benefited by its use without appreciably adding to its total cost. To put it differently, the use of a pure public good by one more member of the society does not reduce its availability to the others. A good example of it is the tuning in of your radio set. Still another example is that of a bridge, over which an additional vehicle may pass without any additional cost to the society. Note, however, that mostly this principle applies, in reality, only to a limited extent. We cannot keep adding to the number of vehicles that may use the same bridge; we cannot have the same defence budget if our population keeps increasing and so on. Also it may be added that a large part of the society may not be able to enjoy the benefits of a public good without adding to the cost of its supply. Similarly, the provision of a public good may be increased or decreased for budgetary reasons or due to some extraneous factors. Pure public goods which possess this characteristic have a strong case for inclusion in the public sector since public goods are indivisible also. In the case of private goods, on the other hand, the argument is basically in favour of large scale production for which either the society should agree to a monopolistic type of private enterprise or should go in for public sector enterprises.

## Decreasing Average Cost

Another likely characteristic of a pure public good is its decreasing average cost. Being lumpy, it would be subject to the economies of scale. If the public good is provided in small units, then the average cost is likely to be much more. For example, the average cost of operating a sewerage system is much smaller if it serves a wide area than when it serves only a portion of the city. When it comes to the choice between public and private sectors for the provision of goods possessing this characteristic, considerations similar to the ones mentioned above in the case of marginal cost characteristic apply.

## Impure Public Goods

It would be noticed that it is highly difficult to come across goods which fully satisfy all the characteristics of pure public goods. Similarly, it is equally difficult to come across pure private goods. In general, most goods possess a mixture of both publicness and privateness. The division between the two types is mostly one of degree and not of kind. Such goods which are neither pure public goods nor pure private goods are called impure public goods (also called quasi public goods or quasi private goods). If the elements of publicness are predominant in the mixture of characteristics of a good, then it may be termed a public good; and in the opposite case, a private good.

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## Local Public Goods

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Over time, the subject matter of public goods gained in depth and coverage. Additional issues associated with their nature and relevance were identified for policy-making. Further impetus was imparted to this subject when issues like the geographical coverage of a public good, its provision in a country having two or more tiers/layers of government, determination of public preferences and their aggregation for it gained prominence.

*Tiebout-Oates Model*

Samuelson had highlighted some problems relating to a public good, such as the level of government that should provide it, quantification and aggregation of the preferences of its users, financing its provision and the like. Charles Mills Tiebout probed these questions and asserted that, under some assumptions, these typical problems could be satisfactorily solved in the case of a sub-category of public goods provided by local/municipal authorities. He termed this sub-category of public goods—Local Public Goods. Tiebout's is a highly abstract model based upon strong and unrealistic assumptions and is variously known as the Tiebout Model, Tiebout Hypothesis, Tiebout Sorting and Tiebout Migration. In recognition of the contribution made by Wallace E. Oates<sup>7</sup> to this line of reasoning, it is also referred to as Tiebout-Oates Model.

Tiebout maintains that there is a sub-category of public goods the provision of which is restricted to people living in (or visiting) a specific geographical area falling within the territorial jurisdiction of a municipal/local body. These goods, therefore, continue to be non-rivalrous, but acquire a degree of excludability. Those who do not reside in (or cannot visit) the specified localities, are automatically denied access to the services provided by it. Every person living in (or visiting) this area is entitled to use these public goods (such as parks, streets, scavenging, street lighting, and so on) irrespective of whether others are also using them or not. At the same time, every such person can be subjected to compulsory contribute to the financing of their provision. This solves the problem of free riders by converting the residents of that area into 'compulsory riders'. It means that the residents have to 'consume' those public services and pay for them the prescribed user charges. No resident is given the option of selecting the municipal services to be consumed by him or the 'user charges' to be paid by him. The municipal body does not alter the basket of services it is providing in response to the preferences of the residents. If some residents disagree with this arrangement, they can migrate to some other municipal area where the provision of municipal services and user charges are acceptable to them. This method of showing preference for a specific set of local goods and willingness to pay for them by migration between municipal areas is termed 'voting with the feet'. Inter-municipal migration continues till the services provided by municipal bodies and charges for them synchronize with the preferences of their consumers.

It may be added here that Samuelson had pointed out that several public goods are only partially non-rivalrous. They are prone to congestion (or over-crowding). Their 'excessive' use by some may reduce their availability to others. This is particularly true of several public goods provided by local governments, such as schools, parks and fire fighting facilities. Their increased use by some leaves less of them for others. A fall out of this phenomenon is that it becomes generally impossible to provide these goods at local level in optimum quantities unless the preferences of users are known and aggregated. In other words, the problem is that the volume of individual services provided by authorities may deviate from the preferences of their users. Tiebout's model provides a theoretical solution of this problem in the form of migration of users of these services.

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In his model, the users reveal their preferences by migrating between municipal areas. This process of migration continues till there is complete matching and the above said problems get solved.

Tiebout model is based upon some strong assumptions including the following.

- Individuals possess perfect information and they are free to move from one municipal area to the other.
- There are enough areas and communities to choose from.
- Problems relating to migration (employment, earning, quality of living associated with some areas, language, culture and other factors) do not come in the way of actual migration.
- Migration is costless and without any disruption.
- Each municipal area has a set of services which are not revised over time.
- The quality of public services is same everywhere.
- Communities do not suffer from negatives like poor law and order, or undesirable habitants.
- The individuals must consume all the goods (both public and private) at the same location, and there are no spill-over effects from one community to the other.
- The model ignores the availability and consumption of national level public goods.
- It assumes that the extent, quality and financing of local public goods are not affected by changing numbers of their consumers.

As stated above, these are highly unrealistic assumptions. A growing economy and society, with changing urbanization and inter-country roads, communication, rail and other facilities and infrastructure is abound to change the scenario over time. The model does not take into account these changes. It is set within the framework of a static economy. It loses relevance in a country like India where every locality is not served by municipal bodies and quality and type of services provided by municipalities widely differ from each other. In several cases, even a large number of basic amenities are not provided. Moreover, in any case, public expenditure in India suffers from a high degree of inefficiency.

**Club Goods**

The concept of club goods (also termed artificially scarce goods) was introduced by James M. Buchanan<sup>8</sup>. They are a sub-set of local public goods and are characterized by an artificially created scarcity. They are distinguished from local public goods by the fact that they are fully excludable. They are public goods embedded with full excludability.

Potential users of club goods are not excluded on the criterion of geographical residence, but on the basis of some other criteria which can vary from case to case. These criteria normally culminate themselves in the form of club membership which, in turn, may be subject to one or more criteria like financial contribution, some academic or professional qualification/accomplishment, social status, religion, community, nationality, political views and so on. The list is inexhaustible.

Club goods are neither fully rivalrous nor completely non-rivalrous. By their very nature, the number of their consumers can be increased but only up to a limit.

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It may be noted that suppliers of club goods are in the nature of monopolies. These goods are characterized by artificial scarcity created by the suppliers in one or more ways. For this reason, club goods typically suffer from under-supply as is the case with most merit goods.

Over space and over time, the category of club goods is subject to a wide variation. It is also noteworthy that the precise nature of club goods is shrouded in a blanket of haziness and in some cases, it may be difficult to decide when a specified good becomes a club good and when it ceases to be so. In India, for example, we have roads built and operated on the basis of public-private partnership. The users of such roads are categorized on the basis of certain criteria and some categories of users have to pay the toll. That way, these roads have a differentiated excludability as in the case of club goods. But a toll road becomes rivalrous only when it is crowded beyond a limit. So long as it is partially rivalrous, it is a club good. But once it is crowded beyond a limit and becomes fully rivalrous, it assumes the nature of a private good (which is both excludable and rivalrous).

**Observation on Free Ridership.** It is pertinent to note that the problem of free ridership can exist only when a good is fully non-excludable, irrespective of whether it is also rivalrous or non-rivalrous. Local public goods and club goods are, by their very nature, impure public goods. Assumptions made in Tiebout model and club theory are such that goods provided by local authorities and clubs become fully excludable. For this reason, the problem of free ridership ceases to exist in their case.

**Merit Goods**

Merit goods are those goods the consumption of which not only benefits their consumers but also non-consumers. Examples of merit goods include education, health services, and the like. Left to market mechanism, the availability of such goods remains inadequate as compared with their need because of an inherent deficiency of effective demand for them (that is, insufficient purchasing power in the hands of their potential consumers). On account of their overriding importance, provision of such goods helps the economy in attaining a high level of efficiency and helps in achieving basic objectives of the society. It follows that the State should itself take up the supply of merit goods or it should at least supplement their availability. Alternatively, it may choose to subsidize their production or consumption.

**Mixed Goods**

Mixed goods are the types of goods which comprise elements of both private and public goods. A mixed good is like a private good in that it is rivalrous and excludable, but it provides noteworthy non-rivalrous, non-excludable external benefits for which preferences are not revealed by the market mechanism. Examples are (i) healthcare; (ii) education; (iii) public transport; (iv) refuse collection and (v) fire-service. Infrastructures are usually defined as mixed goods because of their nature.

## 1.4 DALTON'S MAXIMUM SOCIAL ADVANTAGE

The principle of Maximum Social Advantage was introduced by British economist, Hugh Dalton. According to Hugh Dalton, public finance is concerned with income and expenditure of public authorities and with the adjustment of one with the other.

**Check Your Progress**

3. State two dissimilarities between private and public finance.
4. What are impure public goods?

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Budgetary activities of the government results in transfer of purchasing power from some individuals to others. Taxation causes transfer of purchasing power from tax payers to the public authorities, while public expenditure results in transfers back from the public authorities to some individuals, therefore, financial operations of the government cause 'Sacrifice or Disutility' on one hand and 'Benefits or Utility' on the other. This results in changes in pattern of production, consumption and distribution of income and wealth. Therefore, it is important to know whether those changes are socially advantageous or not. If they are socially advantageous, then the financial operations are justified otherwise not. According to Hugh Dalton, 'The best system of public finance is that which secures the maximum social advantage from the operations which it conducts.'

The principle of Maximum Social Advantage (MSA) is the fundamental principle of public finance. It states that public finance leads to economic welfare when public expenditure and taxation are carried out up to that point where the benefits derived from the MU (Marginal Utility) of expenditure is equal to (=) the Marginal Disutility or the sacrifice imposed by taxation.

Hugh Dalton explains the principle of maximum social advantage with reference to:

- (i) Marginal Social Sacrifice (MSS)
- (ii) Marginal Social Benefits (MSS)

This principle is, however, based on the following assumptions:

- (i) All taxes result in sacrifice and all public expenditures lead to benefits.
- (ii) Public revenue consists of only taxes and no other sources of income to the government.
- (iii) The government has no surplus or deficit budget but only balanced budget.
- (iv) Public expenditure is subject to diminishing marginal social benefit and taxes are subject to increasing marginal social sacrifice.

**Marginal Social Sacrifice (MSS)**

Marginal Social Sacrifice (MSS) refers to that amount of social sacrifice undergone by public due to the imposition of an additional unit of tax.

Every unit of tax imposed by the government taxes result in loss of utility. Dalton says that the additional burden (marginal sacrifice) resulting from additional units of taxation goes on increasing i.e., the total social sacrifice increases at an increasing rate. This is because, when taxes are imposed, the stock of money with the community diminishes. As a result of diminishing stock of money, the marginal utility of money goes on increasing. Eventually, every additional unit of taxation creates greater amount of impact and greater amount of sacrifice on the society. That is why the marginal social sacrifice goes on increasing.



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The marginal social sacrifice is illustrated in Figure 1.1.

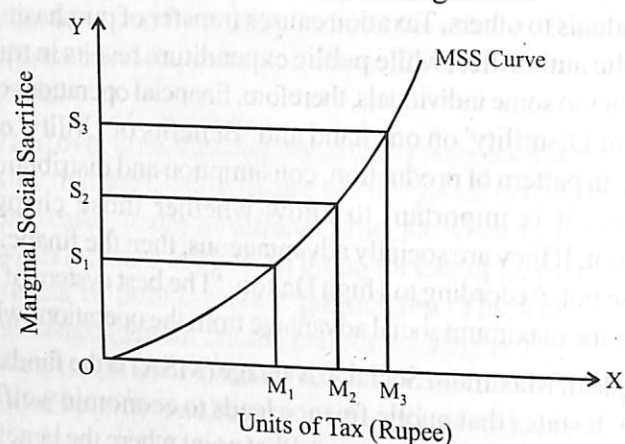


Fig. 1.1 Increasing Marginal Social Sacrifice Curve

The above diagram indicates that the Marginal Social Sacrifice (MSS) curve rises upwards from left to right. This indicates that with each additional unit of taxation, the level of sacrifice also increases. When the unit of taxation was  $OM_1$ , the marginal social sacrifice was  $OS_1$ , and with the increase in taxation at  $OM_2$ , the marginal social sacrifice rises to  $OS_2$ .

### Marginal Social Benefit (MSB)

While imposition of tax puts burden on the people, public expenditure confers benefits. The benefit conferred on the society, by an additional unit of public expenditure is known as Marginal Social Benefit (MSB).

Just as the marginal utility from a commodity to a consumer declines as more and more units of the commodity are made available to him, the social benefit from each additional unit of public expenditure declines as more and more units of public expenditure are spent. In the beginning, the units of public expenditure are spent on the most essential social activities. Subsequent doses of public expenditure are spent on less and less important social activities. As a result, the curve of marginal social benefits slopes downward from left to right as shown in Figure 1.2.

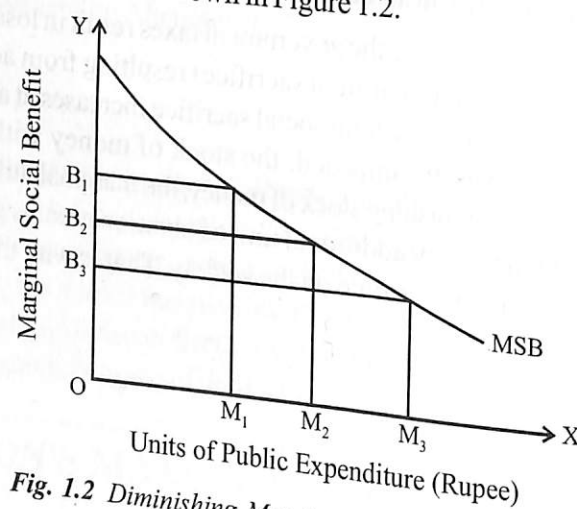


Fig. 1.2 Diminishing Marginal Social Benefit Curve

In Figure 1.2, the Marginal Social Benefit (MSB) curve slopes downward from left to right. This indicates that the social benefit derived out of public expenditure is reducing at a diminishing rate. When the public expenditure was  $OM_1$ , the marginal

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social benefit was  $OB_1$ , and when the public expenditure is  $OM_2$ , the marginal social benefit is reduced at  $OB_2$ .

### The Point of Maximum Social Advantage

Social advantage is maximized at the point where marginal social sacrifice cuts the marginal social benefits curve.

This is at the point P. At this point, the marginal disutility or social sacrifice is equal to the marginal utility or social benefit. Beyond this point, the marginal disutility or social sacrifice will be higher, and the marginal utility or social benefit will be lower.

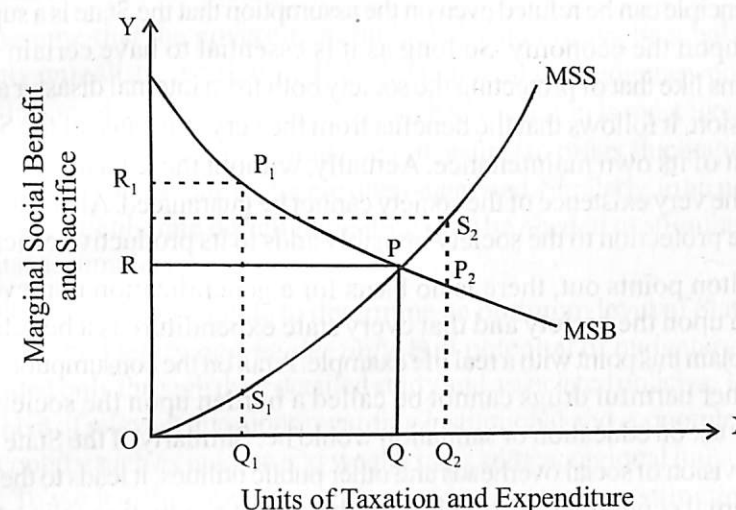


Fig. 1.3 Maximum Social Advantage is Obtained at the Point of Intersection of MSS and MSB Curves

At point P, social advantage is maximum. Now consider Point  $P_1$ . At this point marginal social benefit is  $P_1Q_1$ . This is greater than marginal social sacrifice  $S_1Q_1$ . Since the marginal social sacrifice is lower than the marginal social benefit, it makes more sense to increase the level of taxation and public expenditure. This is due to the reason that additional unit of revenue raised and spent by the government leads to increase in the net social advantage. This situation of increasing taxation and public expenditure continues, as long as the levels of taxation and expenditure are towards the left of the point P.

At point P, the level of taxation and public expenditure moves up to OQ. At this point, the marginal utility or social benefit becomes equal to marginal disutility or social sacrifice. Therefore at this point, the maximum social advantage is achieved.

At point  $P_2$ , the marginal social sacrifice  $S_2Q_2$  is greater than marginal social benefit  $P_2Q_2$ . Therefore, beyond the point P, any further increase in the level of taxation and public expenditure may bring down the social advantage. This is because each subsequent unit of additional taxation will increase the marginal disutility or social sacrifice, which will be more than marginal utility or social benefit. This shows that maximum social advantage is attained only at point P and this is the point where marginal social benefit of public expenditure is equal to the marginal social sacrifice of taxation.

Maximum social advantage is achieved at the point where the marginal social benefit of public expenditure and the marginal social sacrifice of taxation are equated, i.e., where  $MSB = MSS$ .



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This shows that to obtain maximum social advantage, the public expenditure should be carried up to the point where the marginal social benefit of the last rupee or dollar spent becomes equal to the marginal social sacrifice of the last unit of rupee or dollar taxed.

### Limitations of the Principle of Maximum Social Advantage

The simple exposition of the principle of maximum social advantage as described above suffers from some obvious limitations.

- The principle wrongly assumes that the State is something external to the economy.
- The principle can be refuted even on the assumption that the State is a superimposed entity upon the economy. So long as it is essential to have certain basic State functions like that of protecting the society both from internal disaster and external aggression, it follows that the benefits from the very existence of the State exceed the cost of its own maintenance. Actually, without these basic functions of the State, the very existence of the society cannot be guaranteed. Also, the availability of State protection to the society invisibly adds to its productive efficiency.
- As Dalton points out, there is no basis for a generalization that every tax is a burden upon the society and that every state expenditure is a benefit for it. We can explain this point with a real life example. A tax on the consumption of narcotics and other harmful drugs cannot be called a burden upon the society, though a similar tax on education or sanitation would be. Similarly, if the State undertakes the provision of social overheads and other public utilities, it leads to the emergence of external economies. Through them the cost of production falls, efficiency in production goes up and the economy benefits. The State, through its activities, may succeed in breaking the vicious circle of poverty in an underdeveloped country and in this way it may return to the economy (in the form of economic growth) more than it gets from it.
- Moreover, the benefits and ill-effects of a public budget to the economy generally spill over beyond the period covered by a given budget. Accordingly, it is a defective logic to argue in terms of a single budget only.
- If we assume that all taxes are harmful and all public expenditure is beneficial, we arrive at *some absurd results*. For example, it will follow that the best course for the State would be not to levy any tax at all and finance all its activities through deficit financing only. It is very easy to demonstrate the absurdity of this conclusion. We must remember that by themselves taxes or public expenditure do not destroy or create any resources. They only provide a means of transferring resources between private and public sectors of the economy. Any variation in overall resource availability is only an indirect result of budgetary operations.
- Non-tax revenue includes fines, fees, profits from public undertakings, dividends from investments, use of the printing press, market borrowings and so on. These sources of revenue cannot be dismissed as unimportant either quantitatively or as irrelevant to the welfare and working of the economy.
- Every State is committed to certain expenses - a liability from which it cannot free itself easily. These expenses include maintenance of the State itself, defence of the country, maintenance of law and order in the society, imparting justice to the people, certain welfare measures, servicing of the existing debt and so on.

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- The effects of public finance operations are complex, widespread, and often indirect. They are not quantifiable in simple and direct terms as is done in the principle of Maximum Social Advantage. *An imbalanced budget is often an effective weapon affecting various remedial and welfare measures and thereby maximizing aggregate social advantage.* For example, indirect taxes often change relative prices of commodities leading to changes in demand, consumption, production and investment patterns of the society. Thus, it is not possible to link welfare and growth effects of public finance operations with the amounts of taxation and public expenditure and ignore other aspects of budgetary measures and policies.
- To assume that the government budget should always be a balanced one is a highly unrealistic restriction. If the objective of the budgetary policy is to be of maximum advantage to the society, such a restriction is most likely to hinder its attainment. Contracyclical budgetary measures to offset fluctuations in demand generated by the private sector are often suggested. Similarly, in an underdeveloped country, a deliberate deficit budgeting may be needed to stimulate savings and capital accumulation.
- Logically, it is incomplete to determine an optimum level of State activities in terms of budgetary aggregates only. Full potential of budgetary operations is revealed only through their detailed study and associated policies. This fact brings in a host of relevant questions regarding institutional and economic framework of the country such as income and wealth inequalities, regional imbalances and the like. To put it differently, the question of determining an optimum level of State activities leads us to consider in details the *effects* of alternative budgetary policies at different levels and in all their details; and without such an analysis no meaningful answer is possible.

### The Principle in Practice

The question arises that since the principle of maximum social advantage suffers from so many limitations, should we not discard it totally to which the reply is an *emphatic no*. Instead, we should try to make it more realistic and capable of yielding policy conclusions. For this purpose, we first show that it is highly undesirable to limit the State's budgetary activities to the minimum possible. And then we try to find out the tests which should tell us as to whether the budgetary activities of the State are of *net advantage* to the society or not.

### The Case for State Activities

The case for confining State activities to the minimum rests on the assumption of superiority of market mechanism. It assumes that the market is able to generate full employment, and is always more efficient than the public sector. Therefore, within its narrow sphere, the State should only make a judicious choice between alternative taxes and items of expenditure. But we note that these assumptions are highly unrealistic. In reality, market mechanism fails to generate full employment, leads to cyclical fluctuations and creates income and wealth inequalities. It need not succeed in realizing high enough rates of capital accumulation and economic growth. Therefore, it is a duty of the State to remove these drawbacks.

Furthermore, we must remember that though competition is supposed to guide the economy according to consumer's sovereignty, in reality it is not so for two reasons.

## NOTES

Firstly, on account of inequalities of income and wealth, the demand pattern generated in the market does not really display true needs of the society. Quite a number of luxuries are demanded at the cost of necessities which the poor people cannot afford to buy for want of purchasing power. There is also a *shortage of merit goods* due to their non-profitability.

Secondly, the market competition, in practice, tends to degenerate into a monopolistic competition in which there is a lot of wastage on account of selling expenses, unutilized productive capacity, hoarding, speculation and so on.

**The Tests**

Assuming, therefore, that the State cannot remain indifferent to the working of the economy, we proceed to look for the *tests of maximum social advantage*. To make these tests realistic we treat the State as a part and parcel of the economy. This being so, the sweeping statements like the ones asserting that all taxes are leakages from the economy's resources and that all public expenditures are additions to them, lose their meaning. Instead, it becomes relevant to analyze the net effects of budgetary activities, covering not only the budgetary aggregates as such, but also their detailed composition and associated budgetary policies.

However, this is not an easy task. The effects of many State activities cannot be quantified. As examples, we can mention the removal of untouchability, spreading of education, improvement in health and sanitation and so on. Almost every State activity has widespread effects and it is nearly impossible to estimate all of them. In other words, it is very difficult to devise objective tests of benefits and losses to the society and thereby determine (estimate) the quantum of social advantage generated by State activities.

**1. Dalton's tests**

Even under difficult (but realistic) conditions, Professor Dalton gives us certain *objective tests according to which it can be ascertained* whether public finance operations are adding to the social advantage or not. These tests are formulated by assuming that there are certain generally accepted *desirable* objectives which the society should try to achieve, namely the following:

- *Preserving the society*: If it is agreed that the society, as it exists, is worth preserving, then a system of public finance which ensures adequate protection to the society against both foreign aggression and internal disruption certainly adds to social advantage and is worth pursuing.
- *Economic welfare of the community*: This welfare involves two aspects: (a) an improvement in production, and (b) an improvement in the distribution of national income.

An improvement in production should not be taken to mean an increase in current output as such, but basically *an increase in the productive capacity of the economy on a sustainable basis*. An increase in current output through capital consumption cannot be termed an 'improvement in production' because it is not sustainable in the long run. Improved productive capacity implies capital accumulation, better utilization of productive resources, and an increase in productivity of workers with a corresponding addition to the social advantage.

## NOTES

An improvement in the distribution of national income covers both 'efficiency' and 'equity' dimensions thereof. *Efficiency in distribution relates to aggregate of satisfaction only, while equity relates to the sharing of aggregate satisfaction between members of the society*. Normally, the two aspects are so intermixed and interdependent that a decision involving efficiency also affects equity and vice versa. The welfare aspect of distribution of national income, therefore, does not lend itself to an easy treatment. Quite often, we are not even able to find out whether certain decisions would add to the efficiency of distribution or not. In other cases, the efficiency and equity tests might clash, so that improvement in one leads to a deterioration in the other. It is not, therefore, possible to lay down full-fledged objective criteria of social advantage. But we can recommend some common-sense steps about which, on general grounds, there is not much chance of a difference of opinion. We can, for example, advocate reduction in inequalities of income and wealth, reduction in unemployment, uplifting the standards of living of the people, bringing about a higher rate of economic growth, bringing about economic stability in the economy and so on.

**2. Hicks' Tests**

Mrs Hicks has also suggested two sets of criteria for judging whether a particular public finance operation or policy adds to the net social benefit or not. The first is called *the production optimum* and the second is the *utility optimum*.

According to Mrs. Hicks, an optimum in production is achieved if through reallocation of productive resources it is not possible to increase production of any given commodity without reducing that of some other. Obviously, this criterion is not only ambiguous but may also be misleading. Increasing production of one commodity may necessitate reducing that of the other, but the total output may increase. Mrs. Hicks' production optimum may apply in a situation of full employment and complete utilization of existing productive capacity. However, it must be noted that budgetary operations and policies are not always successful in achieving even these conditions. If they could, many of the economic ills of the world of today would not have been there. Again, this test of production optimum applies in short-term only. In the long run, it is always possible to augment productive potential of the economy such as through creation and expansion of social overheads, capital goods sector and investment in *human capital*.

Utility optimum of Mrs Hicks is related to the composition of the national output and relative importance of its components. A variation in this composition would automatically lead to a variation in the utility derived from it. When a stage is reached whereby such a variation in the utility derived from GDP cannot be increased, the utility optimum is said to have been achieved. The difficulty with this criterion arises out of the fact that utility and, therefore, the relative importance of various goods and services cannot be quantified. Furthermore, such measures of relative utility are always subject to revision over time and place and as also between individuals.

All said and done, we find that the basic idea contained in this principle is useful even when it is not possible to adopt it in strict quantitative terms. In line with the reasoning of this idea, we can proceed with the aim of increasing the usefulness of overall budgetary policy of the government for the society. To this end, we first equip ourselves with adequate theoretical knowledge and empirical evidence relating to the immediate and long-term repercussions of various budgetary measures. We have then to choose between various alternatives which budgetary policy may offer including, for example, the level of State activities, the composition of tax and non-tax revenues, tax



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rates, and similar other considerations regarding the expenditure side of the budget. All these decisions have to be taken in the light of our objectives and the extent to which they can be achieved in practice. The optimum size of the government budget is not a fixed quantity. It depends upon several relevant considerations, for example, the objectives, their practicability, their relative costs and benefits, the administrative capability of the government including the accounting system and programme and performance budgeting, the institutional and economic framework of the society and the like.

## 1.5 SUMMARY

- The main difference between public and private goods as well as the concept of the public sector leads us to explore the vast field of public finance.
- To understand the meaning of public finance, it is first important to understand the meaning of the words 'public' and 'finance'. The word 'public' stands for a collection of individuals, whereas the word 'finance' means money resources or revenues. Therefore, 'public finance' means the resources of a public body.
- It must be noted that the State, according to the *laissez-faire* philosophy, was considered as something extraneous to the economy, which was more or less equated with its private sector only.
- Carl C. Plehn, author of *Introduction to Public Finance*, says that the term public finance 'has come, by accepted usage, to be confined to a study of funds raised by governments to meet the costs of government.'
- The scope of public finance involves a complete discussion of the influence of fiscal operations of the government at the level of overall activity, employment, prices and the growth process of the economic system as a whole.
- Musgrave has advocated an approach in which the state sector is viewed as a public household. Such a public household has certain objectives which can be grouped into categories of:
  - Allocation of resources
  - Adjustments in the distribution of income and wealth
  - Stabilization of prices and employment.
- Since a modern government often operates at several levels (federal, state and local), the subject matter of public finance looks into the financial problems and policies of the government at different levels and also studies the inter-governmental financial relations.
- The state sector is not just a necessary evil to be tolerated. It can be designed and operated as an effective set of tools for improving the performance of the economy in several ways.
- The concept of a balanced budget, in whatever way defined, becomes irrelevant in a policy of using financial operations of the government exclusively as instruments of economic and public policy.
- By private finance, we mean the financial problems and policies of an individual economic unit (which does not form a part of State organs) as compared with those of the public authorities.

## Check Your Progress

5. What are the activities dealt with by the principle of maximum social advantage?
6. What are the aspects of economic welfare of the community?
7. Name the factors that are required for improving the distribution of national income.

## NOTES

- It is claimed that *private finance follows the 'market principle', or the principle of economic rationality; but public finance follows the budget principle.*
- *Quite often, in private finance, the view taken is a short term one.* In contrast, the State is expected to take a long-term view of the interests of the economy as a whole and be ready to suffer commercial losses for that purpose, both in the short run and in the long run.
- The first characteristic is that of excludability of a good. It means that it is possible to restrict the availability of a good to select users on a certain basis, such as, by making it a priced good.
- Those goods which are both excludable and rivalrous are termed *private goods* or *pure private goods*. Their use can be rationed between their potential users. In contrast, goods which are both non-excludable and non-rivalrous are termed *public goods* or *social goods*.
- Pure public goods are characterized by the existence of externalities, that is, economic effects which flow from their production or use etc. to third parties or economic units. Such economic effects may also be called *spill-over effects*, *neighborhood effects* or *third-party effects*.
- Another likely characteristic of a pure public good is its decreasing average cost. Being lumpy, it would be subject to the economies of scale. If the public good is provided in small units, then the average cost is likely to be much more.
- The concept of club goods (also termed artificially scarce goods) was introduced by James M. Buchanan. They are a sub-set of local public goods and are characterized by an artificially created scarcity.
- The causal relationship between changes in the supply of money and the level of prices constitute the core of the quantity theory of money. In the classical economic theory, money has no inherent utility and it is exclusively demanded for the transactions purposes.
- The principle of maximum social advantage was introduced by British economist Hugh Dalton. According to Hugh Dalton, public finance is concerned with income and expenditure of public authorities and with the adjustment of one with the other.
- The principle of Maximum Social Advantage (MSA) is the fundamental principle of public finance. It states that public finance leads to economic welfare when public expenditure and taxation are carried out up to that point where the benefits derived from the MU (Marginal Utility) of expenditure is equal to (=) the Marginal Disutility or the sacrifice imposed by taxation.
- While imposition of tax puts burden on the people, public expenditure confers benefits. The benefit conferred on the society, by an additional unit of public expenditure is known as Marginal Social Benefit (MSB).
- Social advantage is maximized at the point where marginal social sacrifice cuts the marginal social benefits curve.
- Maximum Social Advantage is achieved at the point where the marginal social benefit of public expenditure and the marginal social sacrifice of taxation are equated, i.e., where  $MSB = MSS$ .



## NOTES

- The question arises that since the Principle of Maximum Social Advantage suffers from so many limitations, should we not discard it totally to which the reply is an emphatic no.
- An improvement in production should not be taken to mean an increase in current output as such, but basically *an increase in the productive capacity of the economy on a sustainable basis*.
- Mrs Hicks has also suggested two sets of criteria for judging whether a particular public finance operation or policy adds to the net social benefit or not. The first is called *the production optimum* and the second is the *utility optimum*.

## 1.6 KEY TERMS

- **Laissez-faire:** It is the theory or system of government that upholds the autonomous character of the economic order, believing that government should intervene as little as possible in the direction of economic affairs.
- **Taxation:** It is a means by which government finance their expenditure by imposing charges on citizens and corporate entities.
- **Revenue:** It refers to an income that a company receives from its normal business activities, usually from the sale of goods and services to customers.
- **Public goods:** It is a good that is both non-excludable and non-rivalrous in that individuals cannot be effectively excluded from use and where use by one individual does not reduce availability to others.
- **Externality:** It refers to a cost or benefit which results from an activity or transaction and which affects an otherwise uninvolved party who did not choose to incur that cost or benefit.
- **Marginal cost:** It is the change in the total cost that arises when the quantity produced changes by one unit.

## 1.7 ANSWERS TO 'CHECK YOUR PROGRESS'

1. The term 'public finance' denotes the resources of a public body.
2. The scope of public finance involves a complete discussion of the influence of fiscal operations of the government at the level of overall activity, employment, prices and the growth process of the economic system as a whole.
3. Two dissimilarities between private and public finance are as follows:
  - The distinction between private and public borrowings does not end with only amounts of possible borrowings, but extends to their forms, rates of interest and other terms and conditions.
  - It is claimed that private finance follows the 'market principle', or the principle of economic rationality; but public finance follows the budget principle.
4. Such goods which are neither pure public goods nor pure private goods are called impure public goods (also called quasi public goods or quasi private goods).
5. The principle of maximum social advantage deals with the size of the public budget, the level at which the State should operate or the boundaries of its activities.

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6. The aspects of economic welfare of the community are as follows:
  - An improvement in production.
  - An improvement in the distribution of national income.
7. The factors required for improving the distribution of national income are efficiency and equity.

## 1.8 QUESTIONS AND EXERCISES

## Short-Answer Questions

1. What are the similarities between public and private finance?
2. List the characteristics of public goods.
3. Write a short note on club goods.
4. State the limitations of the principle of maximum social advantage.

## Long-Answer Questions

1. Discuss the nature and scope of public finance.
2. Explain the principle of marginal social sacrifice with the help of diagrams.
3. Interpret the following:
  - (a) Dalton's test (b) Hicks' Test

## 1.9 FURTHER READING

- Tyagi, B.P. 1975. *Public Finance*. Meerut: Jai Prakash Nath and Co.
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- Croxtan, Frederick Emory, Dudley Johnstone Cowden and Sidney Klein. 1967. *Applied General Statistics*. New Jersey: Prentice-Hall.
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## Endnotes

1. P.A. Samuelson, Pure Theory of Public Expenditure, in *The Review of Economics and Statistics*, Vol. 36, No. 4, Nov. 1954, pp. 387-389.
2. James M. Buchanan, *The Public Finance*, Richard D. Irwin, 1970, p. 25-26.
3. *Ibid*.
4. Exclusion here will be either impossible or ineffective and also too costly.
5. Bernard P. Herber, *Modern Public Finance*, Richard D. Irwin, 1967, p.27.
6. Charles Mills Tiebout, "A Pure Theory of Local Expenditures", *Journal of Political Economy*, Vol. 64, (1956), pp. 416-424.
7. Wallace E. Oates (1972), *Fiscal Federalism*, (1972), Harcourt Brace.
8. James M. Buchanan, 'An Economic Theory of Clubs', *Econometrica*, Vol. 32, 8. (1965), pp. 1-14.

# UNIT 2 PUBLIC EXPENDITURE

## Structure

## NOTES

- 2.0 Introduction
- 2.1 Unit Objectives
- 2.2 Meaning and Scope of Public Expenditure
  - 2.2.1 Comparison between Private and Public Expenditure
  - 2.2.2 Kinds of Public Expenditure
- 2.3 Canons of Public Expenditure
- 2.4 Wagner's Hypothesis
- 2.5 Growth of Public Expenditure
  - 2.5.1 Growth Trends and Causes
- 2.6 Effects of Public Expenditure on Production and Distribution of Income
  - 2.6.1 Economic Stability and Economic Development
  - 2.6.2 Effect of Public Expenditure on Production
  - 2.6.3 Economic Distribution
- 2.7 Summary
- 2.8 Key Terms
- 2.9 Answers to 'Check Your Progress'
- 2.10 Questions and Exercises
- 2.11 Further Reading

## 2.0 INTRODUCTION

Public expenditure is spending made by the government of a country on collective needs and wants such as pension, provision, infrastructure, etc. It is supported by taxation. Its main objectives are to provide security to the country or states and promote the well-being of the citizens by proper allocation and efficient usage of resources according to strategic priority.

The revised estimate of fiscal deficit in 2016–17 was 3.2 per cent of the GDP, lower from a budgeted 3.5 per cent. It is expected to stay at 3.2 per cent in financial year 2018 and then down to 3.0 per cent in the following year, in accordance with the recommended 3.0 per cent fiscal deficit for the next three years by the newly constituted Fiscal Responsibility and Budget Management (FRBM) committee. The FRBM committee recommended a sustainable debt target with a debt-to-GDP ratio of 60 per cent per cent by 2023 and the fiscal deficit to come down to 3.0 per cent.

In this unit, you will study about the meaning and scope of public expenditure, canons of public expenditure, Wagner's Hypothesis, growth of public expenditure and effects of public expenditure on production and distribution of income.

## 2.1 UNIT OBJECTIVES

After going through this unit, you will be able to:

- Explain the meaning and scope of public expenditure
- Discuss the canons of public expenditure
- Analyse Wagner's Hypothesis

- Interpret growth of public expenditure
- Evaluate the effects of public expenditure on production and distribution of income

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## 2.2 MEANING AND SCOPE OF PUBLIC EXPENDITURE

Public expenditure refers to the expenses which a government incurs for (i) its own maintenance, (ii) the society and the economy, and (iii) helping other countries. In practice, however, with expanding State activities, it is becoming increasingly difficult to separate the portion of public expenditure meant for the maintenance of the government itself from the total.

Historically, public expenditure has recorded a continuous increase over time in almost every country. However, traditional thinking and philosophy did not favour this trend because it rated market mechanism as a better guide for the working of the economy and allocation of its resources. It was argued that each economic unit was the best judge of its own economic interests and the government should not try to decide on behalf of others. Furthermore, while a private economic unit was guided by its own economic interests, the public sector had no such motivation. Accordingly, its efficiency was bound to be very low. Had this philosophy been practised in its entirety, public expenditure would not have grown as rapidly as it did. In reality, however, the State could not ignore problems of economic growth and social injustice. It could not remain a silent spectator of the miseries of the people. This resulted in the acceptance of several versions of socialist and welfare philosophy.

However, in spite of the fact that public expenditure has increased rapidly during the last two centuries or so in almost every State, and in spite of its growing role and importance in national economies, the area of public expenditure remains relatively unexplored. As economist Lowell Harris says, 'the economists have generally concentrated their attention on the theory of taxation. The theory of public expenditure has been more or less confined to that of generalities in terms of the effects of public expenditure on employment and prices etc.' Of course, it may be pointed out, that lately this deficiency is being removed by various studies in the field of public expenditure.

### 2.2.1 Comparison between Private and Public Expenditure

With regard to similarities between the public and private expenditures, we can hypothesise that both private units and public authorities try to maximize returns per unit of expenditure (the returns being the objectives to be achieved). Any shortfall on the front will be on account of inefficiency, uncertainty, lack of foresight and similar other causes. Another point of similarity between private and public expenditure is an element of flexibility, though it is generally more in the case of public expenditure. Both private economic units and public authorities take a collective view of the income, expenditure and the possibilities of adjustments in each. While an individual chooses between an effort to earn and leisure, and a firm thinks of the cost of earning more and spending more, the public authorities compare effects of additional revenue with those of extra expenditure. It must also be remembered that in each case there can be more than one way of raising additional income. The authorities, for example, can plan to raise the

additional tax or nontax revenue, or borrowing or even raising taxation in various forms. There are, therefore, problems of overall efficient and integrated management of finances. They are related to the alternative ways in which finances can be raised, the efforts needed to raise them, the effects of such revenue efforts and the corresponding benefits of the expenditure which are to be incurred. It is also obvious that depending upon circumstances prevailing at the time, the net equilibrating solution will differ. While in some cases, a larger tax and expenditure level would be desirable, in others the amount indicated will be smaller. Similarly, in the case of private finance, we have different levels at which the solutions will be found.

However, while private and public expenditures are similar in their overall and complex ramifications, the *dissimilarities* between them are also quite glaring. The first such dissimilarity is the objective with which the expenditure is incurred. In the case of an individual economic unit, generally an exchange relationship determines the mode, pattern and volume of expenditure. As a consumer, an individual equates the marginal utility of the good (or service) purchased with the disutility of expenditure. A commercial economic unit compares private marginal returns from an expenditure with the amount spent. Public authorities, however, cannot and do not always adopt a commercial attitude towards their expenditure plans. They have to consider social benefits generated in the process of their expenditure activities. And in quite a few cases these benefits are vague and immeasurable. The State has to impute social valuation to these benefits and decide whether it is worthwhile undertaking these expenditures or not. Also, certain state expenditures are directed at bringing about social and economic justice. The benefits of such state expenditures cannot be evaluated directly.

Keeping in view the fact that the State is the guardian of social welfare and economic and social health of the society, provision for many public services is not decided on the basis of their cost effectiveness. Moreover, an individual has a limited horizon covering only a foreseeable future. The State, on the other hand, takes a much longer view. For this reason, the State may adopt even a policy of permanent budgetary deficit. A private economic unit cannot do so. The objectives of public expenditure are now far wider than imagined earlier.

### 2.2.2 Kinds of Public Expenditure

It is conventional to classify public expenditure into various economic categories. *Accounting classification* has been there for centuries because it enables the State executive to maintain an effective control and check over public expenditure and possible leakages and wastage, diversions and misappropriations. It may be departmental classification or classification according to heads of expenditure. Such a classification is good for auditing and for safeguarding against misappropriations and so forth, but it does not help us in understanding its effects. It is, therefore, difficult to formulate an appropriate expenditure policy on this basis. In the same way, a distinction between obligatory (or legally committed) expenditure and optional expenditure can only highlight the constraints under which the government's budgetary policy has to work. It cannot bring out fully the possible effects of different expenditure policies. These days, however, an increasing need for useful and effective classification of public expenditure is felt. It is only through such classification that the economic effects of various State activities can be gauged and proper policies formulated. Here, however, we can take up two classifications of public expenditure, each of them indicating an area of possible effects on the economy.

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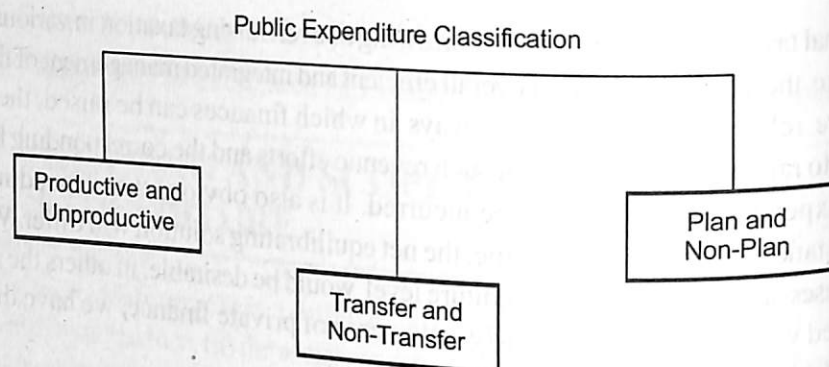


Fig. 2.1 Classification of Public Expenditure

**Productive and Unproductive Expenditures**

This distinction emphasises that while some expenditures are in the nature of consumption, others are in the nature of investment and help the economy in improving its productive capacity. Under the *laissez-faire* philosophy, the only productive public expenditures are those which are incurred to create and maintain social overheads. Expenditures on administration, defence, justice, law and order, and maintenance of the State are unproductive. Adam Smith believed that an economy added to its productive capacity in the long run only through additions to its capital stock and production of tangible goods. If we extend this logic to public expenditure, it will follow that only those public expenditures are productive which create some tangible assets in the economy and enable it to produce more in future. Some people would like to adhere to the usual classical thinking in which the government sector is considered as something foreign and alien to the economy proper. In this case, only those public expenditures are productive which add to the tangible assets of the government, or more precisely income yielding tangible assets of the government including public enterprises of commercial type. The government would be charging for the services of those enterprises to pay for them. Depending upon the pricing policies and other factors, such public expenditures may be partially or fully, self-liquidating. They could even be a source of profit for the authorities.

It is obvious that the foregoing analytical framework is totally unrealistic. Basically, the government sector is a part and parcel of the economy as a whole and must be considered as such. Accordingly, whether an asset is added to the ownership of the government or to that of the private sector should not be the determining factor in deciding about the productiveness or otherwise of any public expenditure.

Secondly, it would also follow that there are many assets which do not yield an income to the government, but which would be really necessary for the productive efficiency of the economy. Such assets ought to be termed productive even though on normal commercial considerations they are not. Parks, waterworks and similar goods and services which add to the productive efficiency of the economy must be viewed as productive assets and expenditure on their creation and maintenance as the productive expenditure. Such public expenditure is, therefore, also self-liquidating in an indirect manner. There will be an increase in the national product and the authorities will be able to collect, even without raising the tax rates or their coverage, an additional revenue.

Thirdly, it is not necessary that the so called productive assets must be in some tangible form only such as buildings, machinery and the like. The productive power of the society can reside in the form of human wealth also. It can manifest itself in different forms. If through education, training, health, better living conditions, better labour

relations and other factors, the working population of the country can add to its productive power, the expenditure on such items should certainly be termed productive. Even if some of these expenditures do not add to the productive effort and national income, they will be adding to the enjoyment of the people. Of course, just as some tangible assets can be useless, so can be some expenditures on particular types of education and training. But that is a question of choosing proper forms of education and training which would be useful for the economy.

Fourthly, there are certain public expenditures without which the economy cannot live and cannot maintain its productivity. Rather in many cases such expenditures indirectly help the economy in attaining higher levels of productivity. Examples are those of defence expenditure, expenditure on research and so on. Even efficient administration, communication and other infrastructural facilities indirectly add to the health and efficiency of the economy. Similarly, some institutions and work culture enhance the economy's productivity while others retard it. Therefore, a precise distinction between productive and unproductive public expenditure is not an easy task. Each case has to be judged on its own merits. Basically, we may take the position that any wasteful and avoidable expenditure is unproductive, while all the necessary and relevant expenditure is productive.

**Transfer and Non-transfer Expenditures**

This classification was favoured by English economist Pigou. Transfer expenditure is a payment without corresponding receipt of goods and services by the State. Examples are interest payments, oldage pensions and unemployment benefits. In these cases, the government is simply transferring the right or claim to use the goods and services to certain sections of the society. In contrast, non-transfer expenditure is that by which the State pays for its purchases or use of goods and services. While in the case of transfer expenditure, the beneficiaries are to decide about the use of real resources, in the case of non-transfer expenditure, it is the State which uses the resources straightaway. Such a use of resources by the State, of course, may be for consumption purposes or for investment purposes. Expenditure on defence, education and such like things are all of non-transfer or real expenditure type as are the investment expenditures. It must, of course, be remembered that when the government incurs a real expenditure, it is not implied that the government will necessarily purchase at the market rates. For one reason or the other, the government may be purchasing at concessional rates or at non-economic rates.

**Expenditure classified as Plan and Non-Plan Expenditure**

Plan expenditure in the government, generally, signifies expenditure taken up under development schemes during a particular Five Year Plan. However, some of these schemes can be continued from a previous plan or some may be 'spill-overs'. At the initial stages of the exercise of preparation of a Five Year Plan, Planning Commission issues detailed instructions directing what should be classified as 'Plan Expenditure'. The plan schemes are mostly expected to be limited to a Five Year Plan period. However, they may have implications that may extend beyond the plan period.

**Major issues relating to plan/non-plan distinction**

Due to the complex nature of Government, the policy regarding what should get classified as plan expenditure and what should get classified as non-plan expenditure has been losing clarity. Besides, a notion has widely gained ground among the policy makers and

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officials across all levels that plan expenditure is good and non-plan is bad. This bias in favour of Plan expenditure and against non-plan expenditure has led to a situation in which essential non-plan expenditure like maintenance of assets is neglected. This has also led to a motivation for showing higher plan expenditure and higher plan sizes both at Central and State levels. Further, several factors such as shift of plan focus from capital to revenue expenditure and the process of transferring expenditure of old schemes to non-plan at the end of each Five Year Plan mean that correspondence cannot be drawn between plan and development expenditure.

The plan/non-plan bifurcation of expenditure has contributed to a fragmented view of resource allocation to various programmes/schemes. With fragmented view, it is difficult not only to ascertain the cost of delivering a service but also to link outlays to outcomes. Outcomes and outputs of programmes depend on total expenditure, plan and non-plan put together and not merely on plan expenditure which constitutes about 30 per cent of the total expenditure only. To conclude, plan and non-plan distinction in the budget is neither able to provide a satisfactory classification of developmental and non-developmental dimensions of Government expenditure nor an appropriate budgetary framework. It has, therefore, become dysfunctional.

Thus, it is recommended that plan and non-plan distinction in the budget should be removed. At the central government level, Planning Commission may be responsible, for the sake of convenience and domain knowledge, for guiding the overall development priorities of the government, setting of outcome targets and review of performance of ministries/departments. Ministry of Finance may be responsible for guiding the fiscal policy, preparation of budget and financial decisions. Planning Commission may be responsible for consolidation of the Five Year Plan covering all services based on the inputs from the Ministry of Finance. The annual budgeting process may need to be revised to facilitate output and outcome-based budgeting within a multi-year framework.

### Revenue and Capital Expenditure

Another way to classify public expenditure is to categorize them as either revenue expenditure or capital expenditure. An expenditure which either creates an asset (e.g., school building) or reduces liability (e.g., repayment of loan) is called capital expenditure. On the other hand, the costs related to specific revenue transactions or operating period such as maintenance expenses are known as revenue expenditures. For the Government of India, revenue expenditure encompasses salaries of government employees, interest payment on loans taken by the government, pensions, subsidies, grants, rural development education and health services, etc. It is a short-term expenditure that is incurred every year. Capital expenditure encompasses things such as building schools, hospitals, purchasing land, investing in shares, plant machinery, and so on. Capital and revenue expenditure will be discussed in detail in Unit 4.

### Current scheme of classification of public expenditure in India

The expenditure of the government is classified into functional heads. The functional classification signifies broadly the function of government for which the expenditure has been incurred and the activity on which the expenditure has been incurred. The functional classification being followed as of now, is a six tier structure with a hierarchy of major, sub-major, minor, sub-head, detailed heads and object head. The first tier of the functional classification, called the major head denotes the functions of the government that are discharged through the expenditure. The second tier of functional classification provides the description of sub functions. The third tier, denoted by the minor head, indicates the

objective of the government being achieved through that particular expenditure. Below the minor head are the two tiers of sub heads (fourth tier) and detailed heads (fifth tier). The sub head indicates specific schemes or activities of the government under which the expenditure has been incurred and the detailed head indicates various components of the schemes or sub schemes. The sixth tier of object head provides details about the object of expenditure. Thus, this forms a two dimensional classification where the expenditure is classified into object heads for each functional head. The division provided by plan/non-plan classification is laid over the functional and object classification. This division cuts across the entire classification hierarchy into two columns.

## 2.3 CANONS OF PUBLIC EXPENDITURE

Like canons of taxation, people have propounded canons of public expenditure also which should govern the public expenditure decisions. They reflect the philosophy of a judicious use of public funds with associated legal propriety. Some of these canons are in the nature of administrative safeguards while others are expected to help the economy and society in achieving their diverse objectives. It, of course, goes without saying that these canons are only broad generalizations and detailed guidelines have to be worked out in each specific case.

1. **Canon of economy:** The resources of the economy are always scarce compared with its needs. No wastage should, therefore, be permitted. Public expenditure is the financial counterpart of the resources which the government uses up directly or places at the disposal of certain sections of the society for this purpose. It is, therefore, essential that the process of public expenditure should not involve the use of resources more than what are just necessary. Utmost care must be taken to avoid wasteful usage of public funds. And as the sphere of government activities increases both in coverage and quality, it becomes all the more difficult to judge the exact type and extent of wasteful expenditure. Therefore, still greater care and a scientific approach towards the assessment of the required expenditure is needed. Techniques like those of programme and performance budgeting and zero base budgeting have been developed to meet these objectives.

One form of wastage of public expenditure is the delay that often accompanies in formulating the plans of public expenditure, their sanction and their execution. On account of the faulty planning and execution and the delays involved, some benefits are lost; or to put it differently, for given benefits the authorities pay more. Furthermore, on account of delays, when prices are rising, costs themselves go up. These days, various costing methods have been evolved for continuous check on various cost elements of projects, especially the manufacturing ones. The authorities also use these methods in a number of such projects. In quite a few projects, the cost benefit approach is adopted in which the social cost and social benefits of a project are estimated (including an imputed valuation of the intangible social costs and benefits) and then the worthwhileness of the project is decided. It must, however, be noted that the techniques of costing and cost benefit analysis are not applied to all the items of public expenditure. And there are certain expenditures which are contractual. The authorities are under obligation to incur them (such as interest on public loans) and the question of economy in their use just does not arise.

## NOTES

#### Check Your Progress

1. Define public expenditure.
2. Name the kinds of public expenditure.



## NOTES

2. **Canon of sanction:** This canon asserts that no public funds should be used without proper authorization and further that funds must be used only for the purpose for which they have been sanctioned. In a democratic set up, it is the legislature which sanctions the expenditure on demand by the executive authorities. The idea is that such a restriction would avoid unscrupulous and unwanted expenditure and will also be a check against misappropriation of funds. Given the authority by the legislature, detailed authorisations are worked out and at each stage the spending unit has to have the sanction and approval of the appropriate authorities. Since, however, there can always be emergencies and delays in getting the sanction of the legislature for additional funds, a certain flexibility is granted in a number of cases up to a margin.

3. **Canon of benefit:** This is clearly related to the canon of economy. Actually economy of expenditure is a relative term and not an absolute one. Any expenditure is to be viewed against the benefits that will accrue from it. Canon of benefit also says that the public expenditure should be incurred only if it is beneficial to the society.

Now the beneficial nature of public expenditure can manifest itself also in the form of various effects on income and wealth distribution, effects on production, and so on. In the final analysis, this canon leads the authorities to observe the principle of maximum social advantage. The additional consideration here would be that it may be possible to reallocate the same public expenditure between different items in a manner which increases social benefit. The authorities should, therefore, try to choose that combination of items for public expenditure which collectively maximize the social benefit.

4. **Canon of surplus:** This canon should actually be interpreted to mean that the government should avoid deficit budgeting, at least a persistent one. It should always try to be prudent and should aim at meeting its current expenditure needs out of its current revenue. It should not overspend and run into a debt. Since it may not be possible to avoid some deficits, it would be better if the general effort is directed at achieving a moderate surplus. Such moderate surpluses during some years will take care of reasonable but unavoidable deficits during other years. If on account of war, or other factors, a large deficit has to be incurred, then the government should try to pay off its debts as soon as possible.

This canon, however, no longer finds favour with the fiscal authorities or with economists in general. This canon was an offshoot of the *laissez-faire* philosophy. These days, however, the regulatory role of the government is recognized in an increasing measure and, therefore, the choice of a surplus or a deficit budget is left to be decided on the merits of the case. Thus, during depression in a developed country, the government would do well to run into a deficit to stimulate demand and production. Objectives of stabilization and economic growth may necessitate even recurring deficits. Resource mobilization efforts in an underdeveloped country often necessitate deficit financing. It is a concealed taxation through which the government appropriates additional resources of the economy which can be used for capital formation. In the growth process, the barter sector of an underdeveloped economy gets increasingly monetised while the economy itself grows in complexities. In order to help and sustain this process, the financial and credit structure of the economy must also develop along healthy and efficient lines. To this end, deficit financing through resultant increase in money supply and public debt, provides the necessary credit base.

In recent years, some academicians have added to the canons of expenditure. A brief description of these canons is as follows:

1. **Canon of maximum social benefit:** Ideally, each component of public expenditure should aim at maximizing aggregate social benefit, that is, satisfying one fundamental principle of Maximum Social Advantage. In practice, application of this criterion poses several difficulties including the identification and quantification of the expected benefit, the efficiency with which public expenditure is incurred, the alternative ways in which it could be spent, the conflicting interests of different social groups, and so on. In general, a good deal of subjectivity (discretion) is involved in deciding the best way of spending public money.

2. **Canon of elasticity:** This means that there should not be any rigidity in spending public funds. It should be possible to bring about necessary changes in it in response to changing circumstances and situation. This objective, however, comes in conflict with the fact that there has to be an overall and tight control over each piece of public expenditure and functionaries of the government cannot be given complete discretionary powers to use public funds as per their personal judgement and preference.

3. **Canon of balanced budget:** This principle does not command universal acceptability. In a way, it says that the government should allow the market forces to work without intervention. In contrast, some thinkers recommend that the government should take active part in modifying the working of demand and supply forces and thereby aim at facilitating the achievement of some of the socio-economic objectives like accelerating economic growth, improving income and wealth distribution, stimulating employment, helping some specific economic sectors, and so on. To this end, therefore, if the government requires a surplus or a deficit budget, it should proceed with it. However, it is also recognized that persistent high surplus or high deficit budgets go against the objectives for which they are adopted. It should be remembered that even a balanced budget is not neutral and can interfere in the working of market forces because of (i) the size and manner of collecting revenue and (ii) the size and manner of public expenditure.

4. **Canon of optimizing production and distribution:** It is claimed that public expenditure must work out a proper control on both production and distribution of income and wealth in the society.

It is noteworthy that several of the canons of public expenditure conflict with each other. The starting point for formulating these canons is to decide whether the government should pursue a policy of total non-intervention and let the ill-effects of 'market failures' go unchecked, or whether it should adopt a specific set of objectives of public expenditure. Even in the latter case, it is not necessary that the public expenditure policy should always aim at a balanced, a surplus or a deficit budget and the size and composition of this imbalance. Every government would therefore, take decisions in the context of various detailed objectives, legal provisions and its own capacity.

## 2.4 WAGNER'S HYPOTHESIS

There are two important and well known theories of increasing public expenditure which we shall be discussing below. The first one is connected with Wagner and the other with Wiseman and Peacock.

## NOTES

### Check Your Progress

3. What does the canon of elasticity denote?
4. What does the canon of optimizing production and distribution stands for?



## NOTES

## 1. Wagner's Law of Increasing State Activities

Adolph Wagner (1835–1917) was a German economist who based his *Law of Increasing State Activities* on historical facts, primarily of Germany. According to Wagner, there are inherent tendencies for the activities of different layers of a government (such as central and state governments) to increase both intensively and extensively. There is a functional relationship between the growth of an economy and government activities with the result that the governmental sector grows faster than the economy. From the original version of this theory it is not clear whether Wagner was referring to an increase in the following:

- (i) Absolute level of public expenditure
- (ii) The ratio of government expenditure to Gross National Product (GNP)
- (iii) Proportion of public sector in the total economy

Musgrave believes that Wagner was thinking of (c) above. F. S. Nitti not only supported Wagner's thesis but also concluded with empirical evidence that it was equally applicable to several other governments which differed widely from each other. All kinds of governments, irrespective of their levels (say, the central or state governments), intentions (peaceful or warlike), and size had exhibited the same tendency of increasing public expenditure.

A number of reasons can be enumerated for this inherent long-term tendency recorded in history.

- (i) An expansion in the traditional functions of the State: Defence became increasingly more expensive over time. Within the country, administrative set kept increasing both in coverage and intensity. The government machinery had to be manned by experts in their fields. With the progress of society, administration of the government, and its services had to become increasingly more extensive, cumbersome and expensive so as to retain efficiency.
- (ii) State activities were increasing in coverage: Traditionally they were limited to only defence, justice, law and order, maintenance of the State and social overheads. But with growing awareness of its responsibilities to the society, the government started expanding its activities in hitherto unexplored field of socio-economic welfare. These measures included efforts to enrich cultural life of the society and provision of social security to the people (such as old age pensions and so on). Subsidies for and direct provision of various *merit goods* also registered an increase. Most governments also took active steps to ensure distributive justice by reducing income and wealth inequalities.
- (iii) The need to provide and expand the sphere of *public goods* received an increasing attention: The State tried to shift the composition of national produce in favour of public goods, and this, in turn, necessitated an expansion of investment activity of the government.

Wagner's Law was based upon historical facts. It did not reveal the inner compulsions under which a government has to increase its activities and public expenditure as time passes. It was applicable only to modern progressive governments which were interested in expanding public sector of the economy for its overall benefit. This general tendency of expanding State activities had a definite long-term trend, though in the short-run, financial difficulties could come in its way. 'But in the long-run the

desire for development of a progressive people will always overcome these financial difficulties.'

Thus, Wagner was emphasising long-term trend rather than short-term changes in public expenditure. Moreover, he was not concerned with the mechanism of increase in public expenditure. Since his study is based on the historical experience, the precise quantitative relationship between the extent of increase in public expenditure and time taken by it was not fixed in any logical or functional manner. His contention that public expenditure had been increasing over time, could not be used to predict its rate of increase in future. Actually, it is consistent with Wagner's law to state that in future the state expenditure would increase at a rate slower than the national income though, factually speaking, it had increased at a faster rate in the past. Thus, in the initial stages of economic growth, the State finds that it has to expand its activities quite fast in several fields like education, health, civic amenities, transport, communications and so on. But when the initial deficiency is removed, then the increase in State activities may be slowed down.

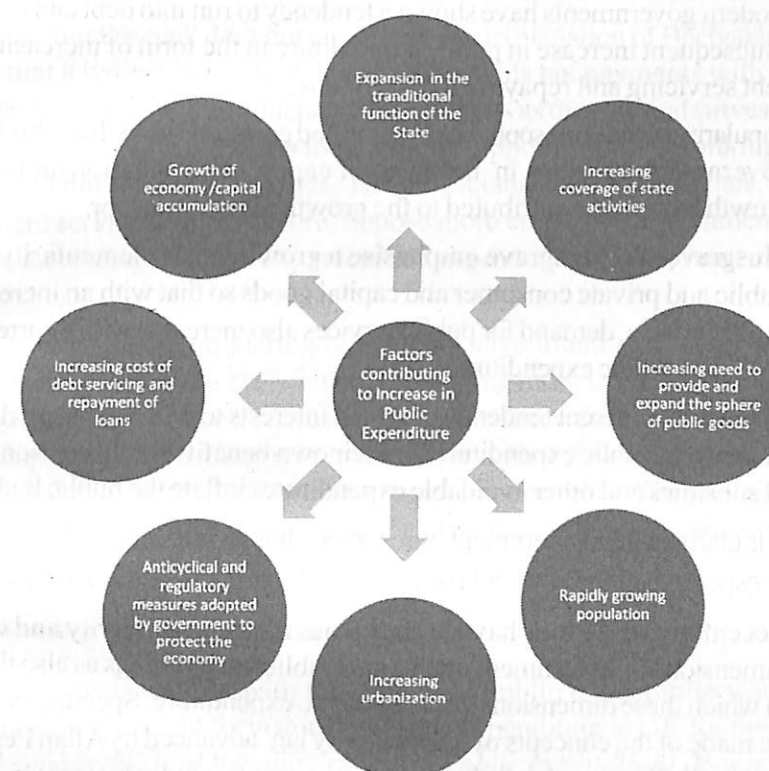


Fig. 2.2 Factors Resulting in Increase in Public Expenditure

Additional Factors which contribute to the tendency of increasing public expenditure relate to a growing role of the State in ever-increasing socio-economic complexities of modern society.

- Many societies are experiencing a growing population which becomes a major contributory factor in the growth of public expenditure. The sheer scale of state services has to increase to keep pace with population growth, including, for example, more schools, hospitals, and police stations.
- Most countries have registered increasing urbanization. Existing cities grow and new ones come up. Urbanization implies a much larger per capita expenditure on civic amenities. It necessitates a much larger supply of incidental services like those connected with traffic, roads and so on.

## NOTES



## NOTES

- Prices have a secular tendency to go up. This also adds to public expenditure even if the scale of state services remains unchanged.
  - The size and nature of public services necessitates an ever-increasing specialization. The quality of the services improves, both as a historical fact as also due to circumstantial compulsions. Better quality services and higher qualified administrators, technicians and so forth, imply a higher cost of providing public services. Also, the government has to purchase a number of goods and services for its own maintenance. With rising prices, expenditure on them also goes up.
  - A modern government considers it a part of its duty to protect the economy from the 'failures' of market mechanism. Accordingly, anticyclical and other regulatory measures are adopted. Efforts are made to reduce the income and wealth inequalities and bring about social and economic justice which, in turn, add to public expenditure.
  - Modern governments have shown a tendency to run into debt and this leads to a subsequent increase in public expenditure in the form of increasing cost of debt servicing and repayment of the loans.
  - Popularity of the philosophy of planning and economic growth as also increasing government activities in the areas of capital accumulation and economic growth have also contributed to the growth of public sector.
  - Musgrave and Musgrave emphasise a growing complementarity between public and private consumer and capital goods so that with an increase in per capita income, demand for public services also increases with a corresponding growth in public expenditure.
  - There is an inherent tendency of vested interests to develop which demand an increase in public expenditure for their own benefit. For this reason, a variety of subsidies and other avoidable expenditures inflate the public budget.
  - It is claimed that government bureaucracy has an inherent tendency to expand irrespective of the size and nature of public services provided by it.
  - Recent investigations have brought into focus productivity and efficiency dimensions of government organs and public undertakings as also the manner in which these dimensions push up public expenditure. Specific mention may be made of the concepts of 'productivity lag' advanced by Allan Peacock and Baumol's Disease. According to these concepts, public sector is less efficient and productive than the private one, and tends to be more labour intensive (overstaffed). Similarly, an element of avoidable inefficiency and, therefore, cost (termed X-inefficiency) creeps in due to poor supervision, nonfixation of responsibility, noncheck on output of individual employees and nonquantification of government services.
  - At the same time, there is a myth that the individuals can voluntarily get together to resolve market deficiencies without government intervention. It is known as coase fallacy. The myth is explained by Fundamental Neoclassical Decentralizability Theorem expounded by B. Greenland and J. Stiglitz.
- Wagner's model has an important analytical limitation which can be removed in an expanded version. A government is not a monolithic entity. It comprises a number of organs and associated institutions. Households and business units in the private sector also do not observe government activities passively. Instead, they respond to them more

actively. Thus, the government decision-making has become a complex phenomenon and has multifarious tendencies to increase public expenditure.

Buchanan and Tullock, in the context of US experience, have viewed Wagner's theory in terms of increasing discrepancy between growth of government expenditure and government output and termed the phenomenon as 'Wagner Squared' hypothesis. They base their argument on two facts. Firstly, in contrast with the situation prevailing in the private sector, expenditure on civil servants grows faster than the corresponding increase in their output. Secondly, with increasing social security and other measures, the proportion of population receiving transfer payments from authorities keeps increasing. This way, public expenditure increases both in absolute terms and as a proportion of national income. It may be noted that even if the expenditure on civil services as a proportion of expenditure on employees in the private sector does not increase, and even if the proportion of population receiving transfer payments remains stable, the Wagner Squared hypothesis would hold. The major limitation of this hypothesis is that output of public servants cannot be measured with any degree of accuracy.

Alan Tait Peacock does not agree with this explanation of Buchanan and Tullock. He says that a typical individual does not relate his tax payments with the receipt of government services. He considers his tax liabilities as they are and strives for additional public services; that is, he fights for additional opportunities for milking government services and not for reducing taxes. The politicians, to win their votes, try to expand government services and, therefore, impose more taxes. The government expenditure keeps on increasing without any reference to productivity/cost ratio of government services.

We may add that modern governments have found new weapons whereby to increase their expenditure even without collecting more taxes. They now own *public undertakings* which can be a source of revenue to them. But more important than that is *their capacity and willingness to resort to deficit financing*. Even in advanced countries deficit financing has become a common occurrence. The public opinion is not strong enough to check this sort of policy even though it has disastrous inflationary effects.

## 2. Wiseman-Peacock Hypothesis

The second thesis dealing with the growth of public expenditure was put forth by Wiseman and Peacock in their study of public expenditure in UK for the period 1890-1955. *The main thesis of the authors is that public expenditure does not increase in a smooth and continuous manner, but in jerks or step like fashion*. At times, some social or other disturbance takes place, creating a need for increased public expenditure which the existing public revenue cannot meet. While earlier, due to an insufficient pressure for public expenditure, the revenue constraint was dominating and restraining an expansion in public expenditure, now under changed requirements such a restraint gives way. The public expenditure increases and makes the inadequacy of the present revenue quite clear to every one. The movement from the older level of expenditure and taxation to a new and higher level is the *displacement effect*. The inadequacy of the revenue as compared with the required public expenditure creates an *inspection effect*. The government and the people review the revenue position and the need to find a solution of the important problems that have come up and agree to the required adjustments to finance the increased expenditure. They attain a new level of *tax tolerance*. They are now ready to tolerate a greater burden of taxation and as a result the general level

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of expenditure and revenue goes up. In this way, the public expenditure and revenue get stabilized at a new level till another disturbance occurs to cause a displacement effect. Thus, each major disturbance leads to the government assuming a larger proportion of the total national economic activity. In other words, there is a concentration effect. The concentration effect also refers to the apparent tendency for central government economic activity to grow faster than that of the state and local level governments. British data are consistent with this hypothesis, but its application to other countries needs verification. Moreover, this aspect of concentration effect is also closely connected with the political set up of the country.

On the face of it, Wiseman Peacock hypothesis looks quite convincing. But we must remember that they are emphasising the recurrence of abnormal situations which cause sizeable jumps in public expenditure and revenue. In all fairness to the historical facts, we must not forget that on account of advancement of the economy and the structural changes therein, there are constant and regular increments in public expenditure and revenue. Public expenditure has a tendency to grow on account of a systematic expansion of the public activities as also an increase in their intensity and quality. Increasing population, urbanization and an everincreasing awareness of the civic rights on the part of the public, coupled with an increasing awareness of its duties on the part of the State leads to an upward movement of public expenditure. To an extent public expenditure gets financed by ever increasing revenue which is made possible through the expansion and structural changes in the economy. These days, in underdeveloped countries like India, the State is deliberately trying to increase its activities and makes an effort to finance those activities through various tax efforts. Even in developed countries, the State finds that it has to perform an increasing regulatory duty to protect the economy against instability and excessive inequalities of income and wealth. Thus, Wiseman Peacock hypothesis is still a description of a particular tendency and does not isolate all the relevant causes at work.

It must be emphasized that apart from various factors like population growth, defence expenditure, urbanization, rising prices and other factors, which by themselves push up public expenditure, an important additional contributory force is the failure of market mechanism in achieving various socio-economic objectives of the country. Inherent deficiencies of market mechanism make the economy a prey of economic instability, income and wealth inequalities, defective patterns of consumption, employment and investment and so on. In a number of cases, the market mechanism is not able to pull the economy out of its vicious circle of poverty and launch it on a path of secular and rapid economic growth. Therefore, the government is forced to increase its field of activities with a corresponding increase in public expenditure.

## 2.5 GROWTH OF PUBLIC EXPENDITURE

The objective of contemporary public expenditure is to focus on improving institutional arrangements and management practices to create incentives for better resource allocation, resource use and financial management. These objectives are based on both traditional fiscal policy and newly introduced institutional development. The objectives of public expenditure are as follows:

- Fiscal discipline
- Resource allocation according to strategic priority (allocative efficiency)

- Effective and efficient usage of resource according to strategic priority (operational efficiency)

The role of public expenditure in the fiscal policy goals of growth, equity and stability, has varied across different phases of economic development in India. The historical importance of public expenditure lies in the mixed economy model adopted after Independence in India whereby the government assumed the primary responsibility of building the capital and infrastructure base to promote economic growth. The concerns regarding equity and poverty alleviation after two decades of Independence added another important dimension to public expenditure in terms of redistribution of resources. The inadequate returns on capital outlays and the macroeconomic crisis of early Nineties arising out of high fiscal deficit shifted the focus of public expenditure to efficiency in its management for facilitating adequate returns and restoring macroeconomic stability. While the fiscal policy goal of stability could be achieved, the modus operandi of public expenditure management through curtailing capital expenditure raised concerns about infrastructure investment and its impact on the long-term growth potential of the economy. Furthermore, stagnating revenue mobilization in particular and some upward movements in expenditures led to a reversal of the fiscal stabilization process since the second half of the Nineties. An improved fiscal performance during 2003-04 engendered by containment of the non-plan expenditures and supported by high revenue mobilization on the back of buoyant real activity paved the way for renewed commitment towards fiscal consolidation in India.

Study of management of public expenditure by state governments in India is highly relevant as:

- There is need for appreciation of the fact that the character of expenditure, rather than the size of the deficit is more important and that the composition of the budget and direction of expenditure influence the growth of GDP and that the level and patterns of expenditure as well as the means through which resources are raised directly affect the income and expenditure streams.
- Analysis of transactions on revenue and capital accounts, at the Centre reveals that revenue surplus covered to a significant extent the capital deficit till the eighties. However, the trend reversed in the nineties with the emergence of capital surpluses and revenue deficits, reduction in capital expenditure and increasing borrowings and debt liabilities in the latter years.

### 2.5.1 Growth Trends and Causes

The fundamental strategy for boosting growth in the Indian economy was to assign a lead role for the public sector in building the capital base of the country. The effect of Mahalanobis model, adopted in Second Five Year Plan (1955-56 to 1960-61) is visible in the capital formation in the public sector comprising central government, state governments and public sector undertakings.

### An overview of public sector investment and consumption

Public sector investment and consumption expenditure have constituted important constituents of effective demand in the Indian economy. The investment process was initiated in the planning period with the public sector being in charge of the 'commanding-height' of the industrial sector, representing infrastructure, heavy industries and defence that required heavy doses of capital formation.

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#### Check Your Progress

5. What was Wagner's law of increasing state activities?
6. What is the Wiseman-Peacock hypothesis?



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The spurt in public investment during the late Seventies reflected government response to the second oil shock by expansionary adjustment through increased investment and reorienting investment for boosting oil production and removing infrastructure constraints. However, in the wake of two successive monsoon failures in 1986 and 1987, the government had to resort to expenditure cuts that affected capital formation. Since the mid-Eighties, the public sector capital formation slackened which, however, did not narrow the saving-investment gap of the public sector as the public sector saving deteriorated more rapidly than investment. The asset-wise distribution of public sector capital formation shows the predominance of investment in construction rather than machinery and equipment reflecting its greater accent on infrastructure. A noteworthy feature has been a decline in the share of construction in the gross fixed capital formation in the public sector with a corresponding increase in that of machinery and equipment up to the Nineties which has somewhat reversed thereafter reflecting renewed emphasis on infrastructure.

Up till the mid-eighties, public sector consumption witnessed an upward trend that reflected the overall expansion in the government sector. Since the mid-eighties, public sector consumption has shown sporadic episodes of expansion resulting from the revision of government employees' salaries and wages. Many economists have raised concerns regarding the sustainability of the growth process in the late nineties. The public sector outlays reflected the change in government strategy regarding development and growth process. Simultaneously, the government's role was rationalized allowing market forces to have a greater role. There were serious implications arising from the increased borrowings and monetisation of government deficits on the overall investment and growth of the economy. This was evident from the macroeconomic crisis occurring in the early nineties. This resulted in the need of fiscal consolidation and a number of measures in terms of government expenditure and revenue. However, due to the need of aligning tax rates with international standards revenue enhancement was restrained and, therefore, the fiscal correction was done mainly from the expenditure side.

The Public Sector Investment Programme (PSIP) is one of the key development policy instruments and strategic management tools to translate the national development objectives of the government into viable programmes and projects which are intended to achieve the country's social and economic development goals and enhance the quality of life of all citizens. In 2015 the government continued with its three-year Public Sector Investment Programme for the period 2015-2017, reflecting a rolling three-year investment portfolio of capital projects aligned to the Medium Term Policy Framework (MTPF) 2011-2014 and which will be the key mechanism for coordinating the implementation of the medium term socio-economic policy objectives.

### Government expenditure pattern

Government expenditure comprises expenditure on economic, social and general services. The pattern in government expenditure since the Eighties has been mainly influenced by a change in role of the government in the growth process, financing pattern of the deficits (debt and interest payments) and the need for fiscal consolidation. As noted above, the revenue mobilization was constrained by the need for rationalization of the structure and aligning the tax rates with international standards. Despite the initiation of tax reforms in the early Nineties, in the Indian context, the typical 'Laffer curve effect' did not fructify and expected increase in tax buoyancies did not occur. The tax-to-GDP ratio of the Centre declined from an average of 9.9 per cent during the Eighties to 9

per cent in the first half of the Nineties. In this scenario, the only way out from the macroeconomic crisis was to undertake an expenditure compression strategy. Accordingly, the overall size of the government sector (centre and states) expenditure after reaching a peak of 32.3 per cent of GDP in 1986-87 showed a steady decline till first half of the Nineties. However, on account of predominance of committed expenses, curtailment could not take place in the revenue expenditure.

As noted above, there has been a slowing down of public sector capital formation since the Eighties which is also reflected in the switch in pattern of government expenditure more towards revenue expenditure. The sharp increases in revenue expenditure reflected continued growth in non-plan expenditure on account of interest payments, subsidies, administrative and defence expenses.

The Plan Expenditure of the Government of India was ₹ 82669 crores during the year 2000-01. It increased to ₹ 465277 crores during the year 2015-16 (BE) showing an increase of ₹ 382608 crores during the period from 2000-01 to 2015-16. In percentage terms, the overall growth was 462.82 per cent during the period. The annual rate of growth in percentage terms was 30.85 per cent during the period from 2000-01 to 2015-16.

The Non-Plan Expenditure of the Government of India was ₹ 242923 crores during the year 2000-01. It increased to ₹ 1312200 crores during the year 2015-16 (BE) showing an increase of ₹ 1069277 crores during the period from 2000-01 to 2015-16. In percentage terms, the overall growth was 440.17 per cent during the period. The annual rate of growth in percentage terms was 29.34 per cent during the period from 2000-01 to 2015-16.

The total expenditure of the Government of India was ₹ 325592 crores during the year 2000-01. It increased to ₹ 1777477 crores during the year 2015-16 (BE) showing an increase of ₹ 1451885 crores during the period from 2000-01 to 2015-16. In percentage terms, the overall growth was 445.92 per cent during the period. The annual rate of growth in percentage terms was 29.73 per cent during the period from 2000-01 to 2015-16.

### Interest payments

The widening of fiscal deficit and consequent rise in debt stocks during the last two decades have resulted in mounting expenditure on interest payments. The debt-to-GDP ratio rose from 46.4 per cent of GDP at the beginning of the Eighties to around 62 per cent by the beginning of the Nineties. The fiscal consolidation process in the first half of the Nineties facilitated some control in the debt burden of government. However, the fiscal stress in the latter half of the Nineties again built up the debt burden.

As a result of the mounting debt burden of the government, interest payments registered substantial increases during the Eighties. The interest burden kept on increasing even in the second half of Nineties despite a softer interest rate regime reflecting impact of sizeable outstanding liabilities contracted at higher interest rates during the early part of the decade and also a return to rising deficits. The persistent rise in interest payments since the mid-Eighties has remained a cause of serious concern.

According to the Economic Survey for 2016-17, India will have a favourable debt dynamics for the next decade as its nominal GDP growth is expected to be in the range of 11-14 and interest rate of 7-7.5 per cent with a differential of around 4-6.5 per cent. India needs to significantly improve its tax to GDP ratio to be able to serve its running

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cost without borrowing and, thus, maintain a primary surplus. India also has to maintain a high growth rate while interest rate has to ease down sharply for significantly bringing down debt to GDP ratio.

## Subsidies

Expenditure on subsidies is a crucial element of government expenditure particularly in the light of targeting poverty alleviation and the growing need to rationalize expenses for fiscal consolidation. The total burden of subsidies on government finances should take into account, in addition to the explicit subsidies, several implicit subsidies in the form of lower user charges for economic and social services provided by the government. The major element of explicit subsidies is food subsidies which is determined by the minimum support price of food grains, operational efficiency of public distribution.

**Table 2.1 Public Sector Capital Formation and Subsidies to Agriculture (Centre and States)**

	(in ₹ crore and as per cent to GDP from agriculture and allied at current prices)											
	Public GCF Agriculture and Allied		Budgetary Subsidies (CSO)		Food Subsidy		Total Fertiliser Subsidy		Subsidy on Indigenous Urea		All other Agriculture Subsidies	
<b>Tenth Plan</b>												
2002-03	9,563	2.0	43,597	9.0	24,176	5.0	11,015	2.3	7,790	1.6	16,196	3.3
2003-04	12,218	2.2	43,765	8.0	25,181	4.6	11,847	2.2	8,521	1.6	15,258	2.8
2004-05	16,187	2.9	47,655	8.4	25,798	4.6	15,879	2.8	10,243	1.8	16,221	2.9
2005-06	20,739	3.3	51,065	8.0	23,077	3.6	18,460	2.9	10,653	1.7	20,181	3.2
2006-07	25,606	3.5	59,510	8.2	24,014	3.3	26,222	3.6	12,650	1.7	21,924	3.0
<b>Eleventh Plan</b>												
2007-08	27,638	3.3	85,698	10.2	31,328	3.7	32,490	3.9	12,950	1.5	34,830	4.2
2008-09	26,692	2.8	1,56,823	16.6	43,751	4.6	76,603	8.1	17,969	1.9	54,438	5.8
2009-10	33,237	3.1	1,39,248	12.9	58,443	5.4	61,264	5.7	17,580	1.6	37,121	3.4
2010-11	34,548	2.7	1,50,170	11.8	63,844	5.0	62,301	4.9	15,081	1.2	39,106	3.1

Note: Public sector agricultural GCF and GDP are from CSO, National Accounts Division; budgetary subsidies, are also from CSO and are based on the economic and purpose classification of Government expenditure. Food and Fertiliser subsidies are from budget documents of the Central Government. 'All other agriculture subsidies' in the table are defined as budgetary subsidies (CSO) plus subsidy on indigenous urea minus food subsidy. This is because CSO classifies food subsidy as subsidy to agriculture but classifies subsidies on indigenous urea as subsidy to industry.

## Wages, salaries and pensions

The rising bill in respect of wages, salaries and pensions is considered to be an important element in the fiscal health of the government, particularly in the recent years. These components partly represent the committed expenditure obligations of the government. An intertemporal analysis of the behaviour of the expenditure on these components shows periodic spurts co-terminus with the implementation of wage revisions. For instance, the impact of Fifth Pay Commission Award by the central government could be seen in the rise of spending on wages.

After the Sixth Pay Commission was implemented, the fiscal deficit that year doubled to 6 per cent in 2008-09, partly due to the resulting increases.

## Defence

The central government also undertakes revenue and capital expenditures for defence purposes which act as a public good at the national level.

1. The Indian defence equipment market can be divided into four large areas:
  - Land Systems
  - Naval Systems

- Electronics Systems
- Aerospace

## Key Objectives under the Twelfth Plan

- Progressive increase share of domestic procurement from 30 to 75 per cent in next 10 years.
- Ensure that 8-10 largest weapons programmes in the country have a targeted large percentage of locally manufactured content.
- Build local IP in critical defence areas.
- Promote and track civilian applications of technologies and material developed during defence research.
- Support local defence manufacturers in building export capabilities.
- Enable creation of one million new direct and indirect jobs in the defence manufacturing space.
- Monitor implementation of Government's offset policy in letter and spirit for large contracts.

## 2.6 EFFECTS OF PUBLIC EXPENDITURE ON PRODUCTION AND DISTRIBUTION OF INCOME

Ideas regarding the need and the effects of public expenditure have varied over time. The earlier approach was closely linked with the philosophy of laissez-faire according to which the best government was the one which governed the least. It was argued that everyone was the best judge of his own interests and that the government could not be expected to take any decision which was basically superior to the private ones. The only sphere where the government could legitimately operate was the preservation of the society and undertaking those activities which were needed by the economy but were commercially unprofitable. It was this logic which delimited the State's legitimate sphere of activities to defence, law and order, justice, administration and social overheads.

However, the fact that the market mechanism failed in many respects to bring about the desired results in the economy, forced an increasing intervention on the part of the State. This not only led to a rapid growth in the government sector and public expenditure but also fed various analytical hypotheses concerning public expenditure. However, we find that on account of the basic differences in the approaches adopted by various writers, we have no general agreement as to the way in which public expenditure can be used and the way it would affect the working of an economy. Thus, we find that some authors have characterized public expenditure as a potent tool for bringing about income and employment stability in the economy. Others are sceptical about the very possibility of using public expenditure usefully. To them public expenditure is a sheer waste and, therefore, a burden upon the economy. Still others would look at public expenditure as a major weapon for bringing about an egalitarian society through various welfare measures and so on.

Let us, however, proceed with the recognition of the fact that the government sector is a part of the economy and that it should be treated as such. It is a different thing, of course, just as different sectors of the economy are interdependent and influence

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7. List the objectives of public expenditure.
8. What is the importance of expenditure on subsidies in the government expenditure?



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each other, similarly, the government sector also is interlinked with the rest of the economy. But there is one major difference. It is that the private sector of the economy is guided by the market mechanism while the government sector can be used by the authorities to bring certain changes in the economy. Within limits, the government sector can flout the laws of the market. It is also an important means of directing the working of the rest of the economy. It is this intricate relationship between the government sector and the rest of the economy which spells out different possible effects of public expenditure.

### 2.6.1 Economic Stability and Economic Development

It is a well-known fact that the market forces by themselves leave much to be desired in the field of economic results. The more advanced and free the market mechanism, the more prone the economy is to fluctuations in income, employment, and prices. It is for this reason that with the development of capitalism, free enterprise economies came to experience ever stronger trade cycles. Accordingly, the need to use some effective anti-cyclical measures was recognized more so since the havoc which the Great Depression of the 1930s caused. Keynesian diagnosis of the basic cause of the ills of a developed market economy was the deficiency of effective demand which was caused on account of a low marginal propensity to consume coupled with a low marginal efficiency of investment. He, therefore, advocated a continuous injection of additional purchasing power in the market through stimulation of investment and consumption activities and through direct public investment. This direct investment was a part of the public expenditure. Such a public expenditure was meant to directly add to the effective demand in the market and generate a high-value multiplier by distributing income to those sections of the population which had a high marginal propensity to consume. The addition to demand by such sections would also stimulate investment activity and, thus, through an all-round increased demand, the depression could be overcome. Keynesian prescription was basically directed towards curing a state of depression - but the logic of the argument can also be extended to that of curing an inflationary situation. To put it differently, Keynesian policy prescription can be developed into a scheme of compensatory finance - correcting the deficiency or excess of demand by the private sector of the economy. During a depression the State was expected to increase total spending in the economy. And this could be done, if need be, through deficit financing. Public borrowings, to the extent they came out of savings of the people, would help in the stimulation of overall demand when they were spent. This would be more so when the savings of the people were not finding an investment outlet, due to an all-round deficiency of demand.

Similarly, if deficit financing was being met through creation of additional money, the stimulating effect of additional public expenditure would again be felt. In either case there would be a net increase in total expenditure and demand flows in the economy. During a boom, on the other hand, the need is to curb extra demand. This may be done through reducing public expenditure while maintaining the same amount of taxation and or borrowings. Here taxation would drain away some of the purchasing power from the hands of the people and public borrowings would in the same way cut into market investment (since market savings are not likely to go uninvested on account of good investment opportunities). Thus, a curtailment of public expenditure would restrain the inflationary pressures.

It must be remembered that the use of public expenditure as an anti-cyclical weapon implies the existence of a well-knit and sensitive market mechanism where through the interrelationships of the input-output relationships between different industries any change starting in one industry spreads to the rest of the economy. It is necessary

that such spreading out of effects should be even enough and without undue time lags. And if a depression is to be cured through stepping up of demand, then there must be adequate unutilized excess capacity in the economy. If these assumptions are satisfied, then the authorities have to concern themselves only with the aggregate demand and not with the particular directions in which it is flowing, since through the interaction between demand and supply flows an automatic adjustment takes place. In a market, where there are technical and other rigidities, the effect created in one sector may not evenly spread to the others. It must be noted that such rigidities are not absent even in developed countries. As a result, under such circumstances, public expenditure no longer remains a simple and easy tool.

The authorities have to regulate not only the total magnitude of demand in the economy, they also have to ensure that the subdivisions of the demand flows match the supply flows. Public expenditure as an anti-cyclical tool will have to be devised in a detailed manner. If this care is not taken, and if the authorities use public expenditure just to stimulate demand in general, then such a stimulating effect will be felt only for certain items while many other industries and areas would remain unaffected, or would be affected only partially. Actually, it is quite possible that while some sectors of the economy are suffering from lack of demand some others might be groaning under inflationary pressures on account of too much demand. Similarly, it is also possible that when the government reduces its expenditure to curtail over-all demand, the effect is more or less concentrated in the industries for which the government reduces the expenditure directly.

As is well-known, an underdeveloped country suffers from far greater rigidities than do the developed countries. Shortages of particular materials, are common. There are gaps in the form of absence of certain industries or adequate productive capacity therein. Various kinds of institutional and legal restrictions prevent a proper and quick market response on the part of different sectors of the economy; and it may be the case even with those sectors to which public expenditure is applied directly. As a result, the problem of bringing about economic stability is far more complex in this case.

Another factor which contributes to the complexity of the problem is the fact that an underdeveloped economy is having, generally speaking, inelastic demand for essential maintenance imports while demand for its exports is quite weak. The result is that if the world prices for its exports fall, it is forced to distress sales; while if its import prices increase, its cost price level is pushed up. Ordinarily an underdeveloped country does not have much defence against this type of instability. Public expenditure cannot remedy the situation to a sufficient degree. Normally, through export and import duties, it should be possible to bring about desired changes in exports and imports; but under unfavourable conditions, this is generally not effective enough. And for some countries, recurring balance of payments problems add to their difficulties.

In summary, we may say that in underdeveloped countries, public expenditure as a general weapon against economic instability has only a limited use; a very detailed programme has to be worked out to meet the specific problems on hand and even then public expenditure alone may not be adequate to overcome the difficulties. A careful and judicious combination of the import and export subsidies, duties and other steps has to be used for achieving effective results.

### 2.6.2 Effect of Public Expenditure on Production

Public expenditure can help the economy in numerous ways in attaining higher levels of production and growth. The ways in which such effects might be brought about are

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obviously inter-related. The analysis of these effects can be taken up separately in the context of developed and underdeveloped economies.

Let us first take up the case of a developed market economy. Such an economy has enough of flexibility but may be suffering from a deficiency of effective demand. Public expenditure can add to the effective demand directly and thus generate conditions favourable for the market forces to push up production. Actually such public investment need not be productive in the sense of adding to the supply side of the market also. This public investment can just be a means of disbursing purchasing power to those who would spend the same and add to the effective demand.

But the technique of increasing production through increasing demand becomes ineffective once the level of full employment is reached. Money income goes up but real income does not increase correspondingly because real income depends upon the use of real resources. If, therefore, demand is pushed beyond full employment, it will only add to the inflationary pressures. It may be noted further that the public expenditure may not be able to push up production proportionately because of various rigidities from which even a developed economy is likely to suffer. For example, some industries may not have unutilized excess capacity when demand goes up. In some industries monopolistic practices may be in vogue and there can be strong militant trade unions. Under different technical and other types of rigidities the economy may not be able to respond fully to increased demand. The result is likely to be a partial increase in production when demand increases through the use of public expenditure and the results can be quite inflationary beyond a limit. Once we recognize the rigidities from which a developed economy may be suffering and the corresponding lack of complete inter-flow of demand between its various sectors, the co-existence of inflation and unemployment cannot be ruled out. In such a case the authorities cannot be indifferent as regards the manner in which public expenditure generates additional demand in the economy. Specific details of public expenditure would have to be decided so as to achieve selective additions to demand along those lines which suffer from shortage of effective demand.

The case is a different one with underdeveloped economies. Such economies are characterised by a low level of saving and investment activity. This deficiency, again, may be remedied by stimulating private saving and investment, or through direct public saving and investment, or both. Thus in underdeveloped countries, there is a shortage of social overheads, skilled labour, capital equipment and machinery. A number of important and basic industries either do not exist or need to be expanded. Public expenditure can be directly used to create and maintain social overheads. It can also be used to create human skills through education and training. A country like India suffers from the problem of regional disparities. Various tax concessions and credit facilities can be provided for setting up industries in these areas. Public expenditure can be used to provide necessary economic infra-structure for the development of selected economic activities and can be used to give subsidies for increasing their profitability. Thus the authorities can strengthen the process of capital accumulation. To the extent this capital formation is financed through foreign aid, the process of economic growth is accelerated.

In this process of accelerating capital accumulation, the authorities have to take a few precautions so as to maximise the benefits of public expenditure and to avoid the possible harmful incidental effects.

Several investment projects have long gestation periods, that is, it takes a long time before the commencement of output. Similarly, some other forms of public expenditure (such as on education) exert only long-term beneficial effects on production.

But there is an addition to money income right from the beginning. In the short run, therefore, such public expenditure generates inflationary pressures. Hence, care must be taken to ensure that inflationary pressures remain within manageable limits.

A sizeable portion of public expenditure is wasted due to faulty planning and execution. This must be avoided.

On account of inherent scarcity of productive resources, care must be taken to determine appropriate investment priorities and stick to them. A proper cost-benefit study should be taken up for each project as also its relationship with other industries in terms of input-output coefficients. Emphasis must be laid on industries to which, for various economic and social reasons, a high priority is accorded and which satisfy the cost-benefit criteria.

Creation of additional productive assets is meaningful only if adequate public expenditure is devoted to their maintenance and operation.

Public expenditure is known for its sub-optimal output. In the very nature of things, it is not possible to fully remedy this situation, but efforts should be made to minimize the wastage of public expenditure.

The authorities should carefully allocate public expenditure over various projects and schemes meant to stimulate private investment. An underdeveloped economy has some untapped resources, but the extent to which they can be utilized in the near future and the extent to which they can be shifted from one use to the other faces several constraints. Accordingly, the size and composition of public expenditure are closely linked with the way it is financed. Resorting to printing press or borrowing from the central bank of the country will add to aggregate demand in the country. Such a course, therefore, has to be kept under observation for its possible inflationary effects. In contrast, financing of public expenditure through market borrowings or taxation may drain the private sector of the corresponding investible resources, that is, it may 'crowd out' the private investment. Therefore, the net effect of public expenditure depends upon the uses to which these funds were being put by the private sector before their acquisition by the authorities, and the uses to which they are put by the authorities after their acquisition. A detailed analysis of the flow of funds and the changes therein on account of all these public policies must be made on an ongoing basis in order to achieve the best possible results.

An increase in the rate of investment undoubtedly helps in accelerating the rate of economic growth. However, all additional investment need not be in the form of direct public investment only. Public expenditure may also be used for helping private investment and production through a pursuit of policies which reduce the cost of production, or push up demand or remove particular shortages and bottle-necks. Creation and maintenance of social overheads lead to an all-round reduction in cost of production and improvement in efficiency. This, therefore, increases profitability and production. Also social overheads bring different regions and sectors of an economy in closer contact with each other and thereby stimulate the process of economic growth. Also public investment can go directly into the development of basic and key industries, power, irrigation and mines etc. Through these steps, the economy can add to its infrastructure and thus provide a firm basis for growth.

Public expenditure can be used to create demand for various products, and thus stimulate private production. A policy of purchase preference in favour of domestically produced goods and services helps domestic enterprise and employment. However, it is noteworthy that international commitments such as towards WTO can come in the way of a policy of purchase preferences.

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Public sector investment can be specifically directed towards creation of specified supplies and facilities, which form important and necessary inputs for other industries. Imports of essential raw materials can be arranged and special labour skills can be developed. To put it differently, public expenditure can be utilised as a means to remove numerous shortages and bottlenecks in the way of production. Public expenditure can be effectively used in reducing regional disparities also. Strategies industries can be subsidised and otherwise helped through loans, etc., if they are established in specified regions. In the same way, a larger proportion of public expenditure on social overheads can be devoted to these areas. Education and training facilities can also be provided as a further aid in reducing regional disparities.

Research and development are important and helpful activities which must be accorded a high priority. New, effective and cheap methods of production can be found whereby local resources are used and a saving in imports and foreign exchange is effected. New products can be invented which will help the economy in its various productive activities. In these diverse ways, the economy can be helped in effecting a re-allocation of its resources and in the process of economic growth.

To summarise, public expenditure affects the level of production in three ways. These are as follows:

**(a) Capacity to work and save**

Dalton states that as a consequence of public expenditure, the capacity to work and save tends to increase. This is because public expenditure allows different types of social and economic facilities that help stimulate the capacity to work of the people. Increased capacity suggests increased efficiency and greater employment. As a result, the level of income and saving tends to rise enabling greater investment and adding to the pace of growth.

**(b) Desire to work and save**

According to Dalton, public expenditure promotes the will to work and save. As a consequence of this, the income and standard of living of people increases.

**(c) Productive utilization of resources**

Public expenditure re-establishes a balance in the economy by focusing on those areas of production which generate maximum linkages effect. It attracts idle resources to their productive utilization. Accordingly, production level tends to raise the resources from unproductive activities to productive ones. As a consequence there is an increase in production.

### 2.6.3 Economic Distribution

An important aspect of the market mechanism is the inequalities of income and wealth that arise on account of it and which through the institutions of private property and inheritance get widened with the passage of time. Furthermore, such income and wealth disparities not only spell a social and economic injustice, they also distort production and employment patterns.

Lesser inequalities of income and wealth, it may be claimed, contribute towards economic stability. It is generally recognized that marginal propensity to consume falls as income rises. As a result, during the expansionary phase of a trade cycle, consumption demand tends to lag behind and causes a check on further expansion of demand in the

economy. Without such a check the upward movement of the trade cycle might develop into a real inflation. Similarly, during a depression, consumption refuses to dip below a certain level and as a result the economy is provided a firm base below which on account of a minimum demand it would not go. Furthermore, such a stability in the economy itself is helpful to economic growth. Private investment is affected, amongst other things, by safety and expected rates of return. With economic stability and expectation thereof, the risk of loss is reduced and this has, therefore, a healthy effect on the investment climate.

Welfare considerations also favour an equitable distribution of income and wealth. The purpose of an economic policy should be to contribute towards achieving the maximum social benefits. Though we cannot prove objectively that marginal utility of income falls as income increases, such a statement may be accepted on common-sense basis. If that is agreed, it follows that any movement towards equitable distribution of income and wealth would increase the aggregate satisfaction in the community. Lerner has shown that even if we do not know the exact way in which marginal utility of income falls with a rise in income and even if we cannot have interpersonal comparisons of utility, still a shift towards equality would probably add to the aggregate satisfaction of the community.

Such a shift towards equality, of course, may be achieved through various forms of public expenditure especially those which are meant to help the poorer sections of the society. A number of welfare measures like free education, health, water and other facilities can be given a top priority. Numerous social security schemes can be adopted whereby people are entitled to old-age pensions, unemployment relief, sickness allowance and so on. Articles of common consumption like food can be subsidised, and the production of those which are in short supply can be taken up in the public sector. Left to market mechanism, the supply of 'merit goods' is likely to be insufficient. Public expenditure, through direct purchases, public production or subsidies can ensure that their supply is augmented to the desired extent. Similarly, public expenditure, through appropriate subsidies and other 'purchase and stores' policy can encourage labour-intensive techniques of production which reduce unemployment and improve income distribution.

However, while proceeding with the programme of bringing about income and wealth equalities, certain aspects of possible interaction between distributive justice and other dimensions of the economy must be kept in mind. To begin with, poorer people may not be able to enjoy fully the additional income because of ignorance. But this argument is applicable only if suddenly large amounts of income start flowing to the poorer sections of the community. In an underdeveloped country (to whose poor people this argument could be directed); this argument does not apply because there is not enough to significantly improve the lot of everyone. Through income redistribution the poor masses can only feel a marginal relief. Even if there was a lot of income to redistribute, the desirability of reducing inequalities would not be disproved. It would only point towards the need for going slow in this direction, so that the poorer sections also get accustomed to higher standards of living.

The second consideration is that of the effect of equalities on production through the will and capacity to work, save and invest. This is a controversial field, and clear-cut and widely acceptable generalizations are difficult to make. In a poor country, where the need to reduce inequalities is the greatest, saving potential is only with the higher income groups. With a big shift towards equalities, such a saving potential is much reduced especially because the poorer sections of the community are bound to consume away a major portion of their newly acquired incomes. The objective of economic equality, therefore comes into-conflict with that of economic growth. In other words, both will

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and capacity to save on the part of the members of the society are likely to suffer when a shift towards income and wealth equalities is made. An underdeveloped country, therefore, is faced with a difficult choice.

Thirdly, the distributive effects of public expenditure must be viewed in the context of its method of financing. For example, if the tax system of the country is regressive, it would militate against the distributive effects of public expenditure. Similarly, if public expenditure is financed through deficit financing, or through such borrowings as are inflationary in character, inequalities would widen. However, deficit financing to a limited extent need not generate inflationary pressures. Similarly, public borrowings out of genuine savings of the economy are expected to be only mildly inflationary. While the long-term solution of its economic difficulties cannot be had without economic growth, the problems of income distribution also cannot be postponed indefinitely. A medium, therefore, has to be worked out wherein both these objectives are pursued concurrently in a balanced manner. And to the extent the hitherto un-exploited resources can be tapped, or foreign aid is received, the task of pursuing both the goals (of equitable distribution and growth) become less difficult.

## 2.7 SUMMARY

- Public expenditure refers to the expenses which a government incurs for (i) its own maintenance, (ii) the society and the economy, and (iii) helping other countries.
- Historically, public expenditure has recorded a continuous increase over time in almost every country. However, traditional thinking and philosophy did not favour this trend because it rated market mechanism as a better guide for the working of the economy and allocation of its resources.
- With regard to similarities between the public and private expenditures, we can hypothesise that both private units and public authorities try to maximize returns per unit of expenditure (the returns being the objectives to be achieved).
- It is conventional to classify public expenditure into various economic categories. Accounting classification has been there for centuries because it enables the State executive to maintain an effective control and check over public expenditure and possible leakages and wastage, diversions and misappropriations.
- Transfer expenditure is a payment without corresponding receipt of goods and services by the State. Examples are interest payments, old age pensions and unemployment benefits.
- Plan expenditure in the Government, generally, signifies expenditure taken up under development schemes during a particular Five Year Plan.
- Due to the complex nature of government, the policy regarding what should be classified as Plan expenditure and what should get classified as non-plan expenditure has been losing clarity.
- Actually economy of expenditure is a relative term and not an absolute one. Any expenditure is to be viewed against the benefits that will accrue from it.
- Adolph Wagner (1835-1917) was a German economist who based his *Law of Increasing State Activities* on historical facts, primarily of Germany. According to Wagner, there are inherent tendencies for the activities of different layers of

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9. What steps should be taken by underdeveloped countries for economic stability and development?
10. What are aspects of market mechanism?

government (such as central and state governments) to increase both intensively and extensively.

- Wagner's Law was based upon historical facts. It did not reveal the inner compulsions under which a government has to increase its activities and public expenditure as time passes.
- Buchanan and Tullock, in the context of US experience, have viewed Wagner's theory in terms of increasing discrepancy between growth of government expenditure and government output and termed the phenomenon as 'Wagner Squared' hypothesis.
- The second thesis dealing with the growth of public expenditure was put forth by Wiseman and Peacock in their study of public expenditure in UK for the period 1890-1955. The main thesis of the authors is that public expenditure does not increase in a smooth and continuous manner, but in jerks or step like fashion.
- Wiseman Peacock hypothesis is still a description of a particular tendency and does not isolate all the relevant causes at work.
- The objective of contemporary public expenditure is to focus on improving institutional arrangements and management practices to create incentives for better resource allocation, resource use and financial management.
- Expenditure on subsidies is a crucial element of government expenditure particularly in the light of targeting poverty alleviation and the growing need to rationalize expenses for fiscal consolidation.
- Ideas regarding the need and the effects of public expenditure have varied over time. The earlier approach was closely linked with the philosophy of laissez-faire according to which the best government was the one which governed the least.
- It is a well-known fact that the market forces by themselves leave much to be desired in the field of economic results. The more advanced and free the market mechanism, the more prone the economy is to fluctuations in income, employment and prices.
- An important aspect of the market mechanism is the inequalities of income and wealth that arise on account of it and which through the institutions of private property and inheritance get widened with the passage of time.
- Welfare considerations also favour an equitable distribution of income and wealth. The purpose of an economic policy should be to contribute towards achieving the maximum social benefits.
- The distributive effects of public expenditure must be viewed in the context of its method of financing. For example, if the tax system of the country is regressive, it would militate against the distributive effects of public expenditure.

## 2.8 KEY TERMS

- **Fiscal deficit:** It is an economic phenomenon, where the government's total expenditure surpasses the revenue generated.
- **Monetisation:** The process of converting or establishing something into legal tender is known as monetisation.
- **Subsidies:** It refers to assistance to a business or economic sector for producers.

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- **Egalitarian:** It is a belief that all people are equal and should have the same rights and opportunities.

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## 2.9 ANSWERS TO 'CHECK YOUR PROGRESS'

1. Public expenditure refers to the expenses which a government incurs for (i) its own maintenance, (ii) the society and the economy, and (iii) helping other countries.
2. The kinds of public expenditure are the following:
  - Productive and unproductive expenditure
  - Transfer and non-transfer expenditure
  - Plan and non-plan expenditure
3. The canon of elasticity denotes that there should not be any rigidity in spending public funds. It should be possible to bring about necessary changes in it in response to changing circumstances and situation.
4. The canon of optimizing production and distribution believes that public expenditure must work out a proper control on both production and distribution of income and wealth in the society.
5. According to Wagner, there are inherent tendencies for the activities of different layers of a government (such as central and state governments) to increase both intensively and extensively. There is a functional relationship between the growth of an economy and government activities with the result that the government sector grows faster than the economy.
6. The main thesis of Wiseman and Peacock is that public expenditure does not increase in a smooth and continuous manner, but in jerks or step like fashion.
7. The objectives of public expenditure are as follows:
  - Fiscal discipline
  - Resource allocation according to strategic priority (allocative efficiency)
  - Effective and efficient usage of resources according to strategic priority (operational efficiency)
8. Expenditure on subsidies is a crucial element of government expenditure particularly in the light of targeting poverty alleviation and the growing need to rationalise expenses for fiscal consolidation. The total burden of subsidies on government finances should take into account, in addition to the explicit subsidies, several implicit subsidies in the form of lower user charges for economic and social services provided by the government.
9. In underdeveloped countries, public expenditure as a general weapon against economic instability has only a limited use, a very detailed programme has to be worked out to meet the specific problems on hand and even then public expenditure alone may not be adequate to overcome the difficulties. A careful and judicious combination of the import and export subsidies, duties and other steps has to be used for achieving effective results.
10. The aspects of market mechanism are inequalities of income and wealth.

## 2.10 QUESTIONS AND EXERCISES

## Short-Answer Questions

1. Prepare a short note on the similarities and dissimilarities between private and public expenditure?
2. What are the factors responsible for the growth of public expenditure in the country?
3. Define coarse fallacy.
4. How can public expenditure be used as a weapon for economic stability and development of the country?

## Long-Answer Questions

1. Discuss the scope of public expenditure.
2. Discuss in detail the types of public expenditure.
3. Describe the canons of expenditure.
4. Critically analyse the Wiseman-Peacock hypothesis.

## 2.11 FURTHER READING

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# UNIT 3 PUBLIC REVENUE

## Structure

- 3.0 Introduction
- 3.1 Unit Objectives
- 3.2 Public Revenue: Meaning and Classification
- 3.3 Sources of Public Revenue
  - 3.3.1 Goods and Services Tax (GST), 2017
- 3.4 Canons of Taxation
- 3.5 Benefit Approach of Taxation
  - 3.5.1 Ability to Pay
- 3.6 Effect of Taxation on Production
  - 3.6.1 Effect of Taxation on Distribution
- 3.7 Summary
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- 3.9 Answers to 'Check Your Progress'
- 3.10 Questions and Exercises
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### 3.0 INTRODUCTION

Public finance is a concept that includes public expenditure, public debt, public revenue and public income. Public revenue is the income generated by the government from various sources to meet the requirements of expenses of public. It usually refers to government revenue. Some important sources or concepts that are included in public revenue consist of taxes, fees, sale of public goods and services, fines, donations, and so forth. These sources are divided into two broad groups: tax and non-tax revenues. The chief source of public revenue is tax, which is a mandatory imposition of duty on public authority by government organizations to meet requirements of general public as a whole. Tax revenues include revenues received by the government by way of income tax, Central excise and customs. Non-tax revenue includes all revenues other than taxes, accruing to the government, such as administrative revenues, commercial revenues, and grants and gifts.

In this unit, you will study about the meaning and classification of public revenue, sources of public revenue, canons of taxation, benefit approach of taxation and effects of taxation on production and distribution.

### 3.1 UNIT OBJECTIVES

After going through this unit, you will be able to:

- Define public revenue
- Discuss the classification of public revenue
- Identify the sources of public revenue
- Explain the canons of taxation
- Interpret the benefit approach of taxation
- Analyse the effects of taxation on production and distribution



### 3.2 PUBLIC REVENUE: MEANING AND CLASSIFICATION

#### NOTES

Every government needs funds to finance its activities. Such funds are raised from various sources. It is difficult to give a complete list of all the sources of public receipts. But the important ones include taxes, income from currency, market borrowings, sale of public assets, income from public undertakings, fees, fines, gifts and donations, etc. Professor Dalton makes a distinction between public receipts and public revenue. While public receipts include receipts from all sources, public revenue is a narrower concept and excludes public borrowings, income from the sale of public assets, or receipts from the use of 'printing press'.

It is a normal practice with a government to divide its receipts 'into 'revenue' and 'capital' categories. Broadly speaking, revenue receipts include 'routine' and 'earned' ones. For this reason, they do not include borrowings and recovery of loans from other parties, but they do include tax receipts, donations, grants, fees, and fines. Capital receipts, on the other hand, cover those items which are basically of non-repetitive and non-routine variety and change government's financial liabilities.

#### Classification of Public Revenue

The following are the main classifications of public revenue given by different economists:

- **Adam Smith's classification:** Adam Smith classified public revenues into two categories, namely revenue from the public and revenue from state property. This classification is very narrow; it does not serve the purpose of modern finance.
- **Bastable's classification:** Professor Bastable also classified public revenue into two categories, namely income received by the government from various functions and income received by the government in the capacity of the 'state'.
- **Seligman's classification:** Seligman classified public revenue into three categories: (i) gratuitous revenue, (ii) compulsory revenue and (iii) contractual revenue. A major drawback of this classification is that it fails to describe unambiguously the differences between fees, prices and taxes.
- **Lutz's classification:** Lutz has classified public revenue into six categories: commercial revenue, administrative revenue, taxation, public debts, grants and bookkeeping revenue. Of these six categories, the last three are no longer included in the category of public revenue.
- **Dalton's classification:** According to Dalton, there are two main sources of public revenue: taxes and prices. He has identified twelve categories of public finance: taxes, gifts and reparations, compulsory loans, fines in courts, public enterprises, public property, fees in other payments, public monopolies (monopoly profits), duties, special assessment, voluntary gifts and mint.

#### Ideal classification of Findlay Shirras

All the aforementioned classifications have some type of lacuna in them. Shirras' classification of revenue into tax and non-tax categories is accepted as most convincing classification of public revenue.

Tax revenue itself is divided into three sections:

- Taxes on income and expenditure:** This section covers all those taxes which are levied on receipts of income and expenditures such as corporation tax, income tax, expenditure tax, interest tax, and similar other taxes, if any, in force.
- Taxes on property and capital transactions:** This section covers taxes on specific forms of wealth and its transfers such as estate duty, wealth tax, gift tax, house tax, land revenue and stamps and registration fees and so forth.
- Taxes on commodities and services:** This section includes taxes on production, sale, purchase, transport, storage, and consumption of goods and services.

Non-tax revenue of the government is divided into three sections:

- Currency, coinage and mint:** This category covers the receipts of Currency Note Press at Nasik, Security Paper Mill at Hoshangabad, Bank Note Press at Dewas and of the Mints. Profit from circulation of small coins is also included here.
- Interest receipts, dividends and profits:** This section comprises, apart from interest receipts on loans by the government to other parties, dividends and profits from public sector undertakings run by or as government departments including other income generating departments. Examples are contributions from railways and posts and telecommunications, and surplus profits of the Reserve Bank of India transferred to the government.
- Other non-tax revenue:** This section covers revenue from various government activities and services such as from administrative services, public service commission, police, jails, agriculture and allied services, industry and minerals, water and power development services, transport and communications, supplies and disposal, public works, education, housing, information and publicity, broadcasting, grants-in-aid and contributions. Note that income and profit from the creation of currency by the government, i.e., the excess of face value of currency over its cost of creation are also included in this group of revenue.

### 3.3 SOURCES OF PUBLIC REVENUE

As shown in Figure 3.1, there are two sources of public revenue, namely tax revenue and non-tax revenue. A tax is a compulsory levy imposed by a public authority on persons and organizations to meet public expenditures. It is the compulsory payment made to the government. Refusal to pay the tax is a punishable offence. Every tax involves some sacrifice on the part of tax payers. A tax is not a fine or penalty. Non-tax revenue includes all revenues other than taxes, accruing to the government. These are internally generated funds, such as administrative revenues, commercial revenues, and grants and gifts.

#### NOTES

#### Check Your Progress

1. What is the difference between revenue receipts and capital receipts?
2. Mention the types of non-tax revenues of the government.

## NOTES

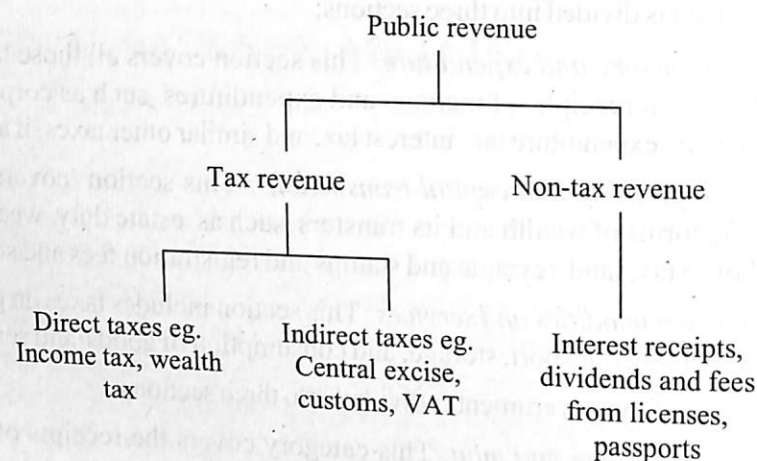


Fig. 3.1 Sources of Public Revenue

## A. Tax Revenues

Let us discuss the various sources of tax revenues.

## 1. Direct Taxes

A direct tax is a kind of charge, which is imposed directly on the taxpayer and paid directly to the government by the persons (juristic or natural) on whom it is imposed. A direct tax is one that cannot be shifted by the taxpayer to someone else. Some important direct taxes imposed in India are as follows:

- **Income Tax:** Income Tax Act, 1961 (as amended) imposes tax on the income of the individuals or Hindu undivided families or firms or cooperative societies (other than companies) and trusts (identified as bodies of individual associations of persons) or every artificial juridical person. The inclusion of a particular income in the total income of a person for income-tax in India is based on his residential status. There are three residential status, viz., (i) Resident & Ordinarily Residents (Residents) (ii) Resident but not Ordinarily Residents and (iii) Non-Residents. There are several steps involved in determining the residential status of a person. All residents are taxable for their income, including income outside India. Non-residents are taxable only for the income received in India or income accrued in India. Not ordinarily residents are taxable in relation to income received in India or income accrued in India and income from business or profession controlled from India.
- **Corporation Tax:** The companies and business organizations in India are taxed on the income from their worldwide transactions under the provision of Income Tax Act, 1961 (as amended). A corporation is deemed to be resident in India if it is incorporated in India or if its control and management is situated entirely in India. In case of non-resident corporations, tax is levied on the income which is earned from their business transactions in India or any other Indian sources depending on bilateral agreement of that country.
- **Property Tax:** Property tax or 'house tax' is a local tax on buildings, along with appurtenant land, and imposed on owners. The tax power is vested in the states and it is delegated by law to the local bodies, specifying the valuation method, rate band and collection procedures. The tax base is the Annual Ratable Value (ARV) or area based rating. Owner-occupied and other properties not producing rent

are assessed on cost and then converted into ARV by applying a percentage of cost, usually six per cent. Vacant land is generally exempted from the assessment. The properties lying under control of the central government are exempted from the taxation. Instead a 'service charge' is permissible under executive order.

- **Inheritance and Estate Taxes:** These taxes are levied on the demise of a person. A tax levied on those who inherit from the deceased person is termed as an inheritance tax and is usually assessed with reference to the overall tax liability of the inheritor. In contrast, an estate duty is levied on the entire wealth of the deceased person before and after the tax balance is inherited. Note that both taxes can be levied simultaneously.

In India, estate duties came into existence in 1957 and were abolished in the budget for 1985-86 because of their widespread ill-effects and extremely small collection. The duties were imposed and collected by the Centre, the net proceeds were divided between the States. Similarly, estate duty on agricultural lands can be imposed only by the States. Some States were doing so and the Centre was collecting it on their behalf and distributing the net proceeds between them. They were also abolished. However, the 1989-90 budget imposed a tax on transfer of wealth through inheritance and this tax was not shared with the States.

In recent years, some ingredients of erstwhile estate duty have been replaced by some forms of wealth tax.

- **Gift Tax:** Gift tax in India is regulated by the Gift Tax Act which was constituted on 1 April 1958. It came into effect in all parts of the country except in Jammu and Kashmir. As per the Gift Act 1958, all gifts in excess of ₹25,000, in the form of cash, draft, check or others, received from one who does not have blood relations with the recipient, were taxable. However, with effect from 1 October 1998, gift tax got demolished and all the gifts made on or after the date were free from tax. But in 2004, the Act was again revived partially. A new provision was introduced in the Income Tax Act, 1961 under Section 56 (2). According to it, the gifts received by any individual or Hindu Undivided Family (HUF) excess of ₹50,000 in a year would be taxable.

## 2. Indirect Tax

An indirect tax is a tax collected by an intermediary (such as a retail store) from the person who bears the ultimate economic burden of the tax (such as the customer). An indirect tax is one that can be shifted by the taxpayer to someone else. An indirect tax may increase the price of a good so that consumers are actually paying the tax by paying more for the products. The some important indirect taxes imposed in India are as follows:

- **Customs Duty:** The Customs Act was formulated in 1962 to prevent illegal imports and exports of goods. Besides, all imports are sought to be subject to a duty with a view to affording protection to indigenous industries as well as to keep the imports to the minimum in the interests of securing the exchange rate of Indian currency. Duties of customs are levied on goods imported or exported from India at the rate specified under the customs Tariff Act, 1975 as amended from time to time or any other law for the time being in force. Under the custom laws, the various types of duties are leviable.
- **Basic Duty:** This duty is levied on imported goods under the Customs Act, 1962.

## NOTES



## NOTES

- o **Additional Duty (Countervailing Duty) (CVD):** This is levied under Section 3 of the Custom Tariff Act and is equal to excise duty levied on a like product manufactured or produced in India. If a like product is not manufactured or produced in India, the excise duty that would be leviable on that product had it been manufactured or produced in India is the duty payable. If the product is leviable at different rates, the highest rate among those rates is the rate applicable. Such duty is leviable on the value of goods plus basic custom duty payable.
- o **Additional Duty to compensate duty on inputs used by Indian manufacturers:** This is levied under Section 3(3) of the Customs Act. (4) **Anti-dumping Duty:** Sometimes, foreign sellers abroad may export into India goods at prices below the amounts charged by them in their domestic markets in order to capture Indian markets to the detriment of Indian industry. This is known as dumping. In order to prevent dumping, the central government may levy additional duty equal to the margin of dumping on such articles. There are, however, certain restrictions on imposing dumping duties in case of countries which are signatories to the GATT or on countries given 'Most Favoured Nation Status' under agreement.
- o **Protective Duty:** If the Tariff Commission set up by law recommends that in order to protect the interests of Indian industry, the central government may levy protective anti-dumping duties at the rate recommended on specified goods.
- o **Duty on Bounty Fed Articles:** In case a foreign country subsidises its exporters for exporting goods to India, the Central Government may impose additional import duty equal to the amount of such subsidy or bounty. If the amount of subsidy or bounty cannot be clearly determined immediately, additional duty may be collected on a provisional basis and after final determination, difference may be collected or refunded, as the case may be.
- o **Export Duty:** Such duty is levied on export of goods. At present very few articles such as skins and leather are subject to export duty. The main purpose of this duty is to restrict exports of certain goods.
- o **Cess on Export:** Under sub-section (1) of Section 3 of the Agricultural & Processed Food Products Export Cess Act, 1985 (3 of 1986), 0.5 per cent ad valorem as the rate of duty of customs be levied and collected as cess on export of all scheduled products.
- o **National Calamity Contingent Duty:** This duty was imposed under Section 134 of the Finance Act, 2003 on imported petroleum crude oil. This tax was also leviable on motor cars, imported multi-utility vehicles, two wheelers and mobile phones.
- o **Education Cess:** Education cess is leviable @ 2 per cent on the aggregate of duties of Customs (except safeguard duty under Section 8B and 8C, CVD under Section 9 and anti-dumping duty under Section 9A of the Customs Tariff Act, 1985). Items attracting Customs Duty at bound rates under international commitments are exempted from this Cess.
- o **Secondary and Higher Education Cess:** Leviable @ 1 per cent on the aggregate of duties of Customs.
- o **Separate Point Road Cess:** Additional Duty of Customs on Motor Spirit is leviable and Additional Duty of Customs on High Speed Diesel Oil is

leviable by the Finance Act (No.2), 1998. and the Finance Act, 1999 respectively.

- o **Surcharge on Motor Spirit:** Special Additional Duty of Customs (Surcharge) on Motor Spirit is leviable by the Finance Act, 2002.

- **Central Excise Duty:** The central government levies excise duty under the Central Excise Act, 1944 and the Central Excise Tariff Act, 1985. The Central excise duty is a tax which is charged on such excisable goods that are manufactured in India and are meant for domestic consumption. The term 'excisable goods' means the goods which are specified in the First Schedule and the Second Schedule to the Central Excise Tariff Act, 1985. It is mandatory to pay Central Excise duty payable on the goods manufactured, unless exempted eg; duty is not payable on the goods exported out of India. Further various other exemptions are also notified by the government from the payment of duty by the manufacturers. Various Central Excise are:

- o **Basis Excise Duty:** Excise Duty, imposed under Section 3 of the 'Central Excises and Salt Act' of 1944 on all excisable goods other than salt produced or manufactured in India, at the rates set forth in the schedule to the Central Excise tariff Act, 1985, falls under the category of Basic Excise Duty in India.
- o **Special Excise Duty:** According to Section 37 of the Finance Act, 1978, Special Excise Duty is levied on all excisable goods that come under taxation, in line with the Basic Excise Duty under the Central Excises and Salt Act of 1944. Therefore, each year the Finance Act spells out that whether the Special Excise Duty shall or shall not be charged, and eventually collected during the relevant financial year.
- o **Additional Duty of Excise:** Section 3 of the 'Additional Duties of Excise Act' of 1957 permits the charge and collection of excise duty in respect of the goods as listed in the Schedule of this Act.
- o **Road Cess:**
  - (a) Additional Duty of Excise on Motor Spirit: This is leviable by the Finance Act (No.2), 1998.
  - (b) Additional Duty of Excise on High Speed Diesel Oil: This is leviable by the Finance Act, 1999.
- o **Surcharge:**
  - (a) Special Additional Duty of Excise on Motor Spirit: This is leviable by the Finance Act, 2002.
  - (b) Surcharge on Pan Masala and Tobacco Products: This Additional Duty of Excise has been imposed on cigarettes, pan masala and certain specified tobacco products, at specified rates in the Budget 2005-06. Bidis are not subjected to this levy.
- o **National Calamity Contingent Duty (NCCD):** NCCD was levied on pan masala and certain specified tobacco products vide the Finance Act, 2001. The Finance Act, 2003 extended this levy to polyester filament yarn, motor car, two wheeler and multi-utility vehicle and crude petroleum oil.
- o **Education Cess:** Education Cess is leviable @ 2 per cent on the aggregate of duties of Excise and Secondary and Higher Education Cess is Leviable @ 1 per cent on the aggregate of duties of Excise.
- o **Cess :** A cess has been imposed on certain products.

## NOTES

## NOTES

- **Service Tax:** The service providers in India except those in the state of Jammu and Kashmir are required to pay a Service Tax under the provisions of the Finance Act of 1994. The provisions related to Service Tax came into effect on 1st July, 1994. Under Section 67 of this Act, the Service Tax is levied on the gross or aggregate amount charged by the service provider on the receiver. However, in terms of Rule 6 of Service Tax Rules, 1994, the tax is permitted to be paid on the value received. The interesting thing about Service Tax in India is that the government depends heavily on the voluntary compliance of the service providers for collecting Service Tax in India.
- **Sales Tax:** In India, sales tax can be imposed only by the States on the sale/purchase, etc. of goods. Most States were doing so. It was being levied on successive sales of an item on the full sale value. This system had its own ill-effects particularly in the form of adding to the costs and prices. Therefore, in accordance with what several other countries had done, in India, States were persuaded to switch over to another form of sales tax, termed VAT. It is also levied on successive transactions of an item but only on the 'value added' after the preceding transaction. If implemented properly, VAT has several advantages over sales tax such as avoidance of taxation of the already paid taxes. In addition, the Centre levies Central Sales Tax on inter-state transactions and its net proceeds go to the States.
- **Value Added Tax (VAT):** The practice of VAT executed by State Governments is applied on each stage of sale, with a particular apparatus of credit for the input VAT paid. VAT in India classified under the tax slabs are 0 per cent for essential commodities, 1 per cent on gold ingots and expensive stones, 4 per cent on industrial inputs, capital merchandise and commodities of mass consumption, and 12.5 per cent on other items. Variable rates (State-dependent) are applicable for petroleum products, tobacco, liquor and so forth. VAT levy will be administered by the Value Added Tax Act and the rules made there-under and similar to a sales tax. It is a tax on the estimated market value added to a product or material at each stage of its manufacture or distribution, ultimately passed on to the consumer. Under the current single-point system of tax levy, the manufacturer or importer of goods into a State is liable to sales tax. There is no sales tax on the further distribution channel. VAT, in simple terms, is a multi-point levy on each of the entities in the supply chain. The value addition in the hands of each of the entities is subject to tax. VAT can be computed by using any of the three methods:
  - o **Subtraction method:** The tax rate is applied to the difference between the value of output and the cost of input.
  - o **The Addition method:** The value added is computed by adding all the payments that is payable to the factors of production (viz., wages, salaries, interest payments etc).
  - o **Tax credit method:** This entails set-off of the tax paid on inputs from tax collected on sales.
- **Securities Transaction Tax (STT):** STT is a tax, which is levied on all transactions done on the stock exchanges. It is applicable on purchase or sale of equity shares, derivatives, equity-oriented funds and equity-oriented mutual funds. Current STT on purchase or sale of an equity share is 0.075 per cent. A person becomes an investor after payment of STT at the time of selling securities (shares). Sale of shares after 12 months does not attract this tax or tax on long-term gains. However, a gain on selling of shares before 12 months is termed short-term gain

and attracts a tax at a flat rate of 10 per cent. Further, for a trader, all his gains are treated as trading (Business) gains and he has to pay tax as per tax tables. In this case, the transaction tax paid by him can be claimed back/adjusted in tax to be paid.

The above mentioned indirect taxes have been subsumed under GST with effect from July 2017. Let us now study about GST.

### 3.3.1 Goods and Services Tax (GST), 2017

The introduction of Goods and Services Tax on 1 July 2017 was a very significant step in the field of indirect tax reforms in India. By amalgamating a large number of Central and State taxes into a single tax, the aim was to mitigate cascading or double taxation in a major way and pave the way for a common national market. It is being held as the largest tax reform by a number of renowned economists after the Independence of India. GST has brought radical change in the taxation system of India. From the consumer's point of view, the biggest advantage is in terms of reduction in the overall tax burden on goods, which was estimated to be around 25–30 per cent. Introduction of GST has also made Indian products competitive in the domestic and international markets. The system has been evolved as a new regime against the different categories of taxes imposed by the State Governments as well as the central government. The new tax system known as GST has been imposed as an indirect tax system to encourage a single market under the single tax system. The Indian Constitution has also been amended with this effect.

#### Salient Features of GST

The salient features of GST are as follows:

- GST is applicable on 'supply' of goods or services as against the present concept of tax on manufacture of goods or on sale of goods or on provision of services.
- GST is based on the principle of destination based consumption taxation as against the present principle of origin-based taxation.
- The GST to be levied by the Centre is called Central GST (central tax- CGST) and that to be levied by the States (including Union territories with legislature) is called State GST (State tax- SGST). Union territories without legislature will levy Union territory GST (Union Territory tax- UTGST).
- An Integrated GST (integrated tax- IGST) is levied on inter-State supply (including stock transfers) of goods or services. This is collected by the Centre so that the credit chain is not disrupted.
- Import of goods is treated as inter-State supplies and is covered under IGST in addition to the applicable customs duties.
- Import of services is treated as inter-State supplies and is subject to IGST.
- CGST, SGST/UTGST & IGST is levied at rates to be mutually agreed upon by the Centre and the States under the guidance of the GSTC (Goods and Service Tax Council).
- GST has replaced the following taxes currently levied and collected by the Centre:
  - Central Excise Duty
  - Duties of Excise (Medicinal and Toilet Preparations)

## NOTES



## NOTES

- Additional Duties of Excise (Goods of Special Importance)
  - Additional Duties of Excise (Textiles and Textile Products)
  - Additional Duties of Customs (commonly known as CVD)
  - Special Additional Duty of Customs (SAD)
  - Service Tax
  - Cesses and surcharges insofar as they relate to supply of goods or services.
- (ix) State taxes that are subsumed within the GST are:
- State VAT
  - Central Sales Tax
  - Purchase Tax
  - Luxury Tax
  - Entry Tax (All forms)
  - Entertainment Tax (except those levied by the local bodies)
  - Taxes on advertisements
  - Taxes on lotteries, betting and gambling
  - State cesses and surcharges insofar as they relate to supply of goods or services.
- (x) GST applies to all goods and services except alcohol for human consumption.
- (xi) GST on five specified petroleum products (Crude, Petrol, Diesel, ATF & Natural gas) will be applicable from a date to be recommended by the GSTC.
- (xii) Tobacco and tobacco products are subject to GST.
- (xiii) A common threshold exemption is applicable to both CGST and SGST. Taxpayers with an annual turnover of ₹ 20 lakh (₹ 10 lakh for special category States (except J&K) as specified in article 279A of the Constitution) are exempt from GST. A composition scheme (i.e., to pay tax at a flat rate without credits) is available to small taxpayers (including to manufacturers other than specified category of manufacturers and service providers) having an annual turnover of up to ₹ 1 crore (₹ 75 lakh for special category States (except J&K and Uttarakhand) enumerated in article 279A of the Constitution).
- (xiv) The list of exempted goods and services is kept to a minimum and has been harmonized for the Centre and the States as well as across States as far as possible.
- (xv) All exports and supplies to SEZs and SEZ units are zero-rated.
- (xvi) Accounts are periodically settled between the Centre and the States to ensure that the credit of SGST used for payment of IGST is transferred by the originating State to the Centre. Similarly, the IGST used for payment of SGST is transferred by the Centre to the destination State. Further, the SGST portion of IGST collected on B2C supplies is transferred by the Centre to the destination State. The transfer of funds is carried out on the basis of information contained in the returns filed by the taxpayers.
- (xvii) Input Tax Credit (ITC) to be broad based by making it available in respect of taxes paid on any supply of goods or services or both used or intended to be used in the course or furtherance of business.

## NOTES

- (xix) Electronic filing of returns by different class of persons at different cut-off dates.
- (xx) Various modes of payment of tax available to the taxpayer including Internet banking, debit/ credit card and National Electronic Funds Transfer (NEFT) / Real Time Gross Settlement (RTGS).
- (xxi) Obligation on certain persons including government departments, local authorities and government agencies, who are recipients of supply, to deduct tax at the rate of 1 per cent from the payment made or credited to the supplier where total value of supply, under a contract, exceeds two lakh and fifty thousand rupees. The provision for TDS has not been operationalized yet.
- (xxii) Refund of tax to be sought by taxpayer or by any other person who has borne the incidence of tax within two years from the relevant date.
- (xxiv) System of self-assessment of the taxes payable by the registered person.
- (xxv) Audit of registered persons to be conducted in order to verify compliance with the provisions of Act.
- (xxvi) Limitation period for raising demand is three years from the due date of filing of annual return or from the date of erroneous refund for raising demand for short-payment or non-payment of tax or erroneous refund and its adjudication in normal cases.
- (xxvii) Limitation period for raising demand is five years from the due date of filing of annual return or from the date of erroneous refund for raising demand for short-payment or non-payment of tax or erroneous refund and its adjudication in case of fraud, suppression or willful mis-statement.
- (xxviii) Arrears of tax to be recovered using various modes including detaining and sale of goods, movable and immovable property of defaulting taxable person.
- (xxix) Goods and Services Tax Appellate Tribunal has been constituted by the central government for hearing appeals against the orders passed by the Appellate Authority or the Revisional Authority. States will adopt the provisions relating to Tribunal in respective SGST Act.
- (xxx) Provision for penalties for contravention of the provision of the proposed legislation has been made.
- (xxxi) Advance Ruling Authority has been constituted by States in order to enable the taxpayer to seek a binding clarity on taxation matters from the department. Centre has adopted such authority under CGST Act.
- (xxxii) An anti-profiteering clause has been provided in order to ensure that business passes on the benefit of reduced tax incidence on goods or services or both to the consumers.
- (xxxiii) Elaborate transitional provisions have been provided for smooth transition of existing taxpayers to GST regime.

## Benefits of GST

## (A) Make in India

- (i) It has helped to create a unified common national market for India, giving a boost to foreign investment and 'Make in India' campaign.
- (ii) It has prevented cascading of taxes as Input Tax Credit is available across goods and services at every stage of supply.

## NOTES

- (iii) Harmonization of laws, procedures and rates of tax.
- (iv) It has given an impetus to export and manufacturing activity, generated more employment and, thus, increased GDP with gainful employment leading to substantial economic growth.
- (v) Ultimately, it will help in poverty eradication by generating more employment and more financial resources.
- (vi) More efficient neutralization of taxes especially for exports thereby making our products more competitive in the international market and giving boost to Indian exports.
- (vii) It has improved the overall investment climate in the country which will naturally benefit the development of the States.
- (viii) Uniform SGST and IGST rates will reduce the incentive for evasion by eliminating rate arbitrage between neighboring States and that between intra and inter-State sales.
- (ix) Average tax burden on companies will decline which is expected to reduce prices and lower prices mean more consumption, which in turn means more production thereby helping in the growth of the industries. This will create India as a 'Manufacturing hub'.

**(B) Ease of Doing Business**

- (i) Simpler tax regime with fewer exemptions.
- (ii) Reduction in multiplicity of taxes that are at present governing our indirect tax system leading to simplification and uniformity.
- (iii) Reduction in compliance costs -- no multiple record-keeping for a variety of taxes so lesser investment of resources and manpower in maintaining records.
- (iv) Simplified and automated procedures for various processes such as registration, returns, refunds, tax payments and so forth.
- (v) All interaction to be through the common GSTN portal- so less public interface between the taxpayer and the tax administration.
- (vi) It will improve environment of compliance as all returns to be filed online, input credits to be verified online.
- (vii) Common procedures for registration of taxpayers, refund of taxes, uniform formats of tax return, common tax base, common system of classification of goods and services will lend greater certainty to taxation system.
- (viii) Timelines to be provided for important activities like obtaining registration, refunds and so forth.

**(C) Benefit to Consumers**

- (i) The final price of goods is expected to be lower due to seamless flow of input tax credit between the manufacturer, retailer and supplier of services.
- (ii) It is expected that a relatively large segment of small retailers will be either exempted from tax or will suffer very low tax rates under a compounding scheme. Purchases from such entities will cost less for the consumers.
- (iii) Average tax burden on companies is likely to come down which is expected to reduce prices and lower prices mean more consumption.

Let us now go through the highlights of Union Budget 2017-18.

## NOTES

**• Overview of the Economy and fiscal deficit**

- o Economic growth expected at 6.5 per cent in 2016-17.
- o IMF expects India to grow at 7.2 per cent in 2017 and 7.7 per cent in 2018.
- o CPI inflation has come down to 3.4 per cent in December 2016 from 6.0 per cent in July 2016.
- o Current Account deficit declined from about 1 per cent of Gross Domestic Product (GDP) last year to 0.3 per cent of GDP in the first half of 2016-17.
- o Foreign exchange reserves have reached US\$ 361 billion as on January 20, 2017.
- o Revenue deficit of 2.3 per cent (of GDP) in Budget Estimates (BE) 2016-17 stands reduced to 2.1 per cent in the Revised Estimates (RE). The Revenue deficit for next year is pegged at 1.9 per cent.

**• Budget Estimates 2017-18**

- o Total receipts (excluding Borrowings and other liabilities) estimated at ₹ 15.16 lakh crore (US\$ 224 billion), a growth of 6.48 per cent.
- o Revenue receipts comprise of ₹ 12.27 lakh crore (US\$ 181 billion) of tax revenues and ₹ 2.88 lakh crore (US\$ 42.7 billion) of non-tax revenues.
- o Total expenditure estimated at ₹ 21.47 lakh crore (US\$ 317 billion), an increase of 6.57 per cent over previous year.
- o Plan / Non-Plan classification to be done away with from 2017-18. Instead, expenditure will now be classified henceforth into 'Scheme' and 'Non-Scheme' expenditure. Every new scheme sanctioned to have a sunset date and an outcome review.
- o Total scheme expenditure expected to be ₹ 9.45 lakh crore (US\$ 139.7 billion).
- o Total non-scheme expenditure expected to be ₹ 12.02 lakh crore (US\$ 177.6 billion).
- o Expenditure on revenue account is expected to be ₹ 18.37 lakh crore (US\$ 271.5 billion), or 85.57 per cent of total expenditure.

**• Financial Performance 2016-17****Receipts**

- o Total receipts (excluding Borrowings and other liabilities) stood at ₹ 14.24 lakh crore (US\$ 210.5 billion) in Revised Estimates (RE), which is more than the Budgeted Estimates (BE) of ₹ 13.77 lakh crore (US\$ 203.6 billion) by ₹ 46,540 crore (US\$ 6.88 billion), led by higher tax collections.
- o Tax revenues stood at ₹ 10.89 lakh crore (US\$ 160.9 billion) in RE, which were more than the BE of ₹ 10.54 lakh crore (US\$ 155.8 billion) by ₹ 34,691 crore (US\$ 5.13 billion), led by higher excise and service tax collections.
- o There was a substantial increase of 21.6 per cent in collection of Union Excise Duties which stood at ₹ 3.87 lakh crore (US\$ 57.2 billion) in RE, an increase of ₹ 68,700 crore (US\$ 10.15 billion) over the BE of ₹ 3.18 lakh crore (US\$ 47 billion).



## NOTES

**Expenditure**

- o Total expenditure was ₹ 20.14 lakh crore (US\$ 297.7 billion) in RE, which exceeded the BE of ₹ 19.78 lakh crore (US\$ 292.4 billion) by ₹ 36,347 crore (US\$ 5.37 billion).
- o Total scheme expenditure expected to be ₹ 9.45 lakh crore (US\$ 139.7 billion). Total non-scheme expenditure expected to be ₹ 12.02 lakh crore (US\$ 177.6 billion).
- o Expense on defence sector was lower by 0.44 per cent or ₹ 1,094 crore (US\$ 161 million) in RE, while that on pensions was higher by 3.89 per cent. Significantly, subsidies expenditure RE was lower by 0.5 per cent than BE.
- **Farmers -**
  - o Target for agricultural credit in 2017-18 has been fixed at a record level of ₹ 10 lakh crore (US\$ 147.8 billion).
  - o Farmers will also benefit from 60 days' interest waiver announced on 31 December 2016.
  - o Coverage under Fasal Bima Yojana scheme will be increased from 30 per cent of cropped area in 2016-17 to 40 per cent in 2017-18 and 50 per cent in 2018-19 for which a budget provision of ₹ 9,000 crore (US\$ 1.33 billion) has been made.
  - o The Long Term Irrigation Fund already set up in NABARD to be augmented by 100 per cent to take the total corpus of this fund to ₹ 40,000 crore (US\$ 5.9 billion).
  - o Dedicated Micro Irrigation Fund in NABARD to achieve 'per drop more crop' with an initial corpus of ₹ 5,000 crore (US\$ 739 million).
  - o Coverage of National Agricultural Market (e-NAM) to be expanded from 250 markets to 585 APMCs. Assistance up to ₹ 75 lakhs (US\$ 110,872) will be provided to every e-NAM.
  - o Dairy Processing and Infrastructure Development Fund to be set up in NABARD with a corpus of ₹ 2,000 crore (US\$ 296 million) and will be increased to ₹ 8,000 crore (US\$ 1.2 billion) over 3 years.
- **Rural Population- Allocation: ₹ 1,87,223 crore (US\$ 27.7 billion)**
  - o Over ₹ 3 lakh crore (US\$ 44.3 billion) were spent on rural areas every year for rural poor.
  - o According to Mission Antyodaya, 10 million households will be brought out of poverty and 50,000 gram panchayats will be made poverty-free by 2019.
  - o Under the Prime Minister Gram Sadak Yojana, ₹ 19,000 crore (US\$ 2.8 billion) has been allocated along with states, while ₹ 27,000 crore (US\$ 4 billion) is expected to be spent in FY18.
  - o Under the Pradhan Mantri Awas Yojana, ₹ 23,000 crore (US\$ 3.4 billion) is allocated for 2017-18 to complete 10 million houses by 2019 for the houseless and those living in kutchha houses.
  - o A sum of ₹ 48,000 crore (US\$ 7.1 billion) allocated for Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS).
  - o Rural livelihood mission has been allocated ₹ 4,500 crore (US\$ 665 million).

## NOTES

- o A 100 per cent village electrification target looks achievable by 1 May 2018
- o PMGSY roads construction accelerated to 133 km roads per day in 2016-17, against 73 km during 2011-14.
- o Women participation in MGNREGS has increased to 55 per cent from less than 48 per cent.
- **Youth**
  - o Skill Acquisition And Knowledge Awareness for Livelihood Promotion program (SANKALP) will be launched at a cost of ₹ 4,000 crore (US\$ 591 million) providing market relevant training to 35 million youth.
  - o Pradhan Mantri Kaushal Kendras to be extended to more than 600 districts across the country for imparting skill education. About 100 India International Skills Centres will be established across the country.
  - o SWAYAM platform to be launched with at least 350 online courses enabling students to virtually attend courses taught by best faculty.
  - o Next phase of Skill Strengthening for Industrial Value Enhancement (STRIVE) will also be launched in 2017-18 at a cost of ₹ 2,200 crore (US\$ 325 million).
  - o Incredible India 2.0 campaign will be launched across the world to promote tourism and employment.
- **The Poor and the underprivileged:**
  - o Mahila Shakti Kendra will be set up with an allocation of ₹ 500 crore (US\$ 73.9 million) in 1.4 million Integrated Child Development Scheme (ICDS) Anganwadi Centres. This will provide one stop convergent support services for empowering rural women with opportunities for skill development, employment, digital literacy, health and nutrition.
  - o Under Maternity Benefit Scheme ₹ 6,000 (US\$ 89) each will be transferred directly to the bank accounts of pregnant women who undergo institutional delivery and vaccinate their children.
  - o National Housing Bank will refinance individual housing loans of about ₹ 20,000 crore (US\$ 2.9 billion) in 2017-18.
  - o Government has prepared an action plan to eliminate Kala-Azar and Filariasis by 2017, Leprosy by 2018, Measles by 2020 and Tuberculosis by 2025.
  - o The allocation for Scheduled Castes has been increased by 35 per cent compared to BE 2016-17. The allocation for Scheduled Tribes has been increased to ₹ 31,920 crore (US\$ 4.7 billion) and for Minority Affairs to ₹ 4,195 crore (US\$ 620 million).
  - o Action plan has been prepared to reduce Infant Mortality Rate (IMR) from 39 in 2014 to 28 by 2019 and Maternal Mortality Rate (MMR) from 167 in 2011-13 to 100 by 2018-2020.
- **Infrastructure**
  - o Provision has been made of ₹ 241,387 crore (US\$ 35.7 billion) in 2017-18 for transportation sector as a whole, including, rail, roads and shipping.
  - o For 2017-18, the total capital and development expenditure of Railways has been pegged at ₹ 1,31,000 crore (US\$ 19.4 billion). This includes ₹ 55,000 crore (US\$ 8.1 billion) provided by the Government.

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- o For passenger safety, a Rashtriya Rail Sanraksha Kosh will be created with a corpus of ₹ 1 lakh crore (US\$ 14.8 billion) over a period of 5 years.
- o Railway lines of 3,500 kms will be commissioned in 2017-18.
- o It is proposed to feed about 7,000 stations with solar power in the medium term.
- o In the road sector, Budget allocation for highways increased from ₹ 57,976 crore in BE 2016-17 to ₹ 64,900 crore (US\$ 9.6 billion) in 2017-18.
- o Total length of roads, including those under PMGSY, built from 2014-15 till the current year is about 1,40,000 kms which is significantly higher than previous three years.
- o Second phase of Solar Park development to be taken up for additional 20,000 MW capacity.
- o For creating an eco-system to make India a global hub for electronics manufacturing a provision of ₹ 745 crore (US\$ 110 million) in 2017-18 in incentive schemes like Modified-Special Incentive Package Scheme (M-SIPS) and Electronic Development Fund (EDF).
- **Financial sector**
  - o Lending target under Pradhan Mantri Mudra Yojana to be set at ₹ 2.44 lakh crore (US\$ 36.1 billion). Priority will be given to Dalits, Tribals, Backward Classes and Women.
  - o In line with the 'Indradhanush' roadmap, ₹ 10,000 crore (US\$ 1.48 billion) for recapitalisation of Banks provided in 2017-18.
  - o Foreign Investment Promotion Board (FIPB) to be abolished in 2017-18 and further liberalisation of Foreign Direct Investment (FDI) policy is under consideration.
  - o A Computer Emergency Response Team for our Financial Sector (CERT Fin) will be established.
  - o Government will put in place a revised mechanism and procedure to ensure time bound listing of identified Central Public Sector Enterprises (CPSEs) on stock exchanges. The shares of Railway PSEs like IRCTC, IRFC and IRCON will be listed in stock exchanges.
- **Digital economy**
  - o A Mission will be set up with a target of 25 billion digital transactions for 2017-18 through Unified Payment Interface (UPI), Unstructured Supplementary Service Data (USSD), Aadhar Pay, Immediate Payment Service (IMPS) and debit cards. A task force has been constituted for rationalisation of human resources in various Ministries.
  - o Banks have targeted to introduce additional 1 million new Point-of-Sales (POS) terminals by March 2017. They will be encouraged to introduce 2 million Aadhar based POS by September 2017.
  - o Aadhar Pay, a merchant version of Aadhar Enabled Payment System, will be launched shortly.
  - o 12.5 million people have adopted the Bharat Interface for Money (BHIM) app so far. The Government will launch two new schemes to promote the

usage of BHIM; these are Referral Bonus Scheme for individuals and a Cashback Scheme for merchants.

• **Public service**

- o A Centralised Defence Travel System has been developed through which travel tickets can be booked online by our soldiers and officers.
- o Web based interactive Pension Disbursement System for Defence Pensioners will be established.

• **Prudent fiscal management**

- o Capital expenditure allocation has been stepped up by 25 per cent over the previous year.
- o Total resources being transferred to the States and the Union Territories with Legislatures is ₹ 4.11 lakh crore (US\$ 60.8 billion), against ₹ 3.60 lakh crore (US\$ 53.2 billion) in BE 2016-17.
- o Fiscal Responsibility and Budget Management (FRBM) Committee has recommended 3 per cent fiscal deficit for the next three years, keeping in mind the sustainable debt target and need for public investment, fiscal deficit for 2017-18 is targeted at 3.2 per cent of GDP and Government remains committed to achieve 3 per cent in the following year.
- o Net market borrowing of Government restricted to ₹ 3.48 lakh crore (US\$ 51.4 billion) after buyback in 2017-18, much lower than ₹ 4.25 lakh crore (US\$ 62.8 billion) of the previous year.
- o Revenue deficit of 2.3 per cent in BE 2016-17 stands reduced to 2.1 per cent in the Revised Estimates. The Revenue Deficit for next year is pegged at 1.9 per cent, against 2 per cent mandated by the FRBM Act.

• **Promoting affordable housing and real estate sector**

- o Under the scheme for profit-linked income tax deduction for promotion of affordable housing, carpet area instead of built up area of 30 and 60 Sq.mtr. will be counted.
- o The 30 Sq.mtr. limit will apply only in case of municipal limits of 4 metropolitan cities while for the rest of the country including in the peripheral areas of metros, limit of 60 Sq.mtr. will apply.
- o Reduction in the holding period for computing long term capital gains from transfer of immovable property from 3 years to 2 years. Also, the base year for indexation is proposed to be shifted from 1.4.1981 to 1.4.2001 for all classes of assets including immovable property.
- o Between 8 November and 30 December 2016, deposits between ₹ 2 lakh (US\$ 2,957) and ₹ 80 lakh (US\$ 118,263) were made in about 10.9 million accounts with an average deposit size of ₹ 5.03 lakh (US\$ 7,436). Deposits of more than 80 lakh (US\$ 118,263) were made in 148,000 accounts with average deposit size of ₹ 3.31 crore (US\$ 489,313).

• **Measures for stimulating growth**

- o Concessional withholding rate of 5 per cent charged on interest earned by foreign entities in external commercial borrowings or in bonds and Government securities is extended to 30 June 2020, including rupee denominated (Masala) Bonds.

## NOTES



## NOTES

- o In order to make Micro, Small and Medium Enterprises (MSME) companies more viable, income tax for companies with annual turnover upto ₹ 50 crore (US\$ 7.4 million) is reduced to 25 per cent.
- o For the purpose of carry forward of losses in respect of start-ups, the condition of continuous holding of 51 per cent of voting rights has been relaxed subject to the condition that the holding of the original promoter/promoters continues. Also the profit (linked deduction) exemption available to the start-ups for 3 years out of 5 years is changed to 3 years out of 7 years.
- o Minimum Alternate Tax (MAT) credit is allowed to be carried forward up to a period of 15 years instead of 10 years at present.
- o Basic customs duty on Liquefied Natural Gas (LNG) reduced from 5 per cent to 2.5 per cent.
- o Allowable provision for Non-Performing Asset (NPA) of banks increased from 7.5 per cent to 8.5 per cent.
- **Promoting digital economy**
  - o Under scheme of presumptive income for small and medium tax payers whose turnover is up to ₹ 2 crore (US\$ 295,658) at present, 8 per cent of their turnover which is counted as presumptive income is reduced to 6 per cent in respect of turnover which is by non-cash means.
  - o No transaction above ₹ 300,000 (US\$ 4,435) will be permitted in cash subject to certain exceptions.
- **Transparency in electoral funding**
  - o A political party can receive a maximum of ₹ 2,000 (US\$ 30) in cash from one person.
  - o Every political party would have to file its returns within the time prescribed in accordance with the provision of the Income-tax Act.
  - o Existing exemption to the political parties from payment of income-tax would be available only subject to the fulfilment of these conditions.
- **Ease of doing business**
  - o Threshold limit for audit of business entities who opt for presumptive income scheme increased from ₹ 1 crore (US\$ 147,829) to ₹ 2 crore (US\$ 295,658). Similarly, the threshold for maintenance of books for individuals and HUF increased from turnover of ₹ 10 lakhs (US\$ 14,783) to ₹ 25 lakhs (US\$ 36,957) or income from ₹ 1.2 lakhs (US\$ 1,774) to ₹ 2.5 lakhs (US\$ 3,696).
  - o Under scheme for presumptive taxation for professionals with receipt upto ₹ 50 lakhs (US\$ 73,914) p.a. advance tax can be paid in one instalment instead of four.
  - o Time period for revising a tax return is being reduced to 12 months from completion of financial year, at par with the time period for filing of return.
- **Personal income-tax**
  - o Existing rate of taxation for individual assesses between income of ₹ 2.5 lakhs (US\$ 3,695) to 5 lakhs (US\$ 7,391) has been reduced to 5 per cent from the present rate of 10 per cent.

## NOTES

- o Surcharge of 10 per cent of tax payable will be levied on categories of individuals whose annual taxable income is between ₹ 50 lakhs (US\$ 73,914) and ₹ 1 crore (US\$ 147,829). The surcharge of 15 per cent for annual taxable income above ₹ 1 crore remains.
- o Individuals having taxable income upto ₹ 5 lakhs (US\$ 7,391) other than business income can file a simple one-page form as income tax return.
- **Goods and services tax (GST)**
  - o The GST Council has finalised its recommendations on almost all the issues based on consensus on the basis of 9 meetings held.
  - o Preparation of IT system for GST is also on schedule.
  - o The extensive reach-out efforts to trade and industry for GST will start from 1 April 2017 to make them aware of the new taxation system.
- **RAPID (Revenue, Accountability, Probity, Information and Digitisation)**
  - o Maximise efforts for e-assessment in the coming year
  - o Enforcing greater accountability of officers of Tax Department for specific act of commission and omission.

## B. Non-Tax Revenues

1. Non-tax sources of public revenues are defined as payment made to the Government for which there is a quid pro quo (an exchange of goods or services, where one transfer is contingent upon the other). However, these non-tax sources do not have similar features and are classified into three categories:
  - First, there are some sources that are compulsory and required payments. These sources include penalties (other than penalties on non-compliance of taxes) and fines.
  - The second category consists of voluntary and unrequited receipts. These payments include donations and contributions made to the Government or any unclaimed funds lying with the Government.
  - The third category comprises voluntary and required payments, including revenue earned from the resources owned by the Government such as forest, marine, riparian habitats and wildlife. This category also has revenue earned by sale of usage rights, admission fee, as well as the royalties and rental payments received by the Government. Income earned in the form of dividends and the interest receipts from investments made by the Government also fall into this category. Interest, profits and dividends arising from the States' commercial undertakings are also included in this category.

## Administrative non-tax receipts

This source accounts for about three-fourths of the States' own non-tax revenue. In the future, this is likely to be the most productive and reliable source of non-tax revenues for the States. Three broad components of administrative receipts, viz. general services, social services, and economic services.

- (i) **Receipts from general services:** These comprise receipts from Public Service Commission, Police, Jails, Supplies and disposals, Stationery and printing, Public works, Other administrative services, Contribution and recoveries towards pension and other retirement benefits, and Other miscellaneous general services.



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(ii) **Receipts from social services:** The major items that come under this class are (a) Education, sports, arts and culture, (b) Medical and public health, (c) Family welfare, (d) Water supply and sanitation, (e) Housing, (f) Urban development (g) Information and publicity, (h) Labour and employment, (i) Social security and welfare, and (j) Other social services.

(iii) **Receipts from economic services:** Major items under this class are (a) Crop husbandry, (b) Animal husbandry, (c) Dairy development, (d) Fisheries, (e) Forestry and wild life, (f) Co-operation, (g) Other agricultural and rural programmes, (h) Special area programmes, (i) Major and medium irrigation, (j) Minor irrigation, (k) Village and small scale industries, (l) Industries, (m) Non-ferrous mining and metallurgical industries, (n) Roads and bridges, (o) Tourism, and (p) Others.

**User charges**

The non-tax revenue in lieu of the provision of goods and services by the Government is derived through 'user charges'. These charges indicate payments that are administratively determined for the goods and services provided by the Government. As stated by the OECD, these are required payments. However, the link between payments and services provided may vary considerably in terms of degree of cost recovery. These include payments in exchange for non-capital goods and services—e.g. charges for education and health; entry charge for museum, parks, etc.; and rent for housing.

However, the OECD definition is subject to some ambiguities as it distinguishes between capital, and non-capital goods and services. The Government is providing capital goods in the form of urban infrastructure. These are used for domestic as well as for industrial purposes and accordingly, the user charges should also vary.

**Current status of non-tax revenues in India**

Non-tax revenues grew at a compound annual rate of 7.6 per cent in the 10 years ending 2009-10. The spurt in 2010-11 owed to higher-than-budgeted realization from the proceeds of auction of telecom 3G/broadband wireless access spectrum. As against the estimated revenue of ₹1,25,435 crore in 2011-12 (BE), the realization fell marginally short at ₹1,24,307 crore notwithstanding the fact that the auctions of telecom spectrum and phase III FM Radio which were to bring in ₹14,600 crore could not take place. Budget 2012-13 estimated a growth of 32.0 per cent over 2011-12 (RE) in non-tax revenue mainly on account of estimated receipts of ₹40,000 crore from the telecom spectrum auction. As the 2G telecom spectrum auction elicited lukewarm response on account of the high reserve price in the current year, the government has revised the reserve price downwards. As such, the proceeds from this component are as yet an important risk to the actual fiscal outcome for 2012-13. The other main component is dividends and profits which have also in the past exhibited sluggish growth.

**3.4 CANONS OF TAXATION**

A tax system (that is, the set of all taxes) for achieving certain objectives, chooses and adheres to certain principles which are termed its characteristics. A good tax system, therefore, is one which is designed on the basis of an appropriate set of principles, such as equality and certainty. Mostly, however, objectives of taxation conflict with each other and a compromise is needed. Therefore, usually economists select some important

objectives and work out the corresponding principles which the tax system should adhere to. The first set of such principles was enunciated by Adam Smith (which he called Canons of Taxation).

Adam Smith was interested in the ways by which an economy can increase its productive capacity and thereby achieve a higher rate of growth. Further, he was of the firm view that private sector is more efficient than the public one and, therefore, the primary responsibility of economic growth should rest with the private sector. Economic growth necessitates large scale saving and investment. It is also essential that the investment should be along productive lines. All told, therefore, he was of the view that the private sector should be entrusted with the maximum possible economic responsibility for an efficient discharge of which it should be given as much freedom as possible. The only additional consideration should be the adequacy of revenue for the State (for its own maintenance, for defence, for law and order, and for social overheads) and an equitable distribution of the tax burden. With this end in view, he laid down those principles of taxation which were to satisfy these conditions.

The four canons of taxation as prescribed by Adam Smith are the following:

1. **Canon of equality:** 'The subjects of every State ought to contribute towards the support of the government, as nearly as possible, in proportion to their respective abilities; that is, in proportion to the revenue which they respectively enjoy under the protection of the State.' This canon tries to observe the objective of economic justice. It dictates that in absolute terms the richer should pay more taxes because without the protection of the State they could not have earned and enjoyed that extra income. If we interpret this principle in terms of disutility which the tax payers suffer by paying taxes, it follows that the tax should impose equal marginal disutility upon every tax payer. Two possibilities emerge in this case. If incomes are subject to constant marginal utility, then both the rich and the poor should be subjected to proportional taxation each person paying a given percentage of his income as tax. On the other hand, if we agree with the more realistic proposition that income is subject to diminishing marginal utility, then the richer should pay a larger proportion of their incomes as taxes (that is, the taxes should be progressive).
2. **Canon of certainty:** This canon is meant to protect the taxpayers from unnecessary harassment by the 'tax officials'. 'The tax which each individual is bound to pay ought to be certain, and not arbitrary. The time of payment, the manner of payment, the quantity to be paid, ought all to be clear and plain to the contributor, and to every other person.' The taxpayers should not be subject to arbitrariness and discretion of the tax officials, since that breeds a corrupt tax administration. With a scope for arbitrariness even an honest tax machinery will become unpopular. Smith is so emphatic about this principle as to claim 'that a very considerable degree of inequality... is not near so great an evil as a very small degree of uncertainty.'
3. **Canon of convenience:** The mode and timings of tax payment should be, so far as possible, convenient to the taxpayer. This canon recommends that unnecessary trouble to the taxpayer should be avoided, otherwise various ill effects may result.
4. **Canon of economy:** This canon recommends that cost of collection of taxes should be the minimum possible. It is useless to impose taxes which are too widespread and difficult to administer. These taxes entail an unnecessary burden

**Check Your Progress**

3. What is meant by a direct tax?
4. What is an indirect tax?

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upon the society in the form of additional administrative expense. The productive efforts of the people suffer due to this wastage. Realizing that the tax collections are being wasted, the taxpayers also tend to evade them.

These canons of taxation have a sound philosophy behind them and exhibit an insight into the practical aspects of tax administration and its effects. However, in view of developments in economic philosophy and problems of a modern State, a few additional principles were also suggested by later writers. A brief description of these is as follows:

1. **Canon of productivity:** It is also called the canon of fiscal adequacy. According to this principle the tax system should be able to yield enough revenue for the treasury and the government should have no need to resort to deficit financing.
2. **Canon of buoyancy:** The tax revenue should have an inherent tendency to increase along with an increase in national income, even if the rates and coverage of taxes are not revised.
3. **Canon of flexibility:** It should be possible for the authorities, without undue delay, to revise the tax structure, both with respect to its coverage and rates, to suit the changing requirements of the economy and of the treasury.
4. **Canon of simplicity:** The tax system should not be too complicated. That makes it difficult to understand and administer and breeds problems of interpretation and legal disputes.
5. **Canon of diversity:** It is risky for the State to depend upon too few sources of public revenue. Such a system is bound to breed a lot of uncertainty for the treasury. It is also likely to be inequitable as between different sections of the society. On the other hand, if the tax revenue comes from diversified sources, then any reduction in tax revenue on account of any one cause is bound to be very small. However, too much multiplicity of taxes is also to be avoided. That leads to unnecessary cost of collection and violates the canon of economy.

In general, we must remember that the tax structure is a part of the economic organization of a society and should, therefore, fit in its overall economic philosophy. No tax system that does not satisfy this basic condition can be termed a good one. Over time, therefore, ideas regarding what should form a good tax system have undergone an evolution.

### 3.5 BENEFIT APPROACH OF TAXATION

This theory proceeds on the assumption that there is basically an exchange or contractual relationship between taxpayers and the State. The State provides certain goods and services to the members of society and they contribute to the financing of these supplies in proportion to the benefits received by them. In this *quid pro quo* set up, there is no place for issues like equitable distribution of income and wealth. Instead, the benefits received are taken to represent the basis for distributing the tax burden in a specific manner. This theory overlooks the possible use of tax policy for bringing about economic growth or economic stabilization in the country.

Services supplied by the State may be divided into two categories. The first category consists of those services to which the principle of exclusion does not apply. In this case every member of the society consumes these services and, therefore, should contribute to the State revenue in accordance with the benefits received. But the other category is the one where the taxpayers have the option to accept or reject the State services. Here a market relationship is established between the two and, therefore,

what the members of the society pay are the fees and the prices and not the taxes in strict sense of the term. Taxes are by definition compulsory payments without *quid pro quo* and this condition is not satisfied in this case.

The Benefits Received Theory has a long dated origin and its roots lie in the contract theory of the State. A fuller survey of the evolution of this theory is available in Professor Edwin R. Seligman's *Progressive Taxation in Theory and Practice*. The theory was in vogue with German, French and other writers like Grotius, Hobbes, Locke, Hume and Rousseau. Its main theme is that there is a contractual relationship between the State and its subjects such that the State provides various goods and services and the citizens finance their provision by paying taxes.

#### Hurdles

As in the case of other theories, several problems crop up in its practical application. Since tax burden is to be distributed between taxpayers in proportion to the benefits received by them from State services, the authorities have to identify the beneficiaries and quantify the benefits derived by them. This, however, is not an easy task.

- (i) Benefits derived from State services are closely related to the distribution pattern of income and wealth in the country. It is so because amongst other things, income distribution is a major determinant of demand pattern including demand for State services. Therefore, it has to be assumed that the existing distribution of income and wealth is an appropriate one and there is no need to change it.
- (ii) Benefit derived by an individual from State services is ultimately a subjective thing and it is conditioned not only by the State services enjoyed by the individual under consideration, but also the availability of these services to other members of the community as also the attitudes of their beneficiaries. There is no standard of the community as also the attitudes and, as a result, depending upon the set of format or pattern of these attitudes, a given amount and variety of State services attitudes of community members, may yield divergent measures of derived benefits.
- (iii) It is possible that State services may lead to a net addition to or reduction in national income. This theory does not tell us what to do in this case.
- (iv) Several State services have spillover effects, and frequently it is very difficult to pinpoint the losers and gainers and quantify their losses and gains. For example, provision of health services to residents of a locality is likely to have a beneficial impact upon the health of the neighbouring colonies as well. Again, if a slum area is improved by the State, some of those living in nearby palatial houses may be happier for it, while some others may feel that their comparatively 'higher' status has been compromised.
- (v) This theory does not tell us whether the losers are to be compensated by the state or not, and if so, who pays for that.

Since, in the ultimate analysis, benefit derived from State services is a subjective thing, there is no scientific way of quantifying it. At the most, it may be possible to consider some proxy variables or widely approved criteria.

For example, income is often used as an indicator of the benefits received from the State. This is because the society and its economy cannot be preserved without State protection. Members of the society can also earn and consume income and possess and enjoy wealth only if the State makes laws to that effect and enforces them. By implication, their tax liabilities should also be proportional to their income and wealth.

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#### Check Your Progress

5. What does the canon of simplicity stand for?
6. What is a good taxation system?

## NOTES

This was the stand taken by Adam Smith when he said that each individual ought to contribute to the public revenue according to his ability. Smith equated relative ability to pay off the taxpayers with incomes which they respectively enjoyed under State protection. Thus, in due course, the benefits approach gradually came to reflect a philosophy that taxation was basically a payment for the protection provided by the State.

It is, of course, interesting to note that even this narrow reasoning permitted contradictory results. Diametrically opposite opinions were expressed as to who was in greater need of State protection, the rich or the poor. Thus, while Rousseau and Sismondi argued that the rich needed greater protection of the State, John Stuart Mill and others thought that the poor were in greater need of protection from exploitation by the rich. Thus, while one group of thinkers advocated progressive taxation, the other was in favour of regressive rates.

In late nineteenth and early twentieth centuries, the Benefits Received Theory was put to an additional use in simultaneously determining the optimum level of State activities and optimum distribution of tax burden. To this end, the concepts of demand and supply schedules were extended to demand for and supply of State services in varying details. In each model, taxpayers were treated as buyers of State services with respective demand schedules and the government was treated as the supplier of these services. The basic problem was that, in several cases, it was not possible to determine demand schedules with any precision and taxes had to be charged by making certain simplifying assumptions.

In this connection, we may start with an Italian thinker, U. Mazolla (1863–1899) famous for his contribution to the theory of public goods. In 1880, he asserted that there is a basic difference between the characteristics of private and public goods in the sense that the latter are all shared by the consumers and the principle of exclusion does not apply to them. Accordingly, instead of charging equal tax from each taxpayer for public goods, their liability should be determined in proportion to the relative marginal utility derived by them from the consumption of State services. In the process, each taxpayer would equate the marginal utility from his expenditure on the public and private goods.

In 1887, Emil Sax, an Austrian economist, made a distinction between personal collective wants and collective wants proper. The principle of exclusion applies to the former and, in their case, fees or taxes can be charged according to the services received. But in the latter case, the principle of exclusion does not apply. No individual consumer can be left out of the benefit of these services. Accordingly, in this case the taxpayers have to agree as to what is the relative benefit which they derive from their respective consumption of public services. Sax advocates that a good proxy of the measure of this relative benefit would be the proportional income tax.

In 1888, Antonio de Viti de Marco (another Italian economist) made an assumption similar to that of Sax that the members of the society consume public services in proportion to their incomes. This assumption should have led him to advocate proportional taxation. But he also brings in the question of marginal utility of income to the taxpayers. Since larger incomes bring in lower marginal utility, the richer citizen ought to pay more for the same service. De Marco, like Adam Smith, then brings in a mixture of the benefit approach with that of the equitable distribution of sacrifice which is represented by ability to pay approach. He is not asserting that the richer people secure greater benefit from State services, as is maintained by some others. The richer, therefore, are not to pay more taxes because of greater benefits, but because of lesser sacrifice involved in paying more taxes. They are to pay more taxes because proportional taxation hurts the poorer more

and the richer less. It is the equitable distribution of sacrifice which leads us to recommend that the richer sections should pay more taxes.

## Voluntary Exchange

In 1896, Knut Wicksell (a Swedish economist) provided an ethical footing for the Benefits Received Theory in the form of voluntary revelation, by taxpayers, of their demand schedules for State services. He defended the Benefits Received Theory on the ground that it allowed taxpayers to opt out of a State service. His basic tenet was that a tax system should be based upon *voluntary and unanimous action* of the taxpayers. However, this suggestion suffers from some inherent drawbacks.

- (i) **Self-contradictory:** If division of tax burden is to be based only upon voluntary disclosures by the taxpayers, its role to bring about equitable distribution of income and wealth is ruled out. Wicksell admits that an equitable income distribution is a precondition for his theory to be applicable.
- (ii) **Revealing demand schedules:** As of now, there is no effective and reliable mechanism whereby the taxpayers can be forced to reveal their true demand schedules for each State service. Various voting models propounded by thinkers end up as theoretical exercises only.

## Lindahl's Solution

A formal and rigorous formulation of the benefits received approach was provided within a framework of *voluntary exchange theory* of public finance by Erik Lindahl of Sweden in 1919. He assumes that the society has only two consumers of State services, say A and B. They are to jointly bear their entire supply cost incurred by the State such that if A pays more for it, B has to pay less and vice versa. He further assumes that both A and B reveal their true demand schedules for the said State services. The State services are subject to the law of diminishing marginal utility for both consumers, thereby generating downward sloping demand curves for them. Accordingly, their vertical addition represents the demand curve of the society as a whole. Thus, an intersection of the demand and supply curves of the State services would simultaneously determine (a) the demand and supply curves of the State services would simultaneously determine (a) the aggregate volume of State services, (b) their equilibrium division between A and B, and (c) the allocation of their supply cost between them, that is, their respective 'tax burden'.

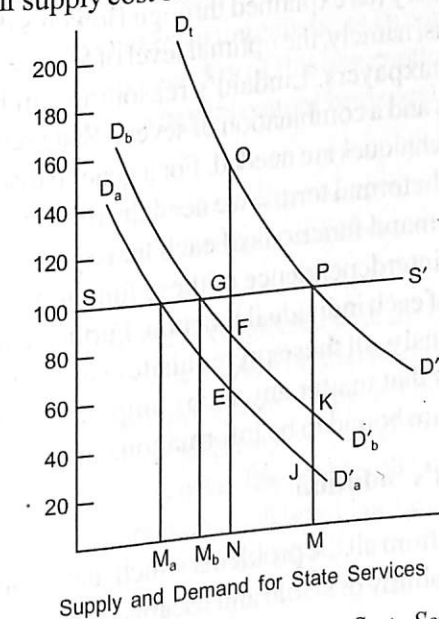


Fig. 3.2 Supply and Demand for State Services

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Lindahl's theory has been explained by Howard R. Bowen with the help of a simple diagram (see Fig. 3.2). Let  $SS'$  be the supply schedule of the State services in the sense that this is the per-unit cost of their alternative amounts. Let there be two members of the society, A and B. A has a given demand schedule for the public services. Keeping in mind the fact that whatever be the supply of State services, they would be consumed jointly by both A and B. Mr A agrees to contribute different proportions of the cost of supplying those services to the community. Larger the proposed supply of the State services, smaller is the part of the per-unit cost which he is ready to bear. Of course, whether his absolute contribution would increase or fall depends upon his elasticity for demand for the State services. Thus, for a supply of less than  $OM_a$  units of State services, Mr A is ready to bear more than their full cost. For supplies larger than  $OM_a$ , his desired contribution per unit is smaller. For example, he is ready to contribute only  $NE$  per unit (out of the total cost of  $NG$  per unit) of the State services when their supply is equal to  $ON$ . In the same manner, the demand schedule of the individual Mr B is found out. Now since, for example, for a supply of  $ON$  of State services to be jointly consumed by both A and B, Mr A is ready to contribute  $NE$  and Mr B is ready to contribute  $NF$ ; therefore, the State can collect a tax revenue of  $NQ$  per unit of State services. The point  $Q$ , therefore lies on the combined demand schedule for State services. In this way, by vertical addition of the two demand curves, we can get the community's demand schedule for the State services, namely  $DD'$ . Now note that at  $ON$ , the cost of supply is only  $NO$  per unit. Since the State is not interested in making a profit out of the supply of services, it respects the desire of the taxpayer and increases the supply of State services. But for increased supplies, each taxpayer is ready to contribute a smaller proportion of the cost. Eventually, we find that for a supply of  $OM$  of State services, the combined contribution by the taxpayers ( $MJ + MK = MP$ ) equals their cost of supply. This is the position where the combined demand curve  $DD'$  intersects the supply curve  $SS'$ . Thus, equilibrium, on a voluntary exchanges basis, is achieved at this position where the State supplies services equal to  $OM$  at a per unit cost of  $MP$  out of which Mr A contributes  $MJ$  per unit and Mr B contributes  $MK$  per unit.

No basic difference to the argument is made if the State services are subject to the law of increasing or diminishing costs resulting in a non-horizontal supply curve. The only change will be in the proportion of taxes contributed by taxpayers.

Thus, Lindahl's theory (as explained through Bowen's diagram) tries to provide an answer to two questions, namely, the optimal level of State activities and allocation of tax burden between the taxpayers. Lindahl's reasoning can be extended to cases of more than two individuals and a combination of several State services. For this, however, complex mathematical techniques are needed. In formal terms, we need the relevant sets of cost functions of state services, and the demand functions of each taxpayer for each state service. The constraints covering the interdependence of these functions have also to be specified along with specification of each individual function. Further, each of these functions has to be a stable one. Obviously, all these prerequisites cannot be easily satisfied which makes Lindahl's (and for that matter any such complicated theory) difficult to apply, especially because there are bound to be information gaps in our specifications.

### Limitations of Lindahl's Solution

Lindahl's solution suffers from all the problems which mathematical models suffer from, particularly the non-availability of stable and useable data.

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Firstly, it starts with a case of two individuals in which each individual bases his demand schedule for the state services on the assumption that the contribution of the other individual to the cost of supplying state services is given. Such a state of affairs creates a situation analogous to the determination of price under duopoly and is not likely to yield a stable solution without highly rigorous assumptions, and that too would depend upon the position which is assumed to exist at the beginning and our assumptions regarding the bargaining strength of A and B.

Secondly, even if all the functions are specified and stable, the actual solution becomes so cumbersome that it is of very limited practical value.

Thirdly, it is totally unrealistic to assume that we can ever know the true preferences of individual taxpayers. By definition, public goods, to which the principle of exclusion does not apply, are expected to be in the public sector. Since no individual can be denied the use of such public goods, each taxpayer would have an inherent tendency to understate his preferences for them. This means that in the case of public goods, every individual has an incentive to be a free rider. Brown and Jackson add that in a small society, the contribution by each individual to the total cost of supplying a public good would be significant, so that if he tries to be a free rider, the supply of the public good would be significantly reduced. It implies that there is a *disincentive* for concealing one's true preference in a small society. In a large society, however, the incentive for concealing one's true preference and an effort to be a free rider assumes greater possibility. In the case of private goods, on the other hand, the incentive for distorting the preferences is greater in a smaller society. Brown and Jackson think, however, that even in the case of a small group, voluntary agreements are not likely to produce a Pareto efficient supply of public goods. This would be caused by the fact that even in a small group, each individual would reveal his preference (so as to get a share of the public good) and misrepresent his preference (so as to minimize his share of its cost). Ordinarily, therefore, neither a set of decentralized markets, nor a central planning system, nor a set of voluntary agreements is likely to produce a Pareto efficient supply of public goods unless the taxpayers reveal their true preferences.

Fourthly, in actual practice, individual taxpayers hardly get a chance to express their preferences. Their preferences are expressed on their behalf by the legislatures or the executive authority and such a system is bound to be an imperfect one.

Fifthly, Lindahl's theory makes an unrealistic assumption that the distribution of pre-tax income is optimal. The non validity of this assumption indicate the fact that the demand schedules of individual taxpayers cannot be expected to represent true needs and preferences of the society.

Sixthly, Lindahl's theory is based on the assumption that the State activities are financed only through taxation and not through public borrowings and use of the printing press etc.

Seventhly, there are also problems connected with the derivation of demand curve for a public good. The usual technique should be that of indifference curves and their points of tangency with given budget price lines. The price ratio would reflect given sets of prices of both public and private goods. However, apart from the problems connected with the determination of indifference curves themselves, there is the difficulty of deciding as to whether it is real or money income which would be held constant. Opinions differ in this regard. Bowen wants to hold real income constant, while Musgrave chooses the money income. Buchanan uses the technique of marginal valuation curve which is the locus of tangency of indifference curves with budget price lines on the assumption that

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the price ratio between public and private goods remains unchanged. Obviously, a change in price ratio would generate a new marginal valuation curve.

Eighthly, Lindahl's solution ignores the fact that the very existence of State means a resource cost for the society. This cost has its own floor level below which it cannot be pushed. And this floor level itself is determined by several exogenous and endogenous variables. One such variable is the minimum size of the State machinery, its cost and its efficiency. Another such variable is the internal and external political situation faced by it. Thus an unpredictable and, to an extent, an indeterminable cost of the State and its primary functions has to be recovered from the members of the society with no reference to their demand for State services. In addition, a resource cost has also to be incurred on extracting the preference pattern of each member of the society.

And lastly, we must note that the pricing of public and private goods are not independent of their supplies. Demand curves for public goods are derived on the assumption that these prices remain unaffected by scale of their production. In other words, the solution of the problem has to be a simultaneous one with the recognition that all these variables are interdependent.

Lindahl's theory, which is a refinement of Wicksell's theory, is primarily aimed at telling us the way a society should choose an optimum level of output of public goods and the way the burden of their provision should be shared between members of the society. In practice, as seen above, there are various limitations of this theory. Moreover, in itself Lindahl's theory is couched in partial equilibrium terms. Various attempts have been made by later economists to extend it to the field of general equilibrium, but they are all based upon some stringent assumptions. Since the main emphasis of Lindahl's theory is to provide rules for determining an equitable distribution of tax burden, it implies that justice is realized if the equilibrium is Pareto optimal. This equilibrium is such that no individual could be made better off without someone else being made worse off. And this, in turn, implies complete unanimity. Doubts can be expressed regarding adjustment process also by which this final equilibrium is reached.

### Limitations of the Benefits Received Approach

The shortcomings of the Benefits Received Theory are the following:

1. The main difficulty in this approach is that basically the contributions by members of the society to the State treasury for the provision of State services are not strictly taxes. *They are in the nature of prices* which the members of the society voluntarily agree to pay for the public services rendered to them. Even when the decisions regarding the supply of public services and the respective contributions by the members of the society are taken not on individual basis, but on the basis of some representative body such as the parliament, or on a majority voting basis, prices only partially acquire the character of taxation (i.e., compulsory payment without any necessary *quid pro quo*).
2. It is impossible to quantify the benefits derived by individual members of the society. Benefit is ultimately a subjective thing and cannot be estimated directly. Any proxy variable used for this purpose will always be subject to discussion. And quite often diametrically opposite results may be arrived at on account of this difference in the interpretation of the benefits. Thus, some authors take income as the representative of the benefits received. In itself, this is a questionable index especially if we do not look into the expenditure pattern of the State. For example it would be wrong to maintain that the benefit of State services derived by two

individuals would be equal with one of them getting a State pension of ₹100 per month and the other earning that very amount by own labour.

3. It is assumed that the benefits derived by consumers of State services are independent of each other. It means that the benefit that any individual enjoys depends only upon his own consumption of State services and that it makes no difference to him as to who else is consuming them and how much. This is a factually incorrect statement. We all know, for example, that the satisfaction that one derives from his income depends not only upon his own absolute income, but also equally upon the income of others. Moreover, there is no way of knowing the *nature and extent* of this interdependence on *a priori* basis. A rich person may feel better on account of the fact that his income is far bigger than those of the others. Or he may feel depressed because there is poverty around him. It is highly unlikely that he would be totally indifferent to the income received by others. In the same manner, the benefits derived from State expenditure do not depend only upon their absolute amount consumed by a given individual, but also upon how he views the consumption-shares of others.
4. This principle falls foul of all welfare activities of the State which bring in any distributive change. 'For example, the benefit derived by an old-age pensioner from his pension is definite enough, and the benefit of service principle would require him to return it to the public treasury in the form of a special tax.' Though, quite erroneously, this principle assumes that the distribution of income is already proper, still such a proper distribution might be the result of the State activities themselves. If the State taxes according to the benefits received, the net result might be an improper income distribution. Therefore, the assumption that income distribution is already proper is obviously erroneous. An important objective of most fiscal policies is to bring about a shift towards what is considered an equitable income distribution. The benefit principle militates against this possible objective. The relationship of the State with its citizens is reduced to a semi commercial level only.
5. It is equally questionable to assume that the income received by a member of the society is directly connected only with the benefits received from the State. The exact relationship between the income of an individual and the valuation of the benefits received from the State services is not always clear and quantifiable. Looked at from one angle, it may be said that income is subject to the law of diminishing marginal utility and as a result the richer people derive proportionately lesser benefit from the State activities. It may also be asserted that the poor are in greater need of the State protection so as to be saved from exploitation by the rich. That is why the State has to enact all kinds of labour legislation and enforce the same. The other view here could be that the richer sections can enjoy their wealth and income only because of the State protection of their rights. If the State derecognizes their rights, they will lose this privilege. Therefore, the richer sections need and get a larger measure of State protection. Also, in practice, we know that enactment of various laws and traditions enable the richer classes to have much wider and profitable opportunities of acquiring additional income. The opportunities to the poor are always inadequate.
6. It must be remembered that a society is not just the summation of its individual members. As German writers have the tradition of insisting upon, a society is an organic entity, having a soul of its own in addition to being the sum total of its

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- members. Accordingly, there are many benefits and costs which cannot be ascribed to any particular individual or a group of individuals. The existence of the society and the nature of some goods is such that there are externalities of those goods. Mention has already been made of such externalities while discussing public goods. The problem, therefore, remains that of assigning the net benefits and the tax burden. There are certain State activities, such as those helping the economy in its economic growth, which cannot be quantified at all much less ascribed to any particular sections of the society.
7. In a number of cases people suffer from a lack of complete knowledge. A particular State service may be of great help to the society and even to the individual taxpayers, but it may not be widely known. In India, for example, quite a few villagers may not be able to appreciate the benefits of polio vaccination and similar other health measures. It will be misleading on our part to assume that these villagers would be voluntarily opting for the provision of these health measures and would also offer to pay for the same.
  8. A modern economy is generally faced with the problems of economic growth (in the case of underdeveloped economies) and/or of stabilization (especially in the case of developed economies). Benefits approach is not able to guide the government in this sphere because the benefits accruing to the economy as a whole cannot be apportioned amongst individual members of the society.
  9. The Benefits Received Theory does not become more acceptable even if we take up a more rigorous and formal statement of Erik Lindahl. Lindahl's approach necessitates that each taxpayer should reveal his true preferences. Firstly, it may not happen especially when each taxpayer finds that it may be possible to achieve a better position by showing a lesser demand for State services (or public goods). Ultimately, it becomes a question of the strategy and bargaining power and no single equilibrium solution becomes available. Secondly, the problem becomes all the more complicated when the number of taxpayers is more than two, as is always the case. With a large number of taxpayers, any individual taxpayer will find that his non contribution to the public revenue does not adversely affect the State expenditure or the supply of public goods proper. Accordingly, each taxpayer has the tendency to evade tax and conceal his true preferences. And unless true preferences of the members of society are known, decisions regarding the nature and extent of public services cannot be taken; nor can the allocation of the cost of services be made. Thirdly, in some cases, the whole approach can lead to a very absurd result. For example, realizing that his contribution as a taxpayer would not effect the defence effort of the country, each taxpayer might refuse to contribute for it. Should it mean that the true preference of the society is not to be protected against foreign aggressions? Obviously, we have been led to a wrong conclusion by the concealment of true preferences by the society.
  10. Wicksell and Colm emphasize the basic fact that the determination of the State budget is through a political process and not through the market mechanism of demand and supply forces. The State organization might work through an elected legislature or through a bureaucracy or some such other method, but it is certainly not a market process in which demand and supply forces determine the extent of each service and its price to be charged from the individual consumers. Furthermore, Colm also points out that apart from the fact that the State budget is determined through a political process, an individual also changes his outlook

while taking decisions about the taxes. In the latter case, he does not go by his own individual interest only. He also has in mind the political factors including what type of society he wants to have around him and the way in which tax contributions can help in its building.

11. A general objection to this theory is its non recognition of the objective of equity in taxation. Though it is occasionally mentioned, it is not generally accepted as a part of this theory.
12. Similarly, in this theory, the relationship between the government and the public is reduced to the one of a semi-commercial nature. Several basic functions of a good government like helping the needy, protecting the helpless and so on are ruled out in this theory.
13. This approach does not tell us what to do if tax collections based on Benefits Received Method do not match the government expenditure needs. Should the government then resort to budgetary savings or market borrowings? Also no interconnection between tax collections and other sources of government revenue like gifts, profits from currency and so forth, is brought to the forefront.
14. Different economic units are interdependent in an economy through their mutual economic transactions. As a result, the benefits or losses of government activities seldom remain confined to their first points of impact. Almost invariably, there are additional rounds of benefits or losses to the economy. This approach does not advocate taxing the secondary, tertiary and later beneficiaries.
15. The benefits received principle of taxation is based upon the assumption that market mechanism fails to supply goods and services which have a quality of publicness in them. It assumes that these goods and services are so important that arrangements should be made for their supply. This, in turn, implies that the State should undertake the supply of these goods and services and charge for them from their beneficiaries. Samuelson has been a strong supporter of the view that only public sector can supply those goods which are non rivalrous in production. The latter characteristic implies that its consumption by one does not deprive others from its use. However, this characteristic also leads to the inference that its marginal cost is zero and, therefore, it is not possible to establish a correspondence between its cost to the supplier and the benefit to its users. This weakens the very theoretical basis of financing the supply of a public good on benefit principle. Moreover, various theoreticians have emphasized the difficulties associated with identifying goods and services that not only contain the characteristics of publicness, but also retain them. The Paretian type theorizing of welfare maximization couched in static terms becomes debatable in this case, since the characteristics of publicness in many goods tend to vary with the techniques of production and areas of consumption.

### 3.5.1 Ability to Pay

This theory has enjoyed widespread popularity right from sixteenth century till date, particularly it sub-serves the ends of a modern welfare State. The well-known advocates of this theory include Rousseau, J. B. Say, Adam Smith, J. S. Mill, among others. It has been used as a theoretical underpinning for several policy prescriptions like progressive taxation, reduction in income and wealth inequalities, and removal of regional disparities.

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This theory views tax liability in its true form—compulsory payment to the State without any *quid pro quo*. It does not assume any commercial or semi commercial relationship between the State and the citizens. According to this approach, a citizen is to pay taxes just because he can, and his relative share in the total tax burden is to be determined by his relative paying capacity. This doctrine has been in vogue for at least as long as the Benefits Received Approach. A good account of its history is found in Seligman. This theory was bound to be supported by socialist thinkers because of its conformity with the ideas and concepts of justice and equity. However, the doctrine received an equally strong support from non socialist thinkers as well and became a part of the theory of welfare economics.

*The basic tenet of the ability to pay doctrine is that the distribution of tax burden between members of society should be on the criteria of justice and equity which, in turn, implies that the tax burden should be apportioned according to their relative ability to pay. In this connection, the following points are particularly noteworthy.*

- The doctrine of ability to pay is also combined, in certain cases, with the objective of maximum welfare of the society. This happens when the index of paying ability is compiled on the basis of equi marginal sacrifice. In that case, the society undergoes *least aggregate sacrifice* in meeting a given tax liability.
- The ability to pay of the society as a whole is *not an absolute but a variable quantity* and depends upon a number of variables including the expenditure side of the government budget.
- Analysts have identified several indices for quantifying relative ability to pay of the taxpayers such as, income, property and wealth and consumption expenditure.
- It is sometimes thought that income as the index of ability coupled with objective of equity and welfare *necessarily* implies progressive taxation. This is not so. Under certain conditions, proportional or even regressive taxation may follow from this line of reasoning. As mentioned above, ability-to-pay is not an invariant quantity, and amongst other things, depends upon the expenditure side of the government budget. A modern government is generally eager to adopt all feasible measures to help, guide and protect the economy and society. Basically, therefore, it is the overall budgetary policy which matters, and not just the taxation in isolation of the rest of the budget. However, for the sake of simplicity of analysis, all these factors are considered exogenous and given.
- While the fact of repercussive effects of a fiscal policy is recognized, it is usually ignored for keeping the arguments at a simple level.
- While cost of service approach to the distribution of tax burden implies that the government should try to have a balanced budget, the ability to pay approach does not have any such direct implication. The claim of non-essentiality of a balanced budget is further strengthened if we bring in the expenditure side of the budget to make the analysis more realistic. Actually, ability to pay approach has the advantage that its analysis can be extended into more realistic spheres to give us a unified picture of the overall fiscal policy of the government. It can admit the interdependence of government expenditure and the paying ability of taxpayers. It also follows that the government should not have a predetermined notion of necessarily having a surplus or a deficit budget. Similarly, the authorities need not limit their revenue raising activities to taxation only—an active and effective debt management policy becomes a part and parcel of their fiscal policy.

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- There can be a difference of opinion as to what constitutes the ability to pay of the citizens. The index of ability compiled by us may be an objective or a subjective one. An objective index may be based upon income, expenditure, wealth and property of the taxpayers, or a weighted combination of some of them. Similarly, a subjective index may be compiled on the basis of those variables which are identified as relevant for equity and welfare. Either way, an ability-to-pay index is supposed to enable the authorities to distribute the tax burden between members of society in conformity with their comparative ability to bear it. Its expected spill-over effect is minimization of aggregate sacrifice by taxpayers.

## (A) Objective Indices of Ability to Pay

## 1. Property as an Index of Ability to Pay

There are several limitations and conceptual difficulties in adopting this objective index. By itself, it is an incomplete index and may be used only to supplement other indices. It has a meaning only in an economy which has the institutions of private property and in which, therefore, decisions of saving and investment are primarily in the hands of private individuals, families and the corporate sector. These institutions provide a great incentive for the will to work, save and invest. If property is chosen as an index of ability to pay, these activities are liable to suffer with adverse effects upon capital accumulation in the economy and its growth rate.

Furthermore, if tax rates are quite high, they would eat into the property, and the set back to saving and investment activity will be all the more severe. It must also be remembered that in an underdeveloped country, where the volume of such taxable property is likely to be small, and where inequalities of wealth are great, this revenue resource is very likely to be both inflexible and inadequate.

Property by itself is bound to be an incomplete index in many cases. Some properties yield more income than the others, and some do not yield any income at all. Therefore, considering the ownership of property to the exclusion of other possible indices of ability to pay is bound to be misleading.

However, just as property should not be chosen as the sole index of ability to pay, it should not be left out of any index either. This is so even when some properties do not yield any income, since their very existence adds to the owner's ability to pay. Also from the point of view of welfare, concentration of economic power should be prevented because it *generates opportunities of economic exploitation and leads to unequal economic opportunities for the citizens*. Property owners are also known to be able to manipulate the working of the economy to their advantage. It is for this reason that taxing of gifts and inheritances should find an important place in any egalitarian tax system.

*In conclusion, we may say, that it will be erroneous to rely upon property as the sole index and source of taxation, but it is equally erroneous to leave it out.* Any good tax system will take into account the property ownership and the powers which it confers upon the owners and would consider it as an important source of public revenue.

## 2. Consumption Expenditure as an Index of Ability

Choice of this index assumes that people with higher consumption expenditure derive smaller marginal utility from it. Therefore, they can pay more tax and suffer a greater



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reduction in their consumption expenditure without losing more utility than those who are spending less. By implication, it is also assumed that levels of income and expenditure of taxpayers rise and fall together and, therefore, taxpayers with higher expenditure are those who have higher incomes. Furthermore, expenditure drains resources of the society and, for that reason, ought to be taxed. But in spite of these arguments, it is not a satisfactory index of the ability to pay. For various reasons, it is a very difficult index to compile and still more difficult to administer because of problems in estimating consumption expenditure during a given period of time. Use of some indirect taxes like excise duties and sales taxes as proxies of tax on consumption expenditure implies that taxpayers can be classified into ability categories according to the goods and services they consume. But this is frequently not so. Moreover, several indirect taxes can be quite regressive in their nature.

Some critics claim that it is questionable to tax only that part of income which is consumed, and leave out that portion which is saved and invested. This system enables higher income people to plough back their earnings into investment and increase the concentration of economic power in their hands without attracting tax liability. We may, therefore, conclude that a tax on consumption may be a part of the overall tax system, but not as its sole component.

### 3. Income as the Index of Ability to pay

Income is one of the most accepted indices of the ability to pay, though it is usually supplemented by other tax indices also. Even Adam Smith, while asserting the ability criterion in his first canon of taxation, maintained that such ability is in proportion to respective incomes of the taxpayers. However, as we shall see, income itself, from the point of view of ability to pay, is subject to several interpretations. Accordingly, various conceptual points have to be clarified before this index can be recommended and of course, as in any other index, there are also several practical difficulties in its administration.

According to this approach, a citizen receiving a larger income is made to foot a larger tax bill and vice versa. As a matter of detail, income may be divided into two parts: (i) earned income, and (ii) unearned income. The latter includes capital gains and so forth, and may be subjected to heavier taxation. Also, it is net and not gross income which should be considered for this purpose. This is because normally, expenses (both monetary and non-monetary) have to be incurred to earn an income. Similarly, conceptually speaking, leisure is also a part of one's real income. Accordingly, a person's net income should mean his gross income plus leisure minus expenses incurred to earn that income.

#### Limitations

However, net income, even when measured in this rigorous way, is not an ideal index of tax paying ability. It also suffers from a number of limitations.

1. The ability to pay of a taxpayer is as much dependent upon his needs as his income. Persons having same income but different needs do not have the same ability to pay.
2. Ability to pay depends upon marginal utility of money which is a tricky measure. It is subject to quick variation on several grounds and cannot be quantified because of its subjectivity.

3. The income as an index of ability to pay appears far less relevant in the case of corporate incomes. An individual or family might own a number of small enterprises and thereby acquire a large amount of income. Alternatively, a large business may be owned by a number of individuals or families, each getting a small amount of income. By implication, corporate sector may be subjected to a uniform rate of income tax.

4. In the same manner, it is difficult to use this index in indirect taxes. Since indirect taxes are collected as taxes on commodities and services, it is implicitly assumed that the consumers can be classified into homogeneous groups of equal ability to pay according to the types and quantities of goods and services purchased by them. This is obviously a highly unrealistic assumption.

5. A comprehensive indirect tax on both goods and services makes it still more difficult to structure it in conformity with the principle of ability to pay. GST accommodates very few exemptions and identified 'sin goods' which are subjected to a penal tax rate. If exemptions and 'sin goods' are ignored, GST boils down to a proportionate tax on consumption expenditure.

6. In underdeveloped countries, it may be partially correct to assume that luxuries are purchased mainly by the richer sections only. But even there it is not necessarily so. Where there is no electricity, even very rich residents are not likely to have refrigerators or air conditioners etc. In advanced countries, the difficulty arises from the fact that consumption pattern is much less indicative of the relative paying capacity of the citizens.

However, in spite of all these limitations, income as an index of ability is more appealing than other indices. It still satisfies our a priori expectations to a great extent.

In practice, however, it is helpful if we adjust and determine the tax liability at multiple levels based upon income, consumption, wealth and property, gifts and inheritances, capital gains and unearned increments and so forth. Also, it is still helpful if the system of taxation includes both direct and indirect varieties.

### (B) Subjective Indices of Ability to Pay

#### 1. Assumptions

Subjective approach to the ability to pay proceeds on the assumptions that a taxpayer undergoes a hardship or suffers a sacrifice by paying the tax. It is assumed that he does not feel better by the idea that he is contributing to the welfare of the society through helping the State in its multifarious activities. Also, it is assumed that the sacrifice of a taxpayer depends upon his own tax liability and is not affected by the tax paid by others.

#### 2. Equity versus Welfare

The question of determining tax liability of individual taxpayers may be considered in the context of equity and/or welfare. The goal of equity dictates that sacrifice undergone by taxpayers is equally apportioned between them. In contrast, 'welfare' approach aims at minimizing (to the extent possible) the aggregate sacrifice of all the taxpayers put together. The concept of equal sacrifice admits of different interpretations and one such interpretation tallies with the welfare objective also.

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## 3. Equal Sacrifice

The term same or equal sacrifice may be interpreted in three alternative ways, namely:

- equal absolute sacrifice,
- equal proportional sacrifice, and
- equal marginal sacrifice.

Dalton adds a fourth possible interpretation, namely, constant inequality of incomes. It means that the inequalities of incomes as between different taxpayers should remain the same after the tax as they were before the tax.

*Out of these four alternative meanings of equal sacrifice, the one termed Equal Marginal Sacrifice also leads to the Least Aggregate Sacrifice which is the goal of Welfare approach.*

## Correct Meaning of Equity

As Dalton says, 'Prima facie, it is not clear, on grounds of equity, which of these four is to be preferred.' While applying any of these principles, or interpretations, we have to know the utility function of income of each taxpayer. That is to say, we must know the way in which marginal utility of income varies as income of a taxpayer changes. This is a highly tricky area. Moreover, any precise conclusions regarding the division of tax burden between taxpayers in accordance with their respective ability to pay can be derived only if on the basis of two assumptions, namely:

- utility can be measured in cardinal terms, and
- it is possible to have an interpersonal comparison of utility.

Factually, both these assumptions are highly unrealistic. But some way has to be found out of the difficulty posed by these assumptions. Accordingly, we make a common-sense and plausible assumption of *similarity* of income-utility schedules. This assumption has been made even by those authors who do not accept its scientific validity. For example, Dalton says, 'most of us, at given levels of income, are more alike each other in our normal needs and moods, and our reactions to variations in our income, than some theorists recognize.' Even Lionel Robbins who is considered a champion of positivism, says, 'I do not believe and I have never believed that in fact men are necessarily equal or should always be judged as such, but I do believe that in most cases, political calculations which do not treat them as if they were equal are merely revolting.'

Similarly, Lerner asserts that even if currently different individuals have different capacities to enjoy income, it still points towards the need for bringing about income equality, but slowly, so that over time the lower income people may also acquire a capacity to enjoy large incomes.

However, while agreeing that it is not possible to have objective measures of utility, we may offer the following observations.

- (i) **Equal Absolute Sacrifice:** This means that each taxpayer is made to sacrifice the same amount of utility so that the difference between the aggregate utility from income before tax and the utility of income after tax is the same for every taxpayer. Symbolically,  $U(Y) - U(Y - T)$  should be the same for all, where  $U$  denotes total utility,  $Y$  denotes income before tax, and  $(Y - T)$  denotes income after tax. If this doctrine is applied, each member of the society will pay at least some tax. No one will enjoy complete tax exemption.

However, it still remains to be determined whether tax rates should be regressive, proportional or progressive. The answer depends upon the behaviour of marginal utility of income schedules. If we assume that marginal utility curve of each member of the society is (i) located at the same distance from X-axis, and (ii) it is parallel to X-axis, (the marginal utility of income is constant for all incomes), then it follows that each taxpayer should pay the *same absolute amount* of tax. This will mean a lower *rate* of tax as income increases, that is, *regressive rates*. On the other hand, if the income utility schedules fall, that is, if marginal utility of income falls as income rises, then with rising income, tax amount will have to increase to represent the same amount of sacrifice. When the rate of fall in marginal utility of income *equals* the rate of rise in income, *proportional* taxation will result in equal absolute sacrifice. On the other hand, if the marginal utility of income falls at a *rate faster* than the increase in income, then the equal absolute sacrifice will require *progressive* tax rates. *It should be noted, however, that unless the slope of the marginal utility curve is known precisely over the relevant range, the above conclusions cannot be drawn.*

- (ii) **Equal Proportional Sacrifice:** According to this principle also, no one is exempt from sharing the tax burden. Each taxpayer is supposed to sacrifice the *same percentage* of the total satisfaction which he would have derived from his income. Symbolically, it would mean that the tax liability of each individual is determined in a manner that for his income  $Y$ ,  $[U(Y) - U(Y - T)]/U(Y)$  is a constant. However, while in the case of equal absolute sacrifice, we were able to lay down the rules of progressive, proportional or regressive tax rates (with reference to the rate at which marginal utility falls with an increase in income), such an easy generalization is not possible in this case. *Here the relative rate of change in marginal and average utility of income will have to be looked into.* If the marginal utility of income remains unchanged, then equal proportional sacrifice would call for a proportional taxation. On the other hand, if the marginal utility of income falls, then we shall have to look at the relative percentage shifts in the marginal and average utilities. If the decline in marginal utility is of the same rate as the decline in the average utility then proportional tax will satisfy this objective. If the fall in the marginal utility is at a rate faster than the fall in the average utility, progressive taxation will be called for. If the fall in the marginal utility is at a rate slower than the fall in average utility, then regressive taxation will be needed to satisfy this criterion.

The above analysis can be presented graphically also. In Figure 3.3, income is measured along horizontal axis and marginal utility of income along vertical axis. If marginal utility falls at the same rate as the rate of rise in income, then the marginal utility curve would be drawn such that for each point the rectangle formed by the abscissa, the ordinate and the two axes bears the same proportion to the area under the curve to the left of this point. The equation of this curve is given by  $U'(Y_1)/U'(Y_2) = Y_2/Y_1$  where  $U'(Y_1)$  and  $U'(Y_2)$  are the marginal utilities of incomes  $Y_1$  and  $Y_2$ . Let us draw a straight line passing through the origin  $O$ , intersecting the line of proportions at  $P$  and forming an angle of  $45^\circ$  with each axis. Also, let a rectangular hyperbola  $APB$  pass through point  $P$ . Then the line of proportions  $CPD$  would lie below the rectangular hyperbola to the left of  $P$  and above it to the right of  $P$ . Now for equal proportional sacrifice, we have the following conclusions. If the marginal utility curve coincides with  $CPD$ , the income

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tax rates should be proportional; if it falls more rapidly than *CPD*, then the rates should be progressive. And they should be regressive if the marginal utility curve descends less rapidly than *CPD*. Thus, we find that in the case of equal proportional sacrifice, the tax rates do not have to be progressive *simply because* income is subject to falling marginal utility. It should be noted, however, that the above conclusions are based on the assumption that the behaviour of the marginal utility of income (that is, the slope of the marginal utility curve) is known over the entire range of income.

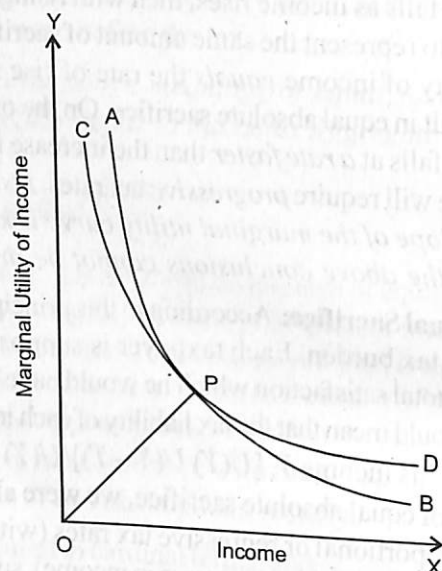


Fig. 3.3 Marginal Utility of Income

(iii) **Equal Marginal Sacrifice or the Least Aggregate Sacrifice:** According to this interpretation of equity, the tax burden should be apportioned in such a way that the marginal utility of income left after tax with any taxpayer is the same. Symbolically, for each taxpayer,  $U'(Y - T)$  should be the same. In this principle the emphasis is equally on the welfare of the community. It follows from the utilitarian dictum of 'the greatest happiness of the greatest number'. This philosophy asserts, amongst other things, that the aggregate sacrifice imposed on the community by the taxation should be the least possible. Musgrave, Pigou and others consider it the 'ultimate principle of taxation'. However, though this doctrine sets the objective of least aggregate sacrifice by the taxpayers, 'there is no generally accepted view as to what it involves in terms of individual sacrifice.' In this case if we assume that the marginal utility schedules are identical and sloping downwards, it follows that the taxation would begin with the highest income and once that income is lopped off to the next highest income, both incomes start sharing the taxation equally and so on. In the end, all taxed incomes are left equal while all non-taxed incomes are smaller than the taxed ones. It has been suggested that this principle would be realized by taxing only the largest incomes, cutting down all above a certain level to that level, while exempting all below that level. Thus, all incomes above, say, ₹2,50,000 a year would be reduced by taxation to that level, and no one, whose income was less than this, would be taxed at all. It is also clear that with these assumptions, this principle necessarily leads to progressive taxation, a conclusion which is sometimes erroneously supposed to be applicable to other cases as well.

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It is well-known that utility cannot be measured and interpersonal comparisons of utility are not possible. On this basis, some writers insist that the above conclusions are not scientifically based. In the absence of any relevant information, it is not possible to prove that the best way of apportioning tax burden would be to enforce equal after-tax incomes. However, Lerner shows that even when the marginal utility schedule are not precisely known, and even when interpersonal comparisons of utility are not possible, still we can conclude that a shift towards equality in income distribution would increase the aggregate satisfaction of the community. Lerner bases his argument on the assumption that in the absence of definite information, the *probability* of a loss in aggregate satisfaction may be taken as high as that of a gain in aggregate satisfaction when income is redistributed. However, in his analytical framework, if we move from equality towards inequality, the *amount* of a probable loss is more than the probable gain (and therefore, the amount of probable gain exceeds the amount of probable loss if we move from inequality towards equality). As a result, the society increases its probable aggregate satisfaction when incomes are distributed equally. Lerner's conclusion, however, rests on *probability argument* only and cannot be taken to be *objectively conclusive*.

Pigou says that the right goal of every government is the maximum welfare of the community as a whole. And 'in the special field of taxation, this general principle is identical with the principle of least sacrifice.'

It is noteworthy that it is not possible to directly apply this principle in the field of business taxation because in the final analysis, incidence of business taxation is shifted to the business owners and/or consumers. Also, it is extremely difficult to structure indirect taxation in accordance with the ability to pay principle because an individual's ability to pay tax has hardly any direct relationship with his consumption pattern.

### 3.6 EFFECT OF TAXATION ON PRODUCTION

In line with Dalton, the effect of taxation on production and growth may be analysed with reference to the following:

- (i) capacity to work, save and invest; and
- (ii) the will to work, save and invest.

An alternative way of analysing these effects would be to split them up into

- (i) shift in the allocation of existing productive resources, and
- (ii) a change in the supply of these productive resources and use them as manifestations of the capacity (and will) to work, save and invest.

It is noteworthy that different segments of these effects are highly interdependent and it is only for analytical simplicity and comprehension that they are considered singly or in groups. In the following paragraphs, the problem is split up into its component parts with their detailed analysis. However, it should be noted that in most cases, it is not possible to assess the effects in quantitative terms and, therefore, our observations would be confined to generalities. In some cases, we shall also try to find out as to which tax has more of a specific effect and which one has less.

#### Check Your Progress

7. Mention the two categories of services supplied by the State.
8. Name the advocates of the Ability to Pay Theory.
9. State the main theme of the Benefits Received Theory.



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**Allocative Effects of Taxes**

We start with the conditions under which existing resource allocation may be termed an optimum one. This is followed by an analysis of the way in which a given tax is likely to shift the existing resource allocation which in turn should help us in drawing certain inferences.

It was a tradition with the economists to assume that a competitive market economy working with sufficient factor mobility would result in an optimum allocation of its productive resources. Optimum allocation is defined as the one in which the relevant marginal conditions are satisfied. It means, for example, that in the field of production, the ratio of marginal productivity of a factor to its market price is equal to the corresponding ratio of every other factor. Similarly, marginal rate of substitution between any pair of goods is equal to the marginal rate of technical substitution between them. In the same way, there is no divergence between social and private marginal costs and between social and private marginal benefits of the employment of any factor. However, optimality of resource allocation depends upon two pre conditions, namely,

- (i) appropriate income distribution, and
- (ii) competitive market with unhindered working of market mechanism.

A market economy gives rise to a specific demand pattern for different goods and services in harmony with the pattern of its income and wealth distribution. The demand pattern, through its impact on profitability of various economic activities would guide the market to a given production and resource allocation set up. If, therefore, we have a reason to believe that the existing income and wealth distribution in the society is not an optimum one (and we know that a market economy generates and widens inequalities), we will not be able to accept the existing resource allocation as an optimum one. Similarly, if the market is riddled with various imperfections like those of imperfect factor mobility and monopoly elements, resource allocation would remain sub optimal.

**Marshallian Reasoning**

Marshall recognized the possibility of a sub optimal inter-industrial allocation of resources. He approached the problem by comparing the effect of a tax on consumer's surplus with the amount of tax collection. If the loss to the consumer's surplus was less than the tax collected by the authorities, then the shift of investment out of the taxed industry was considered beneficial to the society and, therefore, a step towards optimum resource allocation. On this basis, Marshall concluded that the output of an industry operating under diminishing returns should be taxed, while the output of an industry operating under increasing returns should be subsidized. A constant returns industry was to be neither taxed nor subsidized. Further, it was found that in certain cases, *ad valorem* and specific taxes would have different effects on the production of a good. The effect of two taxes would be the same in the case of a constant returns industry (which has a perfectly elastic supply curve) provided the yield from the two taxes is the same. In this case, the supply curve inclusive of tax would run parallel to the supply curve without tax. In the case of a supply curve rising upwards to the right, the vertical distance between the supply curve inclusive of tax and the original supply curve would keep on widening as supply increases. This means that the addition to the supply price increases as output increases. On the other hand, in the case of an increasing returns industry, the absolute addition to the supply price falls with increasing output. For this reason, an *ad valorem* tax has a more pronounced effect on the supply of a good being produced under

diminishing returns and a less pronounced effect on the supply of a good being produced under increasing returns. It can also be shown that under oligopoly with a kinked demand curve, if an indirect tax shifts marginal cost curve within the limits of vertical range of the marginal revenue curve, the output of the oligopolist would not be affected.

**Drawbacks of Marshallian Reasoning**

However, Marshallian reasoning has its own drawbacks. It assumes that the tax revenue in the hands of authorities yields an equivalent benefit to the society while the loss to the society is equivalent to loss of consumer's surplus. Both these assumptions can be refuted easily. Further, he ignores the effect of taxation on producer's surplus. He also makes the mistake of deciding the social priority of an industry on the basis of its cost behaviour. To him an increasing returns industry should have a higher social priority than a diminishing returns one and, therefore, the former should be encouraged at the cost of the latter. However, this area of consideration leads us to infer that the authorities should be able to pick up a judicious set of indirect taxes on a selective basis for realizing a desired shift from the existing allocation of productive resources. Such a possibility is of great policy relevance in a country like ours where investment in high priority industries and infrastructure needs to be encouraged.

What is the role of taxation in resource allocation as between different uses? The answer lies in the assumption that it is possible to alter relative profitability of different resource uses through differential tax rates, tax concessions and even subsidies. This way, cost of supplying various goods and services can be altered selectively. Differential taxation of goods and services would similarly affect their demand pattern. What is needed is an appropriate pattern of tax coverage and rates to guide the economy's investment, production and demand flows in the desired channels. But the success of this approach depends upon responsive elasticities of demand and supply of the taxed goods and services.

Marshallian reasoning, coupled with Dalton's treatment of sharing of tax incidence between the buyers and sellers leads us to the inference that, given the elasticity of supply, the effect on demand for a good will be directly related to its demand elasticity. Goods with higher elasticity of demand would be affected more and those with lower elasticity of demand would be affected less by a given tax rate and its revision. This implies that the extent to which a given tax on a commodity would reduce its output and release resources for other industries would depend upon its elasticity of demand. Similarly, a good with a higher elasticity of supply would be affected more by tax on it than a good with a lower elasticity. Goods with zero elasticity of supply or demand would not be affected at all by a tax on them and such a tax would have no effect on resources allocation. This analysis, therefore, tells us that we should consider the relevant elasticities of demand and supply of a good while using an indirect tax to shift its production and resource appropriation. But it still fails to tell us the way a tax should be distributed between commodities having same elasticity of demand but different elasticities of supply, or between commodities having same elasticity of supply but different elasticities of demand, or commodities having different elasticities of both demand and supply.

**Indirect Taxes and Income Distribution**

The discussion of the allocative effects of indirect taxation would not be complete without considering the fact that it also affects income redistribution. Indirect taxation is pro inflationary and widens income and wealth inequalities in the economy. This in turns

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shifts demand relatively in favour of luxuries which, ordinarily, a less developed economy cannot afford. The result is a shift in the allocation of resources toward luxuries at the cost of necessities. Unless, therefore, indirect taxation of commodities is highly selective with reference to coverage and rates and takes into account their respective elasticities of demand and supply, it can prove a dangerous instrument in the hands of the authorities. On these grounds, therefore, the case for a selective commodity taxation is very strong in a country like India.

## Comparing the Effects of Representative Direct and Indirect Taxes

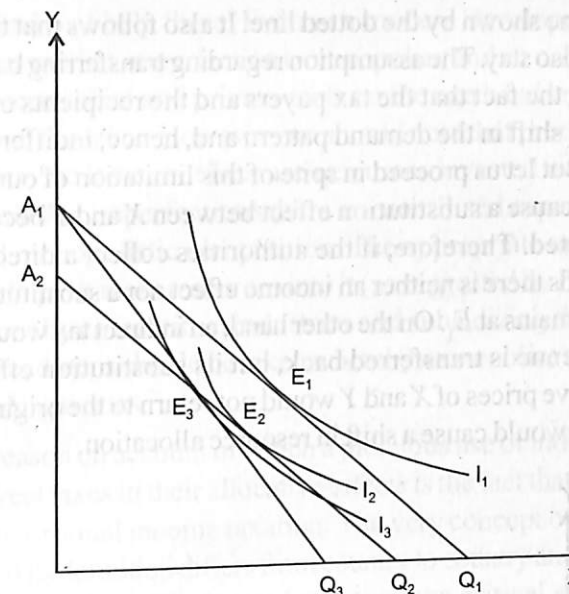
Let us, however, start with the assumption that the existing resource allocation is an optimum one and see the relative allocative effects of direct and indirect taxes. Though any tax will have both allocative and distributive effects, we would ignore the latter for the sake of simplicity of the argument. Also, we would assume that the economy is having a state of full employment and there is no variation in the total supply of a factor. This implies that greater employment of a factor in one use can be had only by reducing its employment in some other use. It should be noted that in a market economy, resource allocation is guided by demand pattern. It would be, therefore, helpful to proceed by analyzing the allocative effects of a tax by looking at the way it would influence the demand of a typical individual who may be taken to reflect, on the average, the tastes and ability to enjoy income and so on of the society as a whole. Further, since we cannot take up the comparison for the allocative effects of direct and indirect taxes as a whole, we must choose a representative direct tax and compare its allocative effects with those of a representative indirect tax, assuming all the while that the government collects an equal amount of tax revenue either way and the expenditure side of its activity is unaffected by its choice between the two taxes. For this purpose, it is typical to choose a proportional income tax on the one hand and an indirect tax on a given commodity on the other.

Thus, in the above framework we take up a typical consumer who is supposed to spend all his income between two goods  $X$  and  $Y$ . Using the technique of indifference curves, we note that (see Fig. 3.4) our consumer has a budget price line  $A_1Q_1$ , and is in equilibrium at point  $E_1$  enjoying an amount of satisfaction represented by the indifference curve  $I_1$ . If the authorities impose an indirect tax on commodity  $X$ , its price would rise and the consumer would be able to buy a smaller quantity, say  $OQ_3$ . His new equilibrium position would then be at  $E_3$  and he would slide down to a lower indifference curve  $I_3$ . Now let the authorities impose an equal revenue yielding direct tax, so that the post tax budget price line  $A_2Q_2$  of consumer shifts downwards and lies parallel to  $A_1Q_1$ . It would pass through point  $E_3$  because the direct tax must yield same revenue as the indirect tax did. However, it is seen that  $A_2Q_2$  would intersect  $I_3$  at two points. Therefore, the consumer is able to move on to a higher indifference curve  $I_2$  by increasing his purchases of  $X$ , his new equilibrium position being at  $E_2$ .

(a) An indirect tax is more burdensome

- (a) An indirect tax is more burdensome than an equal yield proportional income tax because the tax payers sacrifice more utility in the former case.
- (b) Indirect taxes cause a greater distortion in the allocation of resources and, for that reason, are more burdensome than direct ones.

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**Fig. 3.4 Indifference Curve**

We note that according to our assumptions,  $E_1$  represents an optimum production pattern. Direct proportional income tax shifts the demand pattern and, therefore, causes a distortion in the optimum allocation of resources. However, this distortion is due to the *income effect*, since taxation has caused a reduction in the disposable income of the tax payers. On the other hand, an indirect tax causes *both* a reduction in disposable income of the tax payers as also a shift in the relative prices of  $X$  and other goods.  $X$  became costlier as compared to the untaxed goods. This causes a *substitution effect* leading to a reduction in the demand for  $X$  over and above the income effect. Therefore, as between a direct and an indirect tax, the latter causes a greater distortion in the resource allocation.

The above conclusion, according to which indirect taxation is inferior to direct taxation in terms of resource allocation, is based upon the assumption that a shift in resource allocation on account of substitution effect of indirect taxation is *away* from the optimum. This however need not be so. If an economy is over-using resources in the production of good *X*, then indirect taxation of *X* should help the economy in moving closer to the optimum resource allocation. And we should not forget that the existing income distribution in the society may itself be causing an allocation which does not reflect true needs of the society. The thrust of the argument is that in case the existing pattern of resource allocation is believed to be in need of an improvement, then indirect taxation would be a better policy instrument than direct taxation.

### Superiority of Indirect Taxation Over Direct Taxation in Resource Allocation

The possibility of superiority of indirect taxation over direct taxation in resource allocation may be illustrated by extending the above model. Let us now bring in the production possibility curve  $PR$  of a representative producer, so that in conjunction with the indifference curves of the representative consumer and his budget price line  $A_1Q_1$ ,  $E_1$  becomes a point of double equilibrium, that is at  $E_1$  both the marginal rate of substitution between  $X$  and  $Y$  and marginal rate of technical substitution between  $X$  and  $Y$  are equal to the price ratio between  $X$  and  $Y$  as represented by the slope of the line  $A_1Q_1$ . In order to eliminate the income effect which is same in both direct and indirect taxes, let us assume that the authorities pay back the collected tax to the private sector by way of grants, so that the private sector retains the same amount of productive resources and the production possibility curve of its representative producer remains unchanged instead of shifting to



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a position like the one shown by the dotted line. It also follows that the point of double equilibrium would also stay. The assumption regarding transferring back of collected tax revenue is ignoring the fact that the tax payers and the recipients of grants can differ and this can cause a shift in the demand pattern and, hence, indifference curves of the typical consumer. But let us proceed in spite of this limitation of our argument. Now a direct tax does not cause a substitution effect between  $X$  and  $Y$  because their relative prices are not affected. Therefore, if the authorities collect a direct tax and transfer back the tax proceeds there is neither an income effect nor a substitution effect, and our typical consumer remains at  $E_1$ . On the other hand, an indirect tax would have no income effect when its revenue is transferred back, but its substitution effect would remain same because relative prices of  $X$  and  $Y$  would not return to the original position. Thus, an indirect taxation would cause a shift in resource allocation.

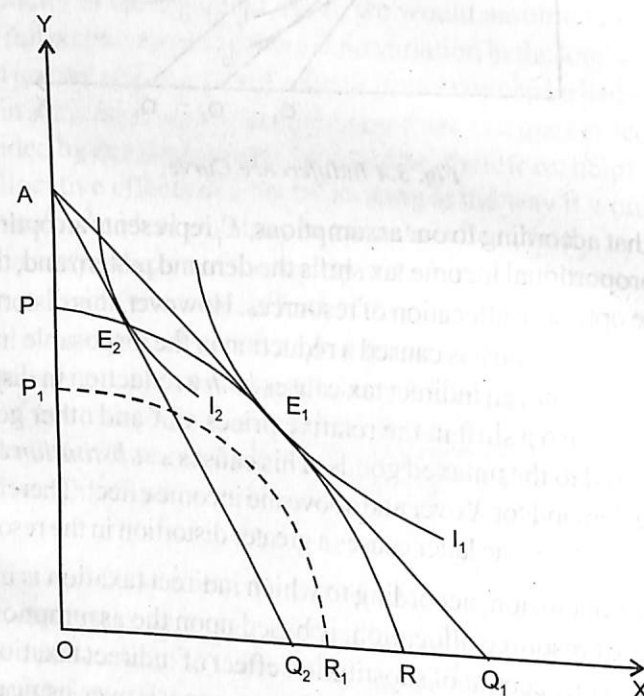


Fig. 3.5 Indirect Taxation Causes a Shift in Resource Allocation

However, if due to market imperfections or due to income inequalities the existing resource allocation is not considered an optimum one, then indirect taxation would be a better instrument for shifting it towards the optimum position. If resources employed in producing commodity  $Y$  are too few,  $X$  should be taxed and if resources employed in producing commodity  $X$  are too few,  $Y$  should be taxed. For example, let us say that the existing resource allocation for  $X$  and  $Y$  is represented by point  $E_2$  where the consumer is at indifference curve  $I_2$  but where marginal rate of substitution between  $X$  and  $Y$  given by the slope of the line  $A_1Q_2$  is not equal to the marginal rate of technical substitution between  $X$  and  $Y$ . Therefore, here the need would be to change the relative prices of  $X$  and  $Y$  such that  $X$  becomes relatively cheaper and production pattern comes closer to the one represented by  $E_1$ .

### Judicious Choice of Indirect Taxes

In practice, the allocative effects of indirect taxes would be superior to those of direct taxes provided the government chooses the indirect taxes judiciously. In an underdeveloped economy, there is a need to shift the resources toward various priority industries and

indirect taxes can be of help there. Even in a modern developed economy, there are usually numerous market imperfections, monopolies and so on, as also a good deal of divergence between social and private costs on the one hand and between social and private benefits on the other. However, we should note that production of certain high priority goods may be lower not because resources invested in them are too few, but because due to market imperfections there are unutilized capacities as in the case of monopolies and monopolistic competition. The appropriate approach in breaking a monopoly is not to push more resources into it (as suggested by Prest) through taxation of goods produced by competitive industries and subsidizing the goods produced by monopolies. Instead steps should be taken whereby monopolies are forced to make use of their unutilized capacities.

Another reason on account of which a judicious use of indirect taxes turns out to be better than direct taxes in their allocative effects is the fact that it is rather difficult to have a really proportional income taxation. The very concept of taxable income is an imprecise one and its definition differs from country to country and even within the same country from time to time. We do not have even the critical standards by which to measure the income of self consumption, income from durable consumer goods and so on. Similarly, it is not easy to lay down exact standards by which to estimate the expenses for earning the income, or by which to estimate the depreciation. In a modern economy, due to changes in prices and other uncertainties, there are capital gains, windfall profits and casual incomes, which pose difficult problems of devising a system of proportional income taxation.

In practice, the above comparison between the allocative effects of a proportional income tax with those of an equal yield indirect tax is an academic exercise only, since a modern government is expected to prefer a progressive direct income tax with an exemption limit to a proportional income tax.

### Allocative Effects of Individual Direct Taxes

To begin with we should note that a direct tax will have a resource allocative effect by changing the relative attractiveness of different sources of income. On this basis, therefore, we can state that a supplier of labour would shift from one employment or industry to another if by so doing he can reduce his direct tax liability more than the reduction, if any, in his earnings from the supply of his labour. If he finds that by shifting his employment, his tax liability remains unaltered, there would be no reallocation effect on existing labour supply in the economy. Similarly, a tax which does not change relative profitability of different forms of investment, or relative rates of returns from different forms of wealth, would not cause a reallocation of capital resources.

The effectiveness of tax tools is closely dependent upon some preconditions including the following, namely,

- sufficient freedom to private sector,
- a competitive market mechanism,
- belief of the market operators (savers, investors, producers, consumers, etc.) that the changes in tax structure are going to stay for a sufficiently long period, that is, their belief in the stability of the revised tax system,
- simplicity and transparency of the tax system, and
- a well-developed and responsive financial system.

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Given these conditions, the market may be expected to respond to the policy measures of the tax authorities. Thus, for example, authorities can make use of tax concessions and penal taxes to divert investment from low priority to high priority industries. Differential taxation can also be used to influence the location of industries. And the same approach is available for promoting certain techniques of production. This fact can be used to help those industries which contribute towards a rapid capital accumulation in the country or those with faster growth in employment.

**Allocative Effect on Labour**

The foregoing approach may be used for a closer look at the allocative effects of some individual direct taxes. This may be done by examining the *allocation of labour and capital*. An allocative effect on *labour* operates through a variation in the relative attractiveness of wage incomes from different employments relative to the disagreeableness of those jobs. In general, less agreeable employments carry higher wage rates. A proportional income tax would reduce the absolute difference between the two wage rates, but the percentage difference would remain the same. A progressive income tax would reduce the difference in both absolute and percentage terms. Let us take an example. Suppose the wage rates in two employments I and II are respectively ₹X and ₹1.5X per month. Thus, wage rate in employment II is 50 per cent more than in employment I. Let a proportional income tax at the rate of 20 per cent of income be levied now. This would reduce the post tax wage incomes to ₹0.8X in employment I and ₹1.20X in employment II. The absolute wage difference is now reduced to ₹0.4X as compared with ₹0.5X earlier but the wage rate in employment II is still 50 per cent more than in employment I. On the other hand, let the income tax be progressive, say 20 per cent at an income of ₹X and 30 per cent at an income of ₹1.5X. Then the post tax wage rates would be ₹0.8X in employment I and ₹1.05X in employment II. This reduces the absolute difference between the two wages to ₹0.25X and makes the wages rate in employment II only 31.25 per cent higher. Prest argues that a proportional income tax would reduce the compensation for less agreeable employment and would cause a shift of labour out of it. By the same token, a progressive income tax will have a greater reallocative effect on labour. However, it should be noted that an appropriate wage compensation for a less agreeable employment ought to be not an absolute amount but a proportion of wage in the more agreeable employment. On this basis, both poll tax and a proportional income tax should have no reallocative effects on labour, but a progressive income tax should cause a shift in labour from less agreeable into more agreeable employments.

**Allocative Effects on Capital**

Before considering these effects, let us note that investments are not to be classified between less agreeable and more agreeable ones, but between more risky and less risky ones. A more risky investment is the one the return from which is subject to a greater variation. In line with Harry Markowitz, J. R. Hicks and G. L. S. Shackle and others, we may look at the mean expected return ( $E_y$ ) and the standard deviation of the expected return ( $s_y$ ) to put the concept of riskiness in more precise terms. A more risky venture is that which, with given  $E_y$ , has a higher  $s_y$ . It should, therefore, carry a higher  $E_y$  to compensate for that extra risk. If, therefore, an income tax reduces the acceptability for a risky venture, it would cause two effects. Substitution effect will lower acceptability of more risky ventures to the investors leading to reallocation of capital resources

favour of less risky ventures. This effect would be stronger if income tax is progressive than when it is proportional. A reduction in income from investment (and a greater reduction in income from more risky ventures) would generate an income effect. However, whether investors, on account of lower income would strengthen their preference for safer ventures, or whether they would go in for still more risky ventures to compensate for that loss of income due to taxation, cannot be asserted with certainty. It would depend upon the capacity and will of the investors to bear risks. It may, however, be added that a poll tax does not discriminate between either the amount of income or its source and is therefore, neutral between alternative investments.

**Effect of Loss Offset**

The foregoing discussion can be further elaborated in the light of the provision or absence of a loss offset. Absence of loss offset means that a positive income is subject to taxation but the tax authorities do not share the losses of investors, nor do they allow them to adjust the loss in one year against the income of another. In such a case, a risky venture automatically gets discriminated against if income tax is progressive, since its after tax average return  $E_y$  falls more than proportionately as compared with the fall in  $E_y$  of a less risky venture. A proportional income tax, on the other hand, does not discriminate against a risky venture unless its income falls to a negative figure for some intervals.

If income tax allows offsetting of a loss in one year against income in another year, then the average tax liability per annum is not affected by fluctuations in the yield. Instead it is determined on the basis of average yield  $E_y$  from a venture. Therefore, a proportional income tax does not discriminate against a risky venture if complete loss offset is allowed. The result with regard to a progressive income tax is, however, not that clear. It would largely depend upon the degree of progression in the tax rates, the timing of losses and gains, and the way the loss offsets are allowed. Ordinarily, progressive tax rates would tend to push  $E_y$  of risky ventures downwards and cause a reallocation of capital in favour of less risky ones. Thus, we find that as compared with a poll tax, income tax often discriminates against risky ventures unless it is proportional and allows a complete loss offset.

The allocative effect of a tax on capital would depend upon its form and coverage. A once over capital levy will leave the relative attractiveness of different capital assets unchanged, but an annual levy would not. Different capital assets do not yield income at the same rate and some assets have no yield at all. An annual tax on capital brings about a shift in the relative attractiveness of different capital assets. This is further compounded by the fact that many capital assets pose problems of valuation. In any case, depending upon the nature of the effective shift in the relative attractiveness of capital assets, the investment allocation would be affected. Capital resources would tend to move out of less attractive into more attractive forms of investment. In practice, the relative attractiveness of capital assets is also affected by the efficiency of tax administration and other legal provisions. If, for example, capital invested in houses or agricultural land is not taxed, or is taxed at lower rates, or can be evaded due to ineffectiveness of tax machinery, the shift of capital assets into these forms would take place.

**Taxation of Gifts**

Another form of capital taxation is that of gifts. It means that when a capital owner gifts its ownership during his lifetime, it is subjected to a tax which may be imposed on the giver or the recipient; and the tax amount may be determined with reference to the value

## NOTES



## NOTES

## Measuring Inequality

Till now we have discussed the effects of taxation on distribution. The measurement of a shift in distribution, however is a separate question and poses difficulties of its own. These difficulties are both conceptual and practical, apart, from those emanating from lack of data and their reliability. In practice, we are often confronted with the task of measuring the degree of inequality in an existing distribution of income, specific assets or total wealth held by individuals or households. Frequently, a need arises to compare the degree of inequality of distribution as between two sets of individuals or groups, or to measure a shift in inequality as between two situations. For example, given the relevant information, we may attempt to measure a shift, if any, in inequalities of income and wealth distribution in India on account of the use of various tax measures.

Let us, for the sake of simplicity, confine ourselves only to the distribution of disposable income. If we arrange households in ascending order of their annual incomes, then an inequality of distribution implies that starting from the poorest households, a given proportion of total households enjoys a less than proportionate share of aggregate disposable income, while another proportion of households (at the top) enjoys a more than proportionate share of aggregate disposable income. Represented graphically, if we measure percentage share of aggregate disposable income along horizontal axis and percentage of households enjoying it along vertical axis, the distribution curve would be skewed to the right. Remember, however, that theoretically, it is possible to think of a situation in which a major proportion of the population happens to have an average income nearer the national average, while smaller proportions are either very rich or very poor. Such a non skewed distribution will exhibit a huge degree of inequality between the richest and the poorest groups.

## Lorenz Curve

A very important measure of inequality is given by Lorenz Curve. A typical Lorenz Curve is shown in Figure 3.6. A box diagram is used in which the proportion of population is measured horizontally and is cumulative from the poorest to the richest; the corresponding proportion of national income enjoyed by it is measured vertically. In our diagram, for example 70 per cent of the poorest population enjoys 29 per cent of the total national income. Plotting the pairs of these values gives us the Lorenz Curve. If income is distributed equally amongst all income groups of the society, the curve will be a straight line diagonal from the left bottom corner to the right top corner, showing that the percentage share of income enjoyed and the percentage share of population enjoying it are always equal to each other.

The degree of inequality is an estimate of the deviation of the Lorenz Curve from the line of equality, and is measured (in Figure 3.6) by

$$\frac{\text{Area between the Lorenz Curve and the Line of Equality}}{\text{Area of the Triangle OBC}}$$

Clearly, greater the gap between Lorenz Curve and the line of equality, greater is the degree of inequality in distribution. The coefficient can theoretically vary between zero and 100 per cent. A higher value of coefficient shows greater inequality.

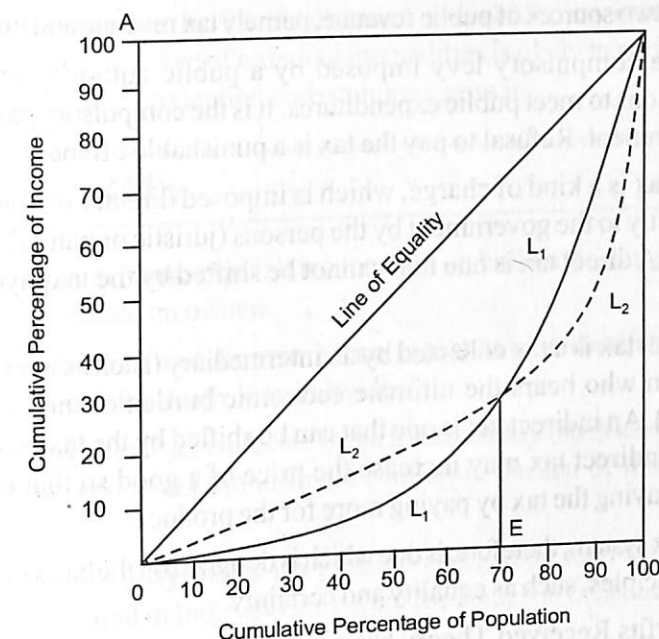


Fig. 3.6 Lorenz Curve

This measure estimates inequality over the entire range of income distribution and is not able to account for the fact that a *compensatory* shift in income distribution can take place without leading to any change in the aggregate measure of inequality. Thus, take the case as depicted in Fig. 3.6. It shows that income distribution has moved from  $L_1$  to  $L_2$  while giving the same measure of inequality. However, with the bottom  $OE$  percentage of population, income inequality has decreased while for richer proportion of population above  $OE$ , the inequality has increased. In other words, income has shifted from the middle income classes to both lower and upper income classes. But this shift is not captured by the measure of inequality as estimated by Lorenz Curve. This limitation of the curve implies that if we are to compare inequality as between two populations, or for the same population in two different situations, the two curves must not intersect each other. One curve must lie throughout its length above (or below) the other.

## 3.7 SUMMARY

- Every government needs funds to finance its activities. Such funds are raised from various sources. It is difficult to give a complete list of all the sources of public receipts. But the important ones include taxes, income from currency, market borrowings, sale of public assets, income from public undertakings, fees, fines, gifts and donations and so forth.
- Broadly speaking, revenue receipts include 'routine' and 'earned' ones. For this reason, they do not include borrowings and recovery of loans from other parties, but they do include tax receipts, donations, grants, fees and fines. Capital receipts, on the other hand, cover those items which are basically of non-repetitive and non-routine variety and change government's financial liabilities/assets.
- Shirras' classification of revenue into tax and non-tax categories is accepted as most convincing classification of public revenue.

## NOTES

## Check Your Progress

10. Mention the two pre-conditions which govern the optimality of resource allocation.
11. What is the use of the Lorenz Curve?



## NOTES

- There are two sources of public revenue, namely tax revenue and non-tax revenue.
- A tax is a compulsory levy imposed by a public authority on persons and organizations to meet public expenditures. It is the compulsory payment made to the government. Refusal to pay the tax is a punishable offence.
- A direct tax is a kind of charge, which is imposed directly on the taxpayer and paid directly to the government by the persons (juristic or natural) on whom it is imposed. A direct tax is one that cannot be shifted by the taxpayer to someone else.
- An indirect tax is a tax collected by an intermediary (such as a retail store) from the person who bears the ultimate economic burden of the tax (such as the customer). An indirect tax is one that can be shifted by the taxpayer to someone else. An indirect tax may increase the price of a good so that consumers are actually paying the tax by paying more for the products.
- A good tax system, therefore, is one which is designed on the basis of an appropriate set of principles, such as equality and certainty.
- The Benefits Received Theory has a long dated origin and its roots lie in the contract theory of the State. A fuller survey of the evolution of this theory is available in Professor Edwin R. Seligman's *Progressive Taxation in Theory and Practice*. The theory was in vogue with German, French and other writers like Grotius, Hobbes, Locke, Hume and Rousseau.
- In 1896, Knut Wicksell (a Swedish economist) provided an ethical footing for the Benefits-Received Theory in the form of voluntary revelation, by taxpayers, of their demand schedules for State services.
- Lindahl's solution suffers from all the problems which mathematical models suffer from, particularly the non-availability of stable and useable data.
- Lindahl's theory, which is a refinement of Wicksell's theory, is primarily aimed at telling us the way a society *should* choose an optimum level of output of public goods and the way the burden of their provision *should* be shared between members of the society.
- Income is one of the most accepted indices of ability to pay, though it is usually supplemented by other tax indices also. Even Adam Smith, while asserting the ability criterion in his first canon of taxation, maintained that such ability is in proportion to respective incomes of the taxpayers.
- Tax system of a modern economy happens to be a highly complex and multi-dimensional one comprising a variety of taxes, each with its own detailed features. For example, each tax has a legally defined and quantifiable 'base' on which it is levied and assessed, as also a rate schedule together with threshold limits, exemptions, rebates, cesses and surcharges, penalties and so on.
- Marshall recognized the possibility of a sub optimal inter-industrial allocation of resources. He approached the problem by comparing the effect of a tax on consumer's surplus with the amount of tax collection.
- Expenditure tax is generally discussed in the context of its effects on supply of savings and capital formation, but it has certainly its resource allocative effect also which may be looked into. Expenditure tax is considered to be neutral as between different forms and amounts of income and therefore neutral as between different employments of labour and capital.

## NOTES

- Market mechanism by itself generates ever-widening income inequalities. However, the objective of reducing inequalities is likely to come in conflict with that of increasing production and economic growth.

## 3.8 KEY TERMS

- **Property tax or 'house tax':** It is a local tax on buildings, along with appurtenant land, and imposed on owners.
- **Inheritance tax (also known as an estate tax or death duty):** It is a tax which arises on the death of an individual.
- **Indirect tax:** It is a tax collected by an intermediary (such as a retail store) from the person who bears the ultimate economic burden of the tax (such as the customer).
- **Central excise duty:** It is a tax which is charged on such excisable goods that are manufactured in India and are meant for domestic consumption.

## 3.9 ANSWERS TO 'CHECK YOUR PROGRESS'

1. Revenue receipts include routine and earned ones. They do include tax receipts, donations, grants, fees, and fines and so forth. Capital receipts, on the other hand, cover those items which are basically of non-repetitive and non-routine variety and change government's financial liabilities/assets.
2. The types of non-tax revenues of the government include the following:
  - Currency, coinage and mint
  - Interest receipts, dividends and profits
  - Other non-tax revenue
3. A direct tax is a kind of charge, which is imposed directly on the taxpayer and paid directly to the government by the persons (juristic or natural) on whom it is imposed.
4. An indirect tax is a tax collected by an intermediary (such as a retail store) from the person who bears the ultimate economic burden of the tax (such as the customer). An indirect tax is one that can be shifted by the taxpayer to someone else.
5. The canon of simplicity stands for the fact that the tax system should not be too complicated. That makes it difficult to understand and administer and breeds problems of interpretation and legal disputes.
6. A good tax system, therefore, is one which is designed on the basis of an appropriate set of principles, such as equality and certainty.
7. Services supplied by the State may be divided into two categories. The first category consists of those services to which the principle of exclusion does not apply. In this case, every member of the society consumes these services and, therefore, should contribute to the State revenue in accordance with the benefits received. But, the other category is the one where the taxpayers have the option to accept or reject the state services. Here a market relationship is established between the two and, therefore, what the members of the society pay are the fees and the prices and not the taxes in strict sense of the term.



## NOTES

8. The well-known advocates of the Ability to Pay theory include Rousseau, J. B. Say, Adam Smith, J. S. Mill among others.
9. The main theme of the Benefits Received Theory is that there is a contractual relationship between the State and its subjects such that the State provides various goods and services and the citizens finance their provision by paying taxes.
10. The two pre-conditions which govern the optimality of resource allocation are the following:
  - (i) Appropriate income distribution, and
  - (ii) Competitive market with unhindered working of market mechanism.
11. The Lorenz Curve is a graphical representation of income inequality or wealth inequality developed by American economist Max Lorenz.

### 3.10 QUESTIONS AND EXERCISES

### Short-Answer Questions

1. Define public revenue.
2. Name the main classifications of public revenue.
3. Write short notes on the following:  
(a) Gift tax (b) Customs duty
4. What are the basic tenets of the Ability to Pay Theory?

## Log-Answer Questions

1. Discuss the current status of tax and non-tax revenues in India.
2. Explain the four canons of taxation as prescribed by Adam Smith.
3. Critically analyse the Benefits Approach Theory.
4. Illustrate the superiority of indirect taxation over direct taxation in resource allocation with the help of a diagram.
5. What is the effect of taxation on distribution?
6. Analyse the importance of Lorenz Curve.

### 3.11 FURTHER READING

- Tyagi, B.P. 1975. *Public Finance*. Meerut: Jai Prakash Nath and Co.
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- Croxtan, Frederick Emory, Dudley Johnstone Cowden and Sidney Klein. 1967. *Applied General Statistics*. New Jersey: Prentice-Hall.
- Gupta, S. C. and V. K. Kapoor. 1996. *Fundamentals of Applied Statistics*. New Delhi: Sultan Chand & Sons.

## UNIT 4 GOVERNMENT BUDGET

## Structure

- 4.0 Introduction
- 4.1 Unit Objectives
- 4.2 Indian Budget
- 4.3 Revenue and Capital Budget
  - 4.3.1 Revenue and Capital Expenditure
- 4.4 Revenue, Fiscal and Primary Deficit
- 4.5 Counter Cyclical Fiscal Policy
- 4.6 Summary
- 4.7 Key Terms
- 4.8 Answers to 'Check Your Progress'
- 4.9 Questions and Exercises
- 4.10 Further Reading

## 4.0 INTRODUCTION

Budget is one of the most powerful instruments of legislative control and executive management as it effectively indicates the financial health of the country. Government's budget in India is normally presented in the month of February every year in the Parliament. You must have also observed that many days before the budget is presented, there are conjectures all round by the general public about the expected changes in taxes. The Union Budget for 2017-18 was announced by the Finance Minister, Mr Arun Jaitley, in Parliament on 1 February 2017. Budget 2017-18 contains three major reforms: advancement of date of presentation, merger of railway budget with general budget and abandoning of Plan and Non-Plan expenditure. In this unit, you will study about the presentation of Indian budget, revenue and capital budget, revenue and capital expenditure, revenue, fiscal and primary deficit and counter cyclical fiscal policy.

#### 4.1 UNIT OBJECTIVES

After going through this unit, you will be able to:

- State the periodicity of Indian budget
- Discuss revenue and capital budget
- Analyse revenue and capital expenditure
- Define revenue, fiscal and primary deficit
- Interpret the problem of budget deficit in India

## 4.2 INDIAN BUDGET

In India, the actual financial statement of the Government of India incorporating item-wise proposed disbursements and estimated receipts for a specified period (normally a year) is termed its Budget Statement. Article 112 of the Constitution of India states that 'an annual financial statement' shall be placed before both Lok Sabha, and Rajya Sabha,

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while Article 202 of the Constitution states that a similar financial statement for each State shall be placed before the Legislature of that State.

In India, all government accounts (of both the Centre and the States) are grouped into three parts, viz., (i) Consolidated Fund, (ii) Public Account and (iii) Contingency Fund.

All sums of money received by and belonging to GOI or States are credited to the **Consolidated Fund of India** or those of the respective States. For example, all revenues received by the Government of India, all loans raised by it through the issue of treasury bills, loans or ways and means advances and recoveries of loans are credited (with the exception of sums credited to the Contingency Fund of India) to the Consolidated Fund of India. No amount can be spent from this Fund without parliamentary sanction, except for certain expenditure items specified in the Constitution and 'charged' upon the Fund (such as the salaries of the Judges of the Supreme Court and Comptroller and Auditor General of India). These expenses are included in the budget but are not put to vote in parliament. Corresponding provisions govern the replenishments of the Consolidated Fund of a State and expenditure from it.

All sums of money received by the Centre or a State, but not belonging to it and held in trust, are credited to the **Public Account of India** or that of the concerned State. No legislative sanction is needed to make payments out of the Public Account.

The **Contingency Fund** consists of finances which are put at the disposal of the governments to meet unforeseen emergent expenses. A prior sanction of the parliament (for spending an amount out of the Contingency Fund of India) or of a State Legislature (for spending an amount out of the State Contingency Fund) is not needed. However, any such expenditure has to be approved later by the parliament or the State Legislature as the case be, and the Contingency Fund is to be replenished accordingly.

### Contents of the Budget

In India, both the Central and State Budget Statements show the receipts and payments under the above mentioned three Accounts separately.

In India, a budget (whether Central or State) shows financial accounts of the previous year, the budget and revised estimates of the current year and the budget estimates for the forthcoming year. The estimates for the forthcoming year are in two parts—those based upon the assumption of the existing taxes and their rates would continue, and those based upon the proposed changes therein. A budget, in this sense, becomes both a description of the fiscal policies of the government and the financial plans corresponding to them.

It is quite possible that some revenues happen to be earmarked for certain specific expenditure heads, such as betterment levies, special assessments and the like. Similarly, some expenditure heads of the budget may be contractual in nature with the government legally bound to honour them. Examples of such expenditure heads include interest payment on loans, repayment of loans, payments arising out of satisfaction of court decrees, amounts falling due for payment on account of salaries, pensions, provident funds and so on.

### Presentation in Parts

In India, a budget may be presented *in parts*. For example, each layer of the government (national and sub-national) has its own budget. In addition, there are bound to be some

intergovernmental transactions and, depending upon the legal and accounting procedures, they may form a part of the budget of one layer or the other. The net effect of the fiscal policy of any one government is conditioned by the collective budgeting of all the layers of the government. Similarly, while railway finances form a part of the central government finances, the railway budget is presented separately from the main budget of the central government.

However, with effect from 2017 the Railway Budget is merged with the Union Budget.

### Periodicity

The periodicity of the public budget in India has also been a subject of debate on two counts.

- (i) In India, fiscal year runs from 1st of April to 31st March of next year. It has been a long-standing argument that the agricultural sector significantly contributes to our GDP. It has, therefore, been a long standing suggestion that the beginning of our fiscal year should coincide with the beginning of the busy season of the economy (which starts with the kharif crop) in October/November. This way the budget would cease to be a gamble in the monsoon. However, this reasoning has lost much of its weight. This is because Indian economy, on account of its (i) overall growth in the recent past, (ii) increased exposure to the global forces, and (iii) increased commercialization and diversification of agricultural sector, has gained in resiliency. Now a change in revenue receipts from agricultural sector are not able to cause a major swing in aggregate revenue receipts of the government. Public budget, for these reasons, is no longer a gamble in the monsoon.
- (ii) It is argued that the annual practice of preparation, presentation and passage of the budget is a wasteful one. Expenditure against sanctioned amounts starts with **a time lag, while preparation** for the next annual budget starts soon after. In other words, the budget has become a **continuous and time consuming** activity of the government. It is claimed that this practice allows the authorities to revise the tax structure more frequently. But this argument holds no weight. Even now the authorities are in a position to vary those taxes where such a need may arise (such as in customs duties). In respect of most other taxes, however, frequent changes do not allow a judicious assessment of the effects of tax measures. Accordingly, it is suggested that the broad features of the tax structure should be left unaltered for a few years at a time and only minor changes should be allowed from year to year. This, however, does not prevent the authorities from introducing major changes in times of national emergencies.

### Secrecy

Secrecy surrounding budget proposals is also a debatable issue. It is asserted that budgetary proposals are unnecessarily kept secret till their actual presentation to the legislature. This practice causes a lot of uncertainty and speculation and obstructs efficient planning of economic activities by everyone. In India, this uncertainty affects even the State budgets because of large scale transfer of resources from the Centre to the State. Till the passage of the Central budget, the States cannot assess the size of these transfers. The State budgets are also indirectly affected by the inflationary impact of the Central budget.

## NOTES



## NOTES

Critics maintain that there is absolutely no reason to be secretive about proposals concerning direct taxes. Rather, they should be widely discussed to assess their impact on savings, capital formation and other parameters of the economy. An open discussion of proposals concerning even indirect taxes would cause less speculation than is the case at present. Moreover, such a discussion would enable the public to participate in the budget deliberations in a more constructive manner. For the authorities also, it would be a more flexible position as against the existing one in which they think it necessary to defend every proposal presented to the legislature. Under the new system, they will be better placed to modify the proposals to suit the needs of the economy.

### 4.3 REVENUE AND CAPITAL BUDGET

In many countries (including India), the budget is divided into revenue (current) and capital accounts. Revenue account covers those items which are of recurring/routine nature; while capital account covers those items which result in acquisition and disposal of capital assets and liabilities. This division can be justified on several grounds. There is an economic sense in distinguishing between expenditure that does not add to or subtract from the capital assets and that which does. And this economic sense applies with equal force to government budgeting as well. It is maintained that every economic unit must distinguish between current expenses and those incurred for acquisition of capital assets. Current expenses are equivalent to consumption; while acquisition of capital assets is not. It is only when these capital assets depreciate that real expenditure takes place in the sense of consumption. It is on this logic that private commercial units do not count the amounts spent on the acquisition of capital assets as a part of current expenses for the year. It is only the depreciation part that is so counted. It is argued that the government should also follow the same practice.

Another argument in favour of the division of the budget between capital and revenue accounts is, however, quite flimsy. It is maintained that through such a division the government can follow a good working rule, namely, ensuring that all the current expenses are met through taxation while all the capital expenses are met through borrowings. It must be noted that such a policy approach can be quite restrictive and misleading. If used judiciously, taxation, borrowing and expenditure become potent policy tools in the hands of the government. Therefore, instead of getting restricted by such self-imposed limitations, the authorities should aim at having a well orchestrated fiscal policy.

In India, the Constitution demands that the budget must distinguish expenditure on revenue account from other expenditure. Though this constitutional obligation applies only to the expenditure side of the budget, factually, this classification is applied to the receipts side as well. Moreover, the Constitution does not provide any criteria for such a classification, and no clear, objective and unambiguous criteria are available from other sources. Factually speaking, this classification is based upon established conventions and official discretion. Revenue Budget consists of the *revenue receipts*—both tax and non-tax revenue—and the expenditure met out of revenue receipts. The non-tax revenue receipts include revenue from currency, coinage and mint, interest receipts, dividends, profits, revenue from general services (such as police, jails, supplies and disposal, and public works), revenue from social and community services (such as education, health, housing, broadcasting, and so on), and revenue from economic services (such as agriculture and allied services, industry and mines, transport and communications).

#### Check Your Progress

1. Name the three parts of all government accounts.
2. What are the contents of the Indian budget?

## NOTES

Correspondingly, receipts on capital account, include *market loans*, borrowings from the Reserve Bank of India and others, through the sale of Treasury Bills<sup>1</sup> and loans from foreign governments and others to the central government. Capital disbursements include expenditure on acquisition of various physical assets like land, buildings, machinery and equipment, investments in shares and debentures, and loans to State Governments and other bodies. The Capital Budget also incorporates the transactions in the Public Account.

The division between revenue and capital accounts for the State Budgets is similar to that of the GOI budget with only some differences in terms of specific items. For example, the States receive a share of net receipts of several taxes levied and collected by GOI. They do not get any revenue from currency, coinage and mint. States also get both revenue and capital grants from GOI. While GOI can borrow from abroad, the States cannot. States borrow from GOI but do not lend to it. Their borrowings from RBI are also nearly non-existent. In recent years, investments by National Small Savings Fund in State Government securities and market borrowings have become prominent components of State borrowings.

#### Plan and Non-plan Accounts

This division applies only to the expenditure side of the budget and, as of now appears counterproductive. Plan expenditure covers only that portion of the total expenditure which is directed to finance the projects/schemes specifically initiated under a plan or which are the spillover of the previous plan/plans. Those projects/schemes which are completed also require maintenance and other running expenditure in future; but such expenditure is classified as Non-Plan expenditure with the result that, over time, it keeps on increasing automatically, and this is as it should be. However, the budget makers, under various compulsions, prefer to increase allocations for plan projects/schemes at the cost of non-plan allocations. As a result, existing projects/schemes remain under exploited for want of maintenance and operative allocations while new projects/schemes are taken up.

In India, till mid 1980s, in addition to the division of the budget into revenue and capital accounts, the Plan Budget was also prepared. The Plan Budget was a document which showed the budgetary provisions for important projects, programmes and schemes included in the Central Plan. It gave the details of the Budgetary support for the Central Plan by sectors of development, including the Central Plan assistance for States and Union Territories. Furthermore, extra budgetary resources for the Central Plan were also shown. The break up of the proposed outlays between General Services, Social and Community Services, and Economic Services, was shown together with various physical targets wherever possible. Currently, in pursuance of the recommendations of the Auditor and Comptroller General of India, this practice stands modified. The budget is first split up into Plan and Non-Plan portions and each part, in turn, is divided further into Revenue and Capital Accounts.

From several quarters, a suggestion has been made for the abolition of distinction between Plan and Non-Plan expenditure. However, so long as this is not done, there should be a two-fold classification, namely, (i) Revenue and Capital Accounts, each sub-classified into Plan and Non-Plan components, and (ii) Plan and Non-Plan Accounts, each sub-classified into revenue and capital components.



## NOTES

## Concluding Observations

The traditional approach towards budgetary accounting is designed for an effective legislative control over the executive, and to meet the requirements of fiscal management. It is an excellent aid to government auditors and an effective check against misappropriation of funds and other fraudulent practices. To this end, therefore, accounts are classified into categories corresponding to individual ministries, departments and sections; and within each, there are further divisions and sub-divisions. But there is a lack of correspondence between the purpose and the account head. This approach does not provide information required for the formulation of fiscal policies. It does not provide a basis for assessing the effect of alternative budgetary policies and operations and for devising improvements therein. To that end, a system of economic and functional classification of the budget on the one hand and the introduction of programme and performance budgeting on the other (to be discussed in a later section) are very essential. It is noteworthy that, in India, the accounting format of the budget broadly corresponded to functional categories. But with the passage of time, the extent of this correspondence weakened and could no longer meet the requirements of a proper functional classification. and with the expansion of government activities, the older classification lost a good deal of its earlier functional relevance. For example, instead of adding new heads for them, several important items were put under the head 'miscellaneous'.

The inadequacies of the budget formats described above lead us to look for alternatives which have appeared on scene.

## 4.3.1 Revenue and Capital Expenditure

*The Concepts.* Article 112(2) of our Constitution requires that the **expenditure part** of the GOI budget must meet the following *two requirements*. (Note that no such restriction has been imposed for the receipts part of the Budget.)

First, the sums required to meet expenditure which, according to the Constitutional provisions, is 'charged' upon the Consolidated Fund of India (that is, such Constitutionally committed expenditure for which specific sanction by Parliament is not required) are to be shown separately from rest of the expenditure sums. There are seven entries which describe the 'charged' expenditure items.

Second, the Constitution says that the Budget 'shall distinguish expenditure on revenue account from other expenditure'; that is, expenditure is to be classified into 'expenditure on revenue account' and 'expenditure on capital account'. In this context, the following facts are specifically noteworthy.

- The Constitution does not provide any legal or other criteria as a basis for distinction between expenditure on revenue account and expenditure on capital account.
- The budgetary classification of GOI expenditure into revenue and capital categories is based upon a combination of prevalent conventions and administrative discretion.
- The conceptual problem of this classification of receipts arises only in the case of borrowings and foreign grants, and not in the case of receipts from taxes, fees and fines and others.
- To meet the above-said Constitutional obligation, **both receipts and expenditure** sides of GOI budget are split into 'revenue account' and 'capital account' components.

## Capital Account

Items representing receipts and disbursements which meet the following criteria are classified under capital account, namely, those

- (i) which add to or subtract from government's financial claims and liabilities to third parties (such as deposits, collections of small savings and other forms of loans but *not*, say, grants);
- (ii) which result in variations in *physical assets* of the government (that is, their acquisition, creation and disposal or additions, as also subtractions and alterations therein); and
- (iii) which result in variations in *financial claims* upon or liabilities to third parties.

It is clear that borrowing, lending, recovery and repayment of loans, as also remissions of loans belong to capital account of the budget.

## Revenue Account

The following items belong to the revenue account of the budget, namely,

- (i) variations in *financial* balances created or owned by the Centre (such as through tax collections and their spending, receipts and payments of interest, dividends, profits, rents, fees and fines, grants, creation of currency and others),
- (ii) expenditure on upkeep and maintenance of physical assets and schemes, and
- (iii) cost of administration, police and judiciary and the like.

Broadly speaking, that **expenditure** which *does not* result in creation of physical assets of the Centre or its financial claims upon others is treated as revenue expenditure. Grants given to State Governments and other parties are also treated as revenue expenditure even when some of them may be meant for creation of assets by the recipients.

As regards defence expenditure, it can be argued that apart from current expenditure on salaries, rations and training and others of the defence personnel, expenditure incurred on acquisition of defence equipment (including items like aeroplanes, tanks and ships etc.), should also be in the revenue account. These items are expected to be 'consumed' away, with at the most junk value left at the end. Expenditure on capital account is, therefore, only that portion of the total defence expenditure which is spent for acquisition of buildings and residential accommodation.

Correspondingly, revenue receipts, while adding to its purchasing power, do not add to the financial claims upon the government. These receipts may be tax receipts, or non-tax receipts like interest receipts, grants, profits and dividends and others.

**It is noteworthy that the criteria narrated above are only general indicators. They are not precise enough to provide an objective, clear-cut and unambiguous basis for classification of every transaction into revenue and capital accounts of the budget.** Consequently, the authorities tend to follow prevalent conventions till there is a compelling need for deviating therefrom.

**Comparative Size:** Revenue receipts have always been a large component of the total receipts, but have shown an uneven variation. From four fifths of the total receipts in 1950-51, this component declined to around 56 per cent in the Third Plan, rose to 72 per cent during 1997-02, and was budgeted at 62.8 per cent in 2012-13. In contrast, expenditure on revenue account registered a fall till the Third Plan and then with a

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secular increase was budgeted at as high as 89.2 per cent in 2008–09 and 86.3 per cent in 2012–13. Clearly this leaves very little scope for capital expenditure and developmental orientation of the GOI budget.

It is seen that revenue expenditure component dominates and far exceeds the capital expenditure one, the former registering a persistent secular uptrend since the Third Plan, and budgeted at 86.3 per cent of the total expenditure in 2012–13. This is considered an unhealthy trend for a developing country like ours where the authorities have assumed a major responsibility of promoting capital formation. Moreover, there is a persistent deficit on revenue account while, ideally speaking, a surplus should be available from it for financing a part of investment on capital account. Several explanatory factors have been mentioned above for this rapid increase in revenue expenditure. In addition, we may also mention inability of the government in checking inflationary price rise, inefficiency of public enterprises, and avoidable populist policies.

#### 4.4 REVENUE, FISCAL AND PRIMARY DEFICIT

It is quite easy to say that a budgetary deficit is simply the excess of public expenditure over public revenue. However, in practice, the concept admits of several variations and yields widely divergent measures of budgetary deficit. There is also a good deal of confusion due to the fact that there is no standard correspondence between a selected measure and the name assigned to it. A given measure of deficit may be referred to by alternative names and similarly a given term may be used to represent alternative measures of budgetary deficit. The existence of a large number of measures is explained by the fact that each measure has an analytical and policy relevance, and there is no single measure which may be universally preferred to all others for all times to come. There is no single 'correct' measure to opt for. As the World Development Report (1989) of the World Bank says, the choice of the 'correct' measure depends upon the purpose of analysis.

##### Receipts and Disbursements of GOI

Before we take up alternative measures of deficit spending and illustrate them, it would be useful to present a break-up of the receipts and disbursements of GOI into relevant categories and sub-categories in an appropriate and usable form (See Table 4.1).

- I (a). This item represents Centre's share out of the tax revenue collected by it. It is therefore gross tax collection *less* states' share *less* Assignments of UT taxes to Local Bodies.
- I (b). (i) This item represents interest received on loans extended by the Centre to various parties like state Governments, Railways, P & T, Government employees, Foreign Governments, etc.
- I (b). (ii) This item includes dividends and profits, receipts in the process of performing various government duties and functions and exercising of sovereign rights, non-tax revenue of UTs without Legislature, and income from fiscal services. The last component (fiscal services) represents profit on creation of Government currency, that is, the excess of the face value of Government currency produced during the year over its cost of production.
- I (b). (iii) This item is self-explanatory. It includes grants from abroad also.

##### Check Your Progress

3. Mention the items which belong to the revenue account of the budget.
4. State the difference between revenue account and capital account.

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II(a). This item represents repayment of loans to the Centre by its debtors. It, however, does not include recoveries of:

- (i) Ways and Means Advances to states
- (ii) Loans for Agricultural Inputs
- (iii) Loans to Government servants etc.

Correspondingly, therefore, all estimates of deficits (except that on Revenue Account) are affected by this omission.

II(b) and II(c): These components represent all varieties of borrowing by GOI except those through the sale of 91-day *ad hoc* treasury bills (borrowings through treasury bills of other kinds are included in item II(b)). These borrowings are *net* amounts, that is, gross borrowings minus repayments by the GOI on its outstanding loans. For this reason, the portion 'Securities Issued to International Financial Institutions' (these securities are deposited with RBI by the Centre) gets totally omitted because it represents simultaneous capital receipts and disbursements of equivalent amounts.

II(d): This represents sales proceeds of some assets sold by the Centre. More specifically, this came into existence on account of disinvestment of some equity share holdings in PSUs in the wake of new policy of liberalization. The reader should note the claim of the Centre that the sale of these assets reduces its budgetary deficit by an equivalent amount. Many analysts and the World Bank do not agree with this view. However, the viewpoint of the Government can be defended by pointing out that additions to Government assets through its capital expenditure, and through extending loans to other parties, are not deducted from its total expenditure in estimating Fiscal Deficit or Primary Deficit. So why should the *sale* of assets be treated differently? In other words, payments on capital account are taken to add to a deficit while the acquisition of assets is not taken to reduce it. Extending this reasoning to sale of assets, it follows that their sale proceeds should mean a reduction in a deficit, while the corresponding loss of assets should be ignored.

The remaining items in Table 4.1 are self-explanatory. It only needs reiteration that repayments of loans by GOI do not appear in 'Expenditure on Capital Account' because the 'Borrowings' in capital receipts have already been reduced to 'net' of repayment figures. However, it should be noted that 'Recoveries' of loans [Item II(a)] from the debtors of GOI are included in item II (Capital Receipts). For this reason, item V(a) [that is, 'Loans and Advances' in Expenditure on Capital Account] includes *gross* (and *not net*) amounts of loans extended by GOI to other parties (such as Foreign Governments, State Governments, and Government employees, etc.).

##### Concepts of Deficit

The following break-up of GOI budget enables us to define (and therefore estimate) a few concepts of deficit, namely:

- Deficit on Revenue Account (RD)
- Deficit on Capital Account (CD)
- Budgetary Deficit (BD)
- Fiscal Deficit (or Gross Fiscal Deficit) (FD) or (GFD)
- Net Fiscal Deficit (NFD)
- Primary Deficit (PD) or (GPD)
- Net Primary Deficit (NPD)



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## 1. Deficit on Revenue Account (RD)

The excess of expenditure on revenue account over receipts on revenue account measures revenue deficit.

Item IV – Item I

Table 4.1 Alternative Measures of Deficit

	(₹ in crores)					
	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
1	2	3	4	5	6	7
I. Revenue Receipts	4,34,387	5,41,864	5,40,259	5,72,811	7,83,833	7,89,892
(a) Tax Revenue (net)	3,51,182	4,39,547	4,43,319	4,56,536	5,63,685	6,64,457
(b) Non-tax Revenue	83,205	1,02,317	96,940	1,16,275	2,20,149	1,25,435
(i) Interest	22,524	21,060	20,717	21,756	19,728	19,578
(ii) Non-interest	58,151	78,534	73,429	91,378	1,97,665	1,03,684
(iii) Grants	2,530	2,723	2,794	3,141	2,756	2,173
II. Capital Receipts	1,44,482	1,97,978	2,99,863	4,53,063	4,47,743	4,47,836
(a) Recoveries	5,893	5,100	6,139	8,613	9,001	15,920
(b) Borrowings, other than 91-day <i>ad hoc</i> Tr. Bills	1,24,096	1,33,678	2,51,384	4,38,774	4,05,459	3,90,782
(c) Other Capital Receipts (net)	13,959	20,405	41,774	-18,905	10,539	1,134
(d) Sale of Public Assets	534	38,795	566	24,581	22,744	40,000
III. Total Receipts	5,78,869	7,39,842	8,39,935	10,25,883	12,30,576	12,37,728
IV. Expenditure on Revenue A/c	5,14,609	5,94,433	7,93,798	9,11,809	10,53,678	10,97,162
(a) Interest Payments	1,50,272	1,71,030	1,92,204	2,13,093	2,40,757	2,67,986
(b) Non-interest Expenditure	3,64,337	4,23,403	6,01,594	6,98,716	8,12,921	8,29,176
V. Expenditure on Capital A/c	68,778	1,18,238	90,158	1,12,678	1,62,898	1,60,567
(a) Loans and Advances	8,542	-1,220	12,663	16,116	42,515	28,640
(b) Capital Outlay	60,236	1,19,458	77,495	96,562	1,20,383	1,31,927
VI. Total Expenditure	5,83,387	7,12,671	8,83,956	10,24,487	12,16,576	12,57,729
VII. Borrowings through 91-day <i>Ad hoc</i> T. Bills and Drawing Down of Cash Balances	4,517	-27,171	43,834	-1,386	-15,000	20,000
1. Revenue Deficit (IV – I)	80,222	52,569	2,53,539	3,38,998	2,69,844	3,07,270
2. Deficit on Capital A/c (V – II)	(-75,704)	(-79,740)	(-2,09,705)	(-3,40,385)	(-2,84,845)	(-2,87,269)
3. Budgetary Deficit (VI – III)	4,517	(-27,171)	43,834	(-1,386)	-15,000	20,000
= VII = (row 1 + row 2)						
4. Fiscal Deficit [VI – {I + II(a) + II(d)}]	1,42,572	1,26,912	3,36,992	4,18,483	4,00,998	4,11,916
= II(b) + II(c) + VII	1,34,030	1,28,132	3,24,329	4,02,367	3,58,483	3,83,276
5. Net Fiscal Deficit [FD – V(a)]	14,824	23,058	1,65,505	2,27,146	1,79,969	1,63,508
6. Primary Deficit	-7,700	-44,118	1,44,788	2,05,390	1,60,241	1,43,930
(a) FD – IV(a) + I(b)(i)	6,282	21,838	1,52,842	2,11,030	1,37,454	1,34,868
(b) FD – IV(a)	-1,62,420	-42,898	1,32,125	1,89,274	1,17,726	1,15,290
7. Net Primary Deficit [PD – V(a)]						
(a) FD – IV(a) + I(b)(i) – V(a)						
(b) FD – IV(a) – V(a)						

Receipts on revenue account include both tax and non-tax revenue as also grants. Tax revenue is net of states' share as also net of 'Assignment of UT Taxes to Local Bodies'. Note that receipts of UT taxes normally exceed the assignments, and the excess forms part of the receipts on revenue account. Non-tax revenue includes interest receipts, dividends and profits, and non-tax revenue receipts of UTs. Grants include grants from abroad also.

Expenditure on revenue account includes both Plan and Non-Plan components. Thus, the Plan component includes Central Plan and central assistance for State and UT

Plans. Non-Plan expenditure includes interest payments, defence expenditure on revenue account, subsidies, debt relief to farmers, postal deficit, police, pensions, other general services, social services, economic services, non-Plan revenue grants to States and UTs, expenditure of UTs without legislature and grants to foreign governments.

## 2. Deficit on Capital Account (CD)

The excess of capital disbursements over capital receipts measures the capital deficit. Plan capital disbursements include those on Central Plan and assistance for State and UT plans. Non-Plan capital disbursements include defence expenditure on capital account; other non-Plan capital outlay; loans to public enterprises, states and UT Governments, foreign governments and others; and non-Plan capital expenditure of UTs without legislature. The item of capital receipts has already been discussed above. It would be recalled that this item includes 'recoveries' of loans extended by the Centre itself, but only 'net' receipts of loans raised by it.

Note that receipts on account of sale of 91-day *ad hoc* treasury bills and drawing down of cash balances do **not** form a part of capital receipts. However, net receipts on account of sale of remaining varieties of treasury bills and sales proceeds of government assets are included in capital receipts.

## 3. Budgetary Deficit (BD)

It is the sum total of RD and CD. From Table 4.1,

$$BD = (IV - I) + (V - II) = (IV + V) - (I + II) = VI - III$$

It should be noted that in economic literature, and to a certain extent by international institutions, the term budgetary deficit is used to represent 'fiscal deficit' (FD) discussed below. FD is a wider concept while BD, as used in Indian official documents, is a narrower concept.

What is the justification for having a definition of BD which is at variance with its internationally accepted version? Officially, this justification is derived from the argument that budgetary deficit should not measure just a transfer of purchasing power from the private to the public sector. Instead, it should measure a net addition in 'high-powered money' (H) which, in turn, causes an increase in aggregate purchasing power in the hands of the economy. It should, therefore, reflect the expected effect of government expenditure in the form of an aggregate demand and inflationary pressure in the country. However, the measure of BD, as adopted in India, does not meet this criterion. It is because borrowings taken from RBI (except through the sale of 91-day *ad hoc* treasury bills) are excluded from it even when, in effect, such borrowings also add to the supply of money and credit in the economy.

It may be noted in passing that high-powered money is currency in the hands of the public and cash balances of banks including their balances with the RBI.

## 4. Fiscal Deficit (FD)

Fiscal deficit may also be called Gross Fiscal Deficit (GFD). It measures that portion of government expenditure which is financed by borrowings (that is, *all borrowings including those through 91-day ad hoc treasury bills*) and drawing down of cash balances. It should be noted that in India, borrowings are net amounts (that is, gross borrowings less repayments). Similarly, loans extended by GOI are included on the expenditure side of capital account while 'recoveries' are included on the receipts side.

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Therefore, the amount of loans and advances by GOI is also reduced to a net figure. From Table 4.1,

$$\begin{aligned} \text{FD} &= [\text{VI} - \{\text{I} + \text{II(a)} + \text{II(d)}\}] \\ &= \text{II(b)} + \text{II(c)} + \text{VII} \end{aligned}$$

In other words, FD is (Total Expenditure less [Revenue Receipts plus Recoveries plus Sale of Public Assets]). It is also equal to the sum of three items, namely, (i) borrowings, other than through 91-day *ad hoc* treasury bills, (ii) sale of public assets, and (iii) BD.

It is often stated that FD measures an addition to the liabilities of GOI (whether backed by acquisition of some assets or not). This, we should remember, is true only if the item 'drawing down of cash balances' is zero. Mostly, it is a small item and, therefore, by and large, the above-mentioned statement may be accepted in practical decision-making.

### 5. Net Fiscal Deficit (NFD)

This measure of deficit is obtained when FD is reduced by 'Loans and Advances' component [V(a) of 'Expenditure on Capital Account']. In other words, this measure considers the fact that some payments by the government are not part of 'spending away', but for acquisition of assets. However, this reasoning is not carried to its logical conclusion. While assets acquired through giving loans to others are accounted for those acquired through 'capital outlay' [a part of item V(b)] are ignored.

### 6. Primary Deficit (PD)

This measure is also referred to as Gross Primary Deficit (GPD). Measures of deficit described above (except CD) include payments and receipts of interest. These transactions, however, reflect a consequence of past actions of the government, namely loans taken and given in years prior to the one under consideration. Exclusion of interest transactions, therefore, enables us to see the way the government is *currently* conducting its financial affairs. Accordingly, PD is defined as FD less **net** interest payments, (that is, less interest payments *plus* interest receipts), so that

$$\begin{aligned} \text{PD} &= \text{FD} - [\text{IV(a)} - \text{I(b)(i)}] \\ &= \text{FD} - \text{IV(a)} + \text{I(b)(i)} \end{aligned} \quad (a)$$

However, in GOI budgetary documents, interest receipts [item I(b)(i)] are ignored so as to get a *smaller* measure of PD.

That is,

$$\text{PD} = \text{FD} - \text{IV(a)} \quad (b)$$

### 7. Net Primary Deficit (NPD)

This measure of deficit is obtained by subtracting 'Loans and Advances' [Item V(a)] from Net Fiscal Deficit. It is also equal to FD less interest payments *plus* interest receipts less loans and advances. Thus,

$$\text{NPD} = \text{PD} - \text{V(a)}$$

Note that corresponding to two measures of PD, we get two measures of NPD, so that

$$\text{NPD} = \text{FD} - \text{IV(a)} + \text{I(b)(i)} - \text{V(a)} \quad (a)$$

and

$$\text{NPD} = \text{FD} - \text{IV(a)} - \text{V(a)} \quad (b)$$

This brings us to those concepts of deficit which cannot be estimated from the information given in Table 6.1 and has to be made available by the government directly.

### 8. Monetised Deficit (MD)

Monetised deficit is defined as an increase in net RBI credit to central government. The rationale for this measure of deficit flows from the inflationary impact which a budgetary deficit exerts on the economy. Our Budgetary Deficit (BD) discussed above is not able to meet this test. The Chakravarty Committee recommended that in addition to existing measure of BD (namely, borrowings through 91-day *ad hoc* treasury bills and drawing down of cash balances), it should include **all** other borrowings from the RBI by the government. Since borrowings from RBI directly add to high-powered money, therefore, this measure is termed Monetised Deficit. It is obvious that **MD is only a part of FD**. Also, it should be noted that even MD is not a perfect measure of the inflationary impact of the budget. Loans from banking sector also add to the liquidity and inflationary forces in the economy.

### 9. Public Sector Borrowing Requirements (PSBR)

It may be termed consolidated Public Sector Deficit, and represents net claims on (that is *net use of*) the resources of the economy by the entire public sector. It is the most comprehensive measure of deficit and covers all government entities.

In brief, PSBR = (Total Expenditure – Revenue Receipts) for all government entities. It also equals their (New Borrowings less Repayments less Drawing Down of Cash Balances).

Note that, here, the term 'expenditure' includes wages of public employees, expenditure on goods and services, fixed capital formation, interest on debt, transfer payments and subsidies. However, it **excludes** amortization payments on government debt and accumulation of financial assets. Similarly, revenue includes taxes, fees, fines, rates, user charges, interest on public assets, transfers, operating surplus of public enterprises and sale of public assets. It, however, excludes drawing down of cash balances.

This measure raises the problem as to which economic units should be counted as part of the government sector. Also, it is not a measure of the resource cost of the economy which includes the repercussive effects including that of inflation.

### 10. Structural Deficit (SD)

When the borrowing requirements of the public sector (PSBR) are adjusted (that is, reduced) for occasional or temporary measures for reducing deficit and raising resources, it is termed Structural Deficit (SD). It is a measure of deficit which is expected to persist unless *long-term corrective measures* are adopted by the authorities. For example, if the government raises resources by 'sale of government assets' and through 'amnesty schemes', PSBR should be adjusted for (reduced by) these amounts to arrive at SD.

### 11. Operational Deficit (OD)

PSBR adjusted (that is, reduced) for inflationary price rise gives us Operational Deficit (OD). Obviously, for arriving at OD, choice of an appropriate price index is of great relevance. However, it is very difficult to select an ideal price index. Another problem

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arises from the fact that while indirect taxes add to the revenue receipts of the government, they are also inflationary in nature. Similarly, many PSUs included in the estimation of PSBR may resort to raising of user charges. This act simultaneously adds to both the revenue of the government sector and the inflationary forces, and thereby clouds the true significance of this measure of deficit.

### Tolerable Limits of Deficit Spending

Tolerable limit (or 'crucial' limit) of deficit spending is indicative of that stage beyond which its ill-effects overshadow its benefits. This limit is not an absolute figure but a level related to economic conditions of the country. This level is difficult to estimate, but it is easy to see when the deficit is sufficiently within 'safe' limits or clearly exceeding the 'tolerable' ones. Further, the 'safe' limit depends upon the way in which a deficit is financed. For example, over-reliance on domestic private borrowings is likely to push up interest rates and 'crowd out' private investment. Similarly, excessive borrowing from abroad is bound to create problems of debt servicing. These problems get aggravated if the borrowings have a short maturity and/or do not lead to additional export earnings. Debt servicing can become an important factor in accelerating the depletion of foreign exchange reserves. In the same way, an economy can absorb only a limited amount of additional money without feeding inflation, and an excessive reliance on this source of financing a deficit becomes inflationary. In this context, the concept of *Seigniorage* is also a noteworthy one. Seigniorage is the ability of the government to claim resources in return for issuing currency. It is an implicit 'inflation tax' which the holders of financial assets (including conventional money balances) pay. The real purchasing power of money balances declines. And the same thing happens with real rate of interest. The burden of outstanding government debt declines and an increase in nominal interest rate seldom compensates for it. Another ill-effect of inflation caused by deficit spending is its impact on income distribution which shifts in favour of non-fixed residual like profits.

Current thinking supports the thesis that inflation is mainly caused by deficit spending, and can be cured only through budgetary reforms. Also deficit spending is a self-feeding process. With price rise, government expenditure rises faster than its revenue and the government is forced to resort to bigger deficits.

These days, it is widely believed that a mild inflation is helpful in maintaining a high level of economic activities and employment and that moderate deficits help in sustaining the mild inflation with its beneficial spill-over effects. In contrast, it is not possible to sustain huge deficits without severely damaging the economy.

Some countries (including India through its Fiscal Responsibility and Budget Management [FRBM] Act) have adopted laws to check deficit spending. Such a course, however, often fails. Ways are found to overcome the legal hurdles when the government is not able to contain its expenditure. The net outcome of such self-imposed restraints always depends upon the political will of the government and its administrative strength. As regards India, it was expected that with the passage of the Fiscal Responsibility and Budget Management Act and rules and targets framed under it, GOI would be able to improve its fiscal health on a sustainable basis. In the meantime, revenue receipts of the Centre have also recorded a creditable increase on various counts including the expanded coverage of service tax and economic growth. It is expected to receive a further boost with the introduction of a comprehensive GST. However, the Centre has not been able to contain the growth of its revenue expenditure, and the problem of fiscal deficit is still with us.

#### Check Your Progress

5. What is fiscal deficit?
6. How is capital deficit measured?

## 4.5 COUNTER CYCLICAL FISCAL POLICY

Budgetary or fiscal policy comprises steps and measures which the government takes both on the receipts and expenditure sides of its budget, including rules, regulations and procedures relating to them. To ensure its consistency with the overall economic policy of the government, its contents should not be selected in a piecemeal and haphazard manner. This frequently poses some difficult problems because some components of the policy may be contradictory to each other. The field of fiscal policy isn't very clearly demarcated from those of monetary policy and debt management because they all make use of several common components but aim at different sets of goals. It is frequently maintained that fiscal policy should mean that segment of government's economic policy which concerns itself "with aggregate effects of government expenditures and taxation on income, production and employment". According to this limitation, the micro-level effects of various taxation and expenditure measures need not be included in fiscal policy proper. Mrs. Hicks says that "Fiscal policy is concerned with the manner in which all the different elements of public finance, while still primarily concerned with carrying out their duties (as the first duty of a tax is to raise revenue), may collectively be geared to forward the aims of the economic policy." The crux of a good and effective fiscal policy lies in keeping its ingredients like expenditure, loans, transfers, tax revenues, income from property, debt management, and the like in a proper balance so as to achieve the best possible results in terms of the desired economic objectives. Discussion of individual taxation and expenditure measures is generally left out of the field of fiscal policy. But this is done only for the sake of simplicity of analysis. Essentially, a fiscal policy is meaningless unless necessary details are filled in.

### Usefulness

Usefulness of fiscal policy lies in its facilitating the achievement of socio-economic objectives of the society. But it must not be forgotten that fiscal policy is only one of the several sets of weapons in the hands of the government. It should also be emphasized that fiscal policy tries to achieve its objectives by regulating the working of market mechanism (while in contrast, some other weapons may by-pass it). The extent of its success, therefore, largely depends upon the response of market forces to various policy steps initiated by the government.

### Recognition

The fact that fiscal policy can be a potent tool in the hands of the authorities came to be recognized only slowly. For decades, both official and academic thinking favoured *laissez-faire* and balanced budgets. This policy, obviously, had its own drawbacks. As Keynes pointed out, an attempt to balance the budget results in its imbalance and vice versa. The rationale and usefulness of fiscal policy came to be recognized only during 1930s and later. With the advancement of growth theory, it was also discovered that long run stability also contributes to economic development. With the popularity of planning and realization of the need for accelerating rate of capital accumulation, fiscal policy has been accorded an important role in underdeveloped countries also. There, it is directed not only to stability, but also towards promoting savings, investment and reduction in distributive inequalities and regional disparities. At the same time, on account of severe rigidities in socio-economic institutions and markets, the task of restructuring fiscal policy is far more difficult in underdeveloped countries. In such countries, there is a need to

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simultaneously direct it at several targets, which also poses additional problem of priority-mix and object-rating.

If fiscal policy of the government is so formulated that it generates additional purchasing power during depression and it contracts purchasing power during the period of expansion, it is known as 'counter-cyclical fiscal policy'. The fiscal policy is based on the relation of public expenditure and taxes to the national income, the *GNP*. The relationship between public expenditure and *GNP* and between tax and *GNP* may be expressed in the form of the following propositions.

**Public Expenditure and *GNP*** An increase in public expenditure raises the level of *GNP*. The size of increase in the *GNP* as a result of additional public expenditure is determined by the multiplier. Public expenditure in the form of purchase of goods and services increases business incomes and household incomes—wage, interest, rent and business profit—which in turn increases government's tax revenue. Marginal propensity to consume being greater than zero, households spend a part of additional income on consumption, and so do the people who earn additional income due to additional consumption expenditure by the households at the first instance. The process continues and *GNP* increases at the rate of multiplier.

**Taxation and *GNP*** Direct taxes without an equivalent public expenditure have adverse effect on *GNP*. Direct taxes have, therefore, a deflationary impact on the economy. Increase in taxation either due to increase in the rates of existing taxes or due to imposition of new taxes, reduces *GNP*. The size of decrease in *GNP* as a result of increase in taxation depends on the tax-multiplier. The multiplier in case of taxation works in the reverse direction. For, taxation reduces disposable income and hence consumption expenditure cumulatively. It should be noted here that the negative multiplier will not be as high as in case of public expenditure because the payment of taxes at the first instance does not reduce *GNP* as it is only a transfer of income. Reverse multiplier or tax-multiplier will be one less than public-expenditure multiplier, even if *mpc* is same in both the cases. The implication of the expenditure multiplier being higher by one than tax-multiplier is that expenditure effect of a certain amount would more than neutralize the effect of taxation of an equal amount.

**Countercyclical Fiscal Policy: Automatic and Discretionary Changes** It may be inferred from the relationship between public expenditure and *GNP* and between taxation and *GNP* that a countercyclical fiscal policy would require increase in public expenditure and reduction in taxation to fight depression, and reduction in public expenditure and increase in taxation to control inflation. In other words, fighting depression would require a deficit budgeting and controlling inflation requires surplus budgeting.

Some of the budgetary changes are automatic and some are discretionary. The automatic budgetary adjustment takes place only when fiscal policy has built-in-flexibility. The automatic budgetary changes should follow the change in *GNP*. Built-in-flexibility in the fiscal policy implies that as *GNP* falls, both income and consumption decline. Consequently, the revenue from both direct and indirect taxes declines. Government's planned and committed expenditure remaining the same, public expenditure exceeds its revenue, and the budget automatically runs into deficit. This effect is more quick and powerful in the countries which provide unemployment allowances and other relief benefits.

When *GNP* increases, tax base expands and tax-revenue increases. Expenditure level remaining the same, the budget automatically shows surplus. The deficit and surplus

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resulting from fluctuation in *GNP* work as automatic stabilizers of the economy. It is, however, generally believed that automatic stabilizers prove to be adequate and serve useful purpose only for short-term fluctuations in the economy. Automatic stabilizers prove generally inadequate to control the economic fluctuations of larger amplitude. Under such conditions, discretionary changes in budget become necessary.

The discretionary changes in the budget refer to the changes in the tax-structure, and in the level and pattern of public expenditure by the government on its own discretion. Discretionary changes include change in tax-rate structure, abolition of existing taxes, imposition of new taxes, increasing and decreasing the public expenditure, changing the pattern of public expenditure, etc. Discretionary changes are so designed as to arrest the inflationary and deflationary trends in the economy and to mitigate the destabilizing forces, such as increase or decrease in aggregate demand.

**Problems in formulating Counter-Cyclical Fiscal Policy** Formulating a counter-cyclical fiscal policy is not an easy task. It involves certain complications, which should be borne in mind while devising the tax and expenditure policy to stabilize the economy. Some complications have been pointed out by Eckstein<sup>19</sup> as follows:

1. All expenditures do not have the same multiplier effect. For example, transfer payments by the government do not create a demand for goods and services. Some kinds of public expenditures (e.g., those on free education and hospital facilities) replace private expenditure.
2. Not all tax-changes have the same multiplier effect. For example, taxes paid by the upper income groups have lower multiplier effect than those paid by lower income groups, because of differences in their *mpc*. The multiplier effects of indirect taxes are not clearly known.
3. Deficit financing through public borrowing may reduce private investment through crowding-out effect. This kind of deficit financing reduces the multiplier effect.
4. There are practical difficulties with regard to the assessment of time-lags and accuracy of forecasts. There is uncertainty with regard to effectiveness of fiscal policy.

### Fiscal Policy and Stability

The problem of stability refers to that of recurring cyclical phases of upward and downward cumulative movement in income, employment, output and prices, etc. in the economy. In an underdeveloped country, such an instability is mainly caused through pressures originating from abroad and imported through variations in imports, exports and external resource flows. Recognition of a close relationship between price changes and the level of output and employment, particularly in developed market economies, has led some economists to claim that economic stability should be interpreted to mean a steady non-inflationary economic expansion in output and employment coupled with a very mild rise in prices. It is argued that a very mild inflation enables an economy to achieve a continuous expansion.

### Problems of Budget Deficit in India

The general public has always been sceptical about government's discussion on budgetary spending. This is unfortunate, since deficits should arouse genuine concern, particularly as their size in some industrial countries is daunting. Yet, the absolute size of deficits is not their most alarming aspect. In fact, most countries now run much smaller deficits (as



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a ratio of GDP) than they did during wartime. Rather, the persistence of budgetary shortfalls during a long period of peace, when governments traditionally pay off debts and save for the future, should set the alarm bells ringing. Furthermore, projected increases in the cost of government programmes, as population's age and economic growth lags, give cause for further concern.

Government budget deficits (the excess of spending over revenue) in industrial countries have been growing as a per cent of GDP for the past 20 years. Large deficits emerged after the oil crisis in the mid-1970s and widened dramatically after 1980, largely the result of government overspending rather than meagre tax receipts. Government expenditures in industrial countries rose from 28 per cent of GDP in 1960 to 50 per cent in 1994. These deficits have sharply increased the public debt (the accumulated burden of yearly budget deficits), which jumped to 70 per cent of GDP in 1995 from 40 per cent in 1980, weakening government finances and draining resources from the economy. Aging population and sluggish economic growth add urgency to this worrisome trend. Governments now have little choice but to restructure their spending programmes. Before understanding the measures to reduce different deficits, we should first understand the problems of budget deficit in India.

Over the past 15 years, India's general government deficits have exceeded 5 per cent in every year except in 2007-08. After a successful consolidation between 2003 and 2008 under the Fiscal Responsibility and Budget Management Act, the deficit again widened during the global financial crisis. The Thirteenth Finance Commission laid out a consolidation plan in 2010 which aimed at reducing the deficit to 5½ per cent of GDP in five years. However, achieving this target has proved elusive. In 2012, new plans for consolidation were announced. These plans focused on lowering expenditure and on controlling the cost of India's fuel and fertilizer subsidies, but achieving long-run fiscal consolidation will be challenging.

The initial years of India's planned development strategy were characterized by a conservative fiscal policy whereby deficits were kept under control. The tax system was geared to transfer resources from the private sector to fund the large public sector driven industrialization process and also cover social welfare schemes. However, growth was anaemic and the system was prone to inefficiencies. In the 1980s, some attempts were made to reform particular sectors. But the public debt increased, as did the fiscal deficit. India's balance of payments crisis of 1991 led to economic liberalization. The reform of the tax system commenced. The fiscal deficit was brought under control. When the deficit and debt situation again threatened to go out of control in the early 2000s, fiscal discipline legalisations were instituted. The deficit was brought under control and by 2007-08 a benign macro-fiscal situation with high growth and moderate inflation prevailed. During the global financial crisis fiscal policy responded with counter-cyclical measures including tax cuts and increases in expenditures. The post-crisis recovery of the Indian economy is witnessing a correction of the fiscal policy path towards a regime of prudence. In the future, the focus would probably be on bringing in new tax reforms and better targeting of social expenditures.

After a brief impact of the global economic slowdown in 2008-09, Indian economy recovered quickly recording 8.4 per cent GDP growth in 2009-10 and 9.3 per cent GDP growth in 2010-11. The recovery, however, was short lived as growth rate slowed down substantially in the following year, 2011-12 to 6.2 per cent. Fiscal expansionary response which continued since 2008-09 to arrest the growth decline resulted in high fiscal deficits. The continued Euro Zone crisis and gloomy economic trends in major economies

contributed adversely, impacting India's exports negatively. This along with the elevated levels of crude prices and high levels of gold imports led to the widening of trade gap and current account deficit. Macroeconomic analysis of India during the years 2010-11 and 2011-12, therefore, showed a trend of rising current account deficit, sticky inflation, falling savings rates, falling investments and even consumption. The uncertainty in global economy along with the monetary policy tightening measures led to a perceptible negative impact on economic growth. As a result of these factors, the growth is estimated to come down to a decade low of 5 per cent of GDP, as per Central Statistics Office's (CSO) advance estimates. Last time sub 6 per cent growth was seen in 2002-03, when the growth in GDP was registered at 4 per cent.

The widening trade gap, falling investment and difficult economic situation, both domestically and abroad, have added to the negative outlook on the Indian economy. The rigid inflationary conditions and consequent tightening measures on monetary policy along with negative sentiment on investments and savings have had a deep impact on industrial growth. Discouraging trends in economic growth called for immediate corrective measures and appropriate policy response. Public debate centred around the fact that high fiscal deficit tends to heighten inflation, reduces room for monetary policy actions, and dampens private investment. The sustained high levels of fiscal deficit though required as a countercyclical measure to spur growth, has also caused diverse forms of macroeconomic imbalances, which could not be overlooked and immediate corrective measures were called for to contain the likely growth in fiscal deficit during 2012-13 and onwards.

Mid-year course correction with suitable policy response became imminent in the emerging scenario. Fiscal consolidation by way of regulating deficits and cutting expenditure to create positive business environment was immediate need of the hour. Government accordingly appointed Kelkar Committee in August 2012 to suggest 'Roadmap for Fiscal Consolidation' within one month's time period. Kelkar Committee held series of meetings with Ministry of Finance, concerned line ministries and Planning Commission to finalize its report within the given timeframe. Deliberating on various issues facing the economy, Kelkar committee suggested a slew of measures to contain the rising trend of fiscal deficit. The committee observed that twin deficits hypothesis domestic *sources tends to be inflationary. At the same time, twin deficits hypothesis implies that, given a certain level of private savings, an increase in fiscal deficit will have to be balanced by either a reduction in private investment or an increase in the current account deficit.* The Indian economy has been witnessing both these katures.

The fiscal stress in the 'do-nothing' scenario as per Kelkar Committee report was fast approaching unsustainable levels. On revenue side, slower pace of economic growth implied shortfall in both direct taxes—both corporation and income tax—due to lower profits and incomes. Similarly, slower pace of economic growth meant shortfall on custom duty, being directly linked to imports and excise duty due to slower pace growth in production. Another matter of concern related to expected shortfall in non-tax revenue by at least ₹30,000 crore on account of lower realization from 2G spectrum following court litigation and poor response to auctions. It was estimated by the Committee that the revenue collections in the current year, tax and non-tax put together will take a hit by at least ₹60,000 crore from the budgeted targets in BE 2012-13. Similarly, international crude prices remained at high levels in the range of US \$ 110 to 115 per barrel peaking to above US \$ 120 per barrel for some time. As India imports bulk of its crude requirements and the pricing of petroleum products by oil marketing companies for the purpose of calculating under-recoveries are benchmarked to the international prices, there was a

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significant increase in the estimated under-recovery of Oil Marketing Companies (OMCs). In tandem with high crude price, prices of most of the petroleum products in the international market went up sharply, and fertilizer bill ballooned due to rising Urea prices. Therefore, it was estimated that the subsidy expenditure would rise by about ₹ 70,000 crore. Accordingly, it was estimated that unless immediate corrective measures are taken the deficit will be well above 6.1 per cent of GDP.

The net effect would be 'crowding-out' of private sector financing for investment due to large gross borrowing requirement. In an extremely fragile world market financing of this magnitude would be creating huge risks for macroeconomic and external stability. Against this scenario and aided by Kelkar Committee recommendations, government undertook the task of meeting the challenge. As a first credible step towards fiscal consolidation, the fiscal deficit target was revised from 5.1 per cent to 5.3 per cent for the current year. As per the roadmap of fiscal consolidation laid down by the government, the fiscal deficit in 2013-14 has been projected at 4.8 per cent, to be reduced by 0.6 per cent every year to achieve 3.0 per cent target by the end of the plan period, viz. 2016-17. In order to achieve the target for Disinvestment, committee of secretaries was constituted in the Ministry of Finance. Similarly, efforts were made to mop up revenues both tax and non-tax to contain the fiscal deficit within the projected targets. However, shortfall in the customs duty on indirect side and non-realization of targeted revenues from Spectrum sale on the Non-tax side had to be factored in.

The case of India illustrates the challenges of consolidating the fiscal position when growth is relatively strong. Fiscal vulnerabilities are masked by high growth. In the past years, the debt-to-GDP ratio has fallen as nominal output growth exceeded the pace of debt accumulation. However, several papers show that it is less costly to embark on fiscal adjustment in a supportive macroeconomic environment. Fiscal multipliers tend to be larger during downturns and fiscal consolidation would involve disproportionately higher costs (see Corsetti et al., 2010; Baum et al., 2012; Baunsgaard et al., 2013; and Blanchard and Leigh, 2013). Therefore, consolidation during good times can help, as can engaging in simultaneous structural reforms. Delaying fiscal correction may lead to an increase of risk premiums as market sentiment deteriorates. High borrowing costs can crowd out important spending and derail growth. In the near term, there is an uncertainty about the trade-off between fiscal consolidation and growth. Therefore, a crucial question is how to achieve consolidation while minimizing the negative growth effects of raising revenues or controlling spending.

Going by official statistics, the Indian economy appears to have already achieved what is globally considered an enviable position – a virtuous combination of high growth and dwindling inflation. According to estimates by the Central Statistical Office, GDP growth accelerated from 5.6 per cent in 2012-13 to 7.2 per cent in 2014-15 and further to 7.6 per cent in 2015-16. The average annual inflation rate as measured by the WPI had fallen from 7.4 per cent in 2012-13 to 2 per cent in 2014-15 and further to -2.8 per cent in 2015-16 (up to January 2016).

Indicators from the economic survey have reflected that gross fixed capital formation (investment) had fallen from 33.4 per cent of GDP in 2012-13 to 30.8 per cent in 2014-15 and further to 29.4 per cent in 2015-16.

The government has built up fiscal credibility since it came to power in 2015 and macroeconomic stabilization has yielded rich dividends. Inflation and the current account deficit are within comfort zones and foreign investors have endorsed the policies. A fiscal slippage would be seen negatively by foreign investors.

## Check Your Progress

7. What were the recommendations of the Kelkar Committee in 2012 regarding fiscal consolidation?
8. What was India's GDP growth rate in 2009-10 and 2010-11?

## 4.6 SUMMARY

- In India, the actual financial statement of the Government of India incorporating item-wise proposed disbursements and estimated receipts for a specified period (normally a year) is termed its Budget Statement.
- In India, all Government accounts (of both the Centre and the States) are grouped into three parts, viz., (i) Consolidated Fund, (ii) Public Account and (iii) Contingency Fund.
- The Contingency Fund consists of those finances which are put at the disposal of the governments to meet unforeseen emergent expenses.
- In many countries (including India), the budget is divided into revenue (current) and capital accounts. Revenue account covers those items which are of recurring/routine nature; while capital account covers those items which result in acquisition and disposal of capital assets and liabilities.
- In India, till mid-1980s, in addition to the division of the budget into Revenue and Capital Accounts, the Plan Budget was also prepared.
- It is quite easy to say that a budgetary deficit is simply the excess of public expenditure over public revenue. However, in practice, the concept admits of several variations and yields widely divergent measures of budgetary deficit.
- As the World Development Report (1989) of the World Bank says, the choice of the 'correct' measure depends upon the purpose of analysis.
- The excess of capital disbursements over capital receipts measures the capital deficit. Plan capital disbursements include those on Central Plan and assistance for state and UT plans.
- Monetised deficit is defined as an increase in net RBI credit to Central government. The rationale for this measure of deficit flows from the inflationary impact which a budgetary deficit exerts on the economy.
- Tolerable limit (or 'crucial' limit) of deficit spending is indicative of that stage beyond which its ill-effects overshadow its benefits. This limit is not an absolute figure but a level related to economic conditions of the country.
- Government budget deficits (the excess of spending over revenue) in industrial countries have been growing as a per cent of GDP for the past 20 years.

## 4.7 KEY TERMS

- **Monetised deficit:** It implies the increase in the net RBI credit to the central government, such that the monetary needs of the government could be met easily.
- **Structural deficit:** It is an estimate of how large the fiscal deficit would be if the economy was operating at a normal, sustainable level of employment.
- **Seigniorage:** It is the ability of the government to claim resources in return for issuing currency. It is an implicit 'inflation tax' which the holders of financial assets (including conventional money balances) pay.

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## 4.8 ANSWERS TO 'CHECK YOUR PROGRESS'

1. All government accounts are grouped into three parts namely, (i) Consolidated Fund (ii) Public Account (iii) Contingency Fund.
2. In India, a budget (whether central or State) shows financial accounts of the previous year, the budget and revised estimates of the current year, and the budget estimates for the forthcoming year.
3. The items which belong to the revenue account of the budget are as follows:
  - (i) Variations in *financial* balances created or owned by the Centre (such as through tax collections and their spending, receipts and payments of interest, dividends, profits, rents, fees and fines, grants, creation of currency, etc.),
  - (ii) Expenditure on upkeep and maintenance of physical assets and schemes, and
  - (iii) Cost of administration, police and judiciary and the like.
4. Revenue account covers those items which are of recurring/routine nature; while capital account covers those items which result in acquisition and disposal of capital assets and liabilities.
5. Fiscal deficit may also be called Gross Fiscal Deficit (GFD). It measures that portion of government expenditure which is financed by borrowings (that is, *all borrowings including those through 91-day ad hoc treasury bills*) and drawing down of cash balances.
6. The excess of capital disbursements over capital receipts measures the capital deficit.
7. The Kelkar Committee in August 2012 suggested 'Roadmap for Fiscal Consolidation' within one month's time period. Kelkar committee suggested a slew of measures to contain the rising trend of fiscal deficit. The committee observed that deficit financing through domestic sources tends to be inflationary.
8. India's GDP growth in 2009-10 was 8.4 per cent and 9.3 per cent in 2010-11.

## 4.9 QUESTIONS AND EXERCISES

## Short-Answer Questions

1. What is a budget statement?
2. Write a short note on the periodicity of the public budget.
3. Prepare short notes on the following:
  - (a) Budgetary deficit (b) Primary deficit

## Long-Answer Questions

1. Why is it necessary to distinguish expenditure on revenue account from other expenditure? Give reasons for your answer.
2. Discuss the 'receipts and expenditure sides' of the Government of India budget.
3. Critically analyse the problem of budget deficit in India.

## 4.10 FURTHER READING

- Tyagi, B.P. 1975. *Public Finance*. Meerut: Jai Prakash Nath and Co.
- Sundaram and Sundaram. 1984. *Public Finance*. New Delhi: Sultan Chand & Sons.
- Croxtan, Frederick Emory, Dudley Johnstone Cowden and Sidney Klein. 1967. *Applied General Statistics*. New Jersey: Prentice-Hall.
- Gupta, S. C. and V. K. Kapoor. 1996. *Fundamentals of Applied Statistics*. New Delhi: Sultan Chand & Sons.

## Endnotes

1. Borrowings from the Reserve Bank of India through the sale of long-term securities are considered a part of the 'market loans'.

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## UNIT 5 PUBLIC DEBT

### Structure

- 5.0 Introduction
- 5.1 Unit Objectives
- 5.2 Differences between Private and Public Debt
- 5.3 Sources of Public Debt
- 5.4 Effects of Government Borrowing
  - 5.4.1 Effects of Government Borrowing on Price Level and Aggregate Demand
- 5.5 Summary
- 5.6. Key Terms
- 5.7 Answers to 'Check Your Progress'
- 5.8 Questions and Exercises
- 5.9 Further Reading

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### 5.0 INTRODUCTION

In the 18th and 19th centuries, the government, under the influence of laissez-faire philosophy, which was reflected in economic liberalism, restricted its activities to its minimum unavoidable essential duties of providing protection and security to the citizens. Consequently, the activities of the state were limited to performing only the essential functions of protecting the community against external aggressions and internal disorders by spending on the defence and maintenance of law and order. These functions were considered essential for the preservation of the community.

However, with the passage of time, with an enormous increase in the responsibilities of the state and also with the development of enlightened views on public finance, the governments in order to supplement their traditional financial resources started borrowing from individuals and institutions within the country and also from outside the country.

Although borrowing as a source of financing certain government activities has not been unknown in the developed countries, the necessity of the public borrowing by the government is imperative in the case of less developed countries where the taxable capacity of the people is low. In modern times, public debt is as popular in the developed countries as it is in the less developed countries.

In modern times, borrowing by the government has become a normal method of government finance along with other sources of public finance like taxes, fees and so forth. In all countries of the world, public debt has shown the tendency of increasing rapidly. In fact, the debt burden, particularly external debt burden, of the world's less developed countries has grown phenomenally and quite disproportionately to the debt servicing capacity of these poor countries. At present, the external debt burden of the third world countries has crossed the staggering figure of over \$2,000 billion mark and in the case of several individual developing countries of Latin America and Africa; the annual debt servicing burden of payment exceeds or nearly equals their total export earnings. For such unfortunate countries, there is little hope that in any foreseeable future they will be in a position to pay off their foreign debt. In fact, the external debt burden of the Third World countries has been mounting up year after year adding to the grave economic plight of these poor countries. These countries are in the never-ending external debt trap from which these countries find it almost impossible to come out. With each passing year, world's developing countries are sliding deeper in debt.



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We find a significant difference in the composition of debt of the developed and developing countries. For example, the total public borrowings of the less developed countries may generally comprise the borrowings made from abroad while in a developed country these mainly consist of the borrowings raised internally from the local authorities, institutions and individuals. It is on account of this significant difference in the composition of public debt that the American economists, including Taylor, have emphasized the internal debt for their country. In India, however, the economists emphasize the external debt. However, both internal debt and external debt are the essential and important components of public debt. In this unit, you will get acquainted with the differences between private and public debt, sources of public debt and effects of government borrowing.

### 5.1 UNIT OBJECTIVES

After going through this unit, you will be able to:

- Differentiate between private and public debt
- State the sources of public debt
- Analyse the effects of government borrowing

### 5.2 DIFFERENCES BETWEEN PRIVATE AND PUBLIC DEBT

The government of a country finances its expenditure from its income. The income of the government consists of what is called public revenue and public debt. In its wider sense, the term 'public revenue' includes all kinds of income. Consequently, it includes also the money that a government borrows. The amount borrowed by the government during any given year constitutes the income of that year. However, since debt has to be repaid to the creditors from whom it is borrowed, it does not constitute the income of the government from the point of the view of the long period. Thus, the main difference between the two is that public revenue consists of the money revenue or income which the government is not obliged to return to the people from whom it is obtained while public debt carries with it the obligation on the part of the government to repay the loan amount together with interest to the creditors from whom it has been borrowed.

Thus, in a broad sense, public debt may be called 'revenue' of the state. Just as the taxes levied and collected in any given year constitute the income of the government, in the same way, loans raised or debt incurred and received in that year also constitute the income of the government of that year. However, the vital difference between the public debt and the other traditional sources of public revenue (taxes and fees) is that while the former has to be repaid with interest, the latter are not. Taxes are collected from the public without any promise or commitment on the part of the government to provide the taxpayers any service, much less the commitment of paying them back to the taxpayers, but public loans or debt are taken by the government from the banks, institutions and individuals on the explicit understanding given in writing that these shall be repaid on maturity while interest shall be paid regularly, half-yearly or yearly as stipulated in the loan agreement.

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The necessity of repaying the loans and various consequences of the different methods of redeeming a loan necessitate a separate study of the subject of public debt.

### Differences between Private Debt and Public Debt

In the matter of public borrowing, the government is placed in almost a similar position as is a private borrower. The relationship between the government and the holders of the government bonds is the same as that between a private borrower and a private lender. The government is barely a government in all its characteristics in such transactions. Like a private borrower, the government may also borrow either for unproductive consumption or for investment purposes. The government will also have to pay interest on such borrowings. However, the dissimilarities between the two kinds of debt are quite glaring. The following are the main differences between private and public debt:

- In times of emergency, like war or economic crisis, the State may force the people and/or institutions in the country to lend funds to it. No private individual or institution can, however, force or compel the other private individuals or institutions to lend.
- In the abnormal circumstances, the State can repudiate the payment of loans taken by it from the public while the private individual can under no circumstance refuse payment of loans to another private individual without inviting legal action. However, normally the State will only in very rare and exceptional circumstances take resort to repudiation of loan because such an act on its part will damage its prestige beyond repair.
- Public debt is generally spent for productive purposes whereas private debt may be spent both for productive as well as for unproductive purposes.
- The State usually repays public debt by taxing the people. The creditors also make their contribution to the extent they also pay taxes in this task of repayment of public debt. In other words, the burden of public debt is also borne by the creditors of the government. As against this, the burden of private debt is never borne by the creditors. In other words, we can say that a private person has to repay his/her debt either out of personal earnings or out of his/her accumulated assets or by borrowing from other sources. While the government can at least partially shift the burden of payment of public debt on the shoulders of the individual creditors in the country in the case of internally held debt.
- The State can unilaterally reduce the rate of interest payable on public loans but a private economic unit is not in a position to do so. Private borrowers have to pay the rate of interest which they have contracted to pay to the lenders.
- The government may take loans from the public for a very long period while a private person can get loans only for a relatively short period of time. In fact, the public debt may consist of government bonds which have infinite or no maturity period.
- The government may borrow both from the internal and external sources. In other words, it not only borrows from others; technically it can also borrow from itself. When the government covers the budget deficit through the printing of paper notes, it amounts to taking loans from itself. However, a private person can borrow only from external sources.



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- The proceeds of public debt are generally spent to promote the welfare of the society, including the creditors. For instance, when the government spends the loan proceeds on development schemes, it benefits almost all the sections of the community. Even the creditors are also benefited through this developmental expenditure. On the other hand, the private debt is not spent in the interest of creditors because it is exclusively spent to finance the individual or private project.
- Being large in amount, public debt significantly affects the production and distribution of wealth and income in the country while a private debt, being small in amount, produces no such effects.
- Since the credit of the government is generally high, it can borrow at lower interest rates than is possible for the private individuals. We can trust a government more easily than a private individual because the government loan is perfectly credit-risk free.

## Causes for the Increase in Public Debt

The size of public debt has increased tremendously in modern times. There is hardly any government today which has not contracted loans both from abroad and in the country from its people. Following are the important causes for the extraordinary increase in public debt in modern times.

1. **Abandonment of the laissez-faire, laissez-passer policy:** Modern governments have abandoned the policy of laissez-faire according to which they indulged in the minimum amount of economic activities in the community. The 19th century philosophy was that the government which governed the least and consequently spent the least was the best. Nowadays, governments actively participate in the economic affairs according to the requirements of the people. The present-day state is a welfare state. Consequently, it resorts to economic planning under which it undertakes the execution of several development projects in order to raise the living standards of people. In order to implement the economic plans it has to borrow funds frequently on a large scale from the public.

Thus, government takes recourse to public debt for development purposes. Even the governments in advanced countries have to undertake mass scale construction of public works like roads, railways, irrigation works, power-houses and so forth, for accelerating the economic growth of their countries. The less developed countries interested in the optimum utilization of their economic resources find public debt a very useful device to finance the various development projects.

2. **Unpopularity of taxation:** People generally do not like to pay taxes to the government. Taxation, whether old or new, has always been unpopular with the public. The citizens generally oppose the imposition of new taxes and enhancement of the old rates of taxation. To get over this public opposition, the government adopts the easier method of resorting to public debt.

3. **Facing natural calamities:** Sometimes, the government raises loans in order to face natural calamities, such as, floods, famines, earthquakes and other calamities. For example, in 2017, the North-East states — Assam, Arunachal Pradesh, Manipur and Nagaland were severely affected by floods. Prime Minister Narendra Modi announced a package of ₹ 2,350 crore for all North-East states for mitigating the impact of floods on short- and long-term basis. Such cases of natural calamities lead to a sudden spurt in the government expenditure. Thus, the government

would be committed to incur a much larger expenditure and would, therefore, run into a sizeable public debt.

4. **Waging of wars:** When a country is engaged in war, it has to borrow heavily from the public. Modern warfare is so costly that the normal income of the State raised through taxation falls substantially short of the actual war expenditure. Besides, taxation beyond certain limits has disastrous consequences on production, and, thus, interferes with the most important objective during a war, namely, the winning of war. Moreover, a public loan is a better and easier method of collecting revenue than taxation. Governments, therefore, borrow extensively from individuals and institutions toward war financing.
5. **Covering of temporary budget deficit:** Sometimes, the government does not consider it appropriate to meet its budget deficit by resorting to additional taxation. In such a situation, the government resorts to temporary borrowing from public.
6. **Fighting the depression:** During the great depression of the 1930s, the long-practised traditional monetary techniques of raising the economy from the depth of depression failed. Fiscal policy was then devised as a way out to deal with the problem. Depression does not mean that the public has no money to spend. Money is there but due to lack of entrepreneurship, the money remains unutilized. Profit expectations being low, nobody is willing to invest his money. At such a juncture, the government can utilize this money by raising borrowings from the public and utilize these borrowings on its own to raise the level of aggregate effective demand in the economy. On the other hand, the private enterprise may be willing but not able to enhance production and thereby to raise output and employment due to lack of funds. At such times, the government may borrow from the banks and release the borrowed funds often supplementing the private enterprise. Either by ensuring circulation of new money or by activating the idle resources in the economy by raising loans, the government may be able to lift the depressed economy and place it on the road to recovery and lead to prosperity.
7. **Controlling inflation:** By raising public debt, the government can withdraw a large amount of money from the public and prevent prices from rising. Since the monetary policy of the central bank alone has not been very successful, fiscal policy of which the public debt constitutes an important part, has been attaining greater importance ever since World War I.
8. **Financing economic development:** An underdeveloped country is always faced with the shortage of funds. Taxation is resented if it is heavily imposed on the people because the taxable capacity of the people is low. However, the need for finance is imperative in order to take the economy out of the vicious circle of poverty. In such a situation, public loans are the only way out for the government.

## Classification of Public Debt

Public loans differ from one another in many aspects. These differences are due to either the markets in which the loans are floated, the rate of interest offered on the government bonds, the conditions of repayment or the purpose for which they are used. Thus, public debt can be classified into various categories. For example, we may have internal and external loans, funded and unfunded loans, redeemable and irredeemable loans, productive and unproductive loans. In the past, loans of some governments have also been compulsory but loans of modern governments are voluntary. In times of emergency, the modern governments encourage and sometimes bring moral pressure on

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the people of their countries to subscribe for public loans (government bonds). However, direct compulsion is hardly ever brought to bear on the people in present times. The main classification of public debt can be discussed as follows:

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**1. Productive and unproductive public debt:** Public debt is incurred for various purposes. Sometimes, a government borrows money in order to construct a railway line or a canal. Sometimes, money is borrowed for purposes of famine relief and sometimes, it is borrowed to wipe off a deficit in the government budget. It will be seen, therefore, that in some cases, the borrowed money is spent to produce goods or services that can be sold for a price. A railway line, for instance, is a profitable commercial proposition. While some railways do not pay, but many do pay. If the debt is incurred by the government for the purpose of constructing a railway line that pays, it would be called a productive debt. The same applies to a loan raised to finance the construction of an irrigation canal if it is able to pay for itself.

However, the public debt incurred to wipe-off the budget deficit or to help provide employment to people in the famine stricken areas and to supply people with food is not a productive debt. Thus, the word 'productive' here has been used in the businessman's sense. In simple words, we can say that productive debt is that debt whose proceeds are spent by the government directly for productive purposes. The spending of such a debt after some time on the completion of the project on which the borrowed money has been spent increases the revenue of the government out of which the government can pay the interest on this debt. Thus, productive loans add to the total productive capacity of the country. As against this, an unproductive debt is a debt wherein the proceeds are not spent directly for productive purposes. Such loans do not add directly to the productive capacity of the country. Consequently, it becomes increasingly difficult to repay such unproductive loans. It is on this account that this debt (unproductive) is often known as a 'dead-weight debt'.

**2. Voluntary and forced public debt:** Voluntary debt is taken from the people on a voluntary basis without coercing the people. Ordinarily, public debt is a voluntary debt. However, sometimes the government may take loans from the public even against their wishes. For example, at the time of grave national crisis like war, the government may go to the extent of raising forced loans from the public. In India, the introduction of a compulsory deposit scheme is an example of this forced kind of public loans. Consequently, loans given to the government by the people on their own accord are called voluntary debt, whereas compulsory debt comprises those loans which are taken by the government by coercing the people by virtue of its sovereign powers.

In most cases, the debt incurred by the government is voluntary and no loan is taken against the will of the lenders. However, in emergency when the people do not buy government bonds due to lack of faith in the stability of government, the government may make it compulsory for the people to lend to it a specified amount by forcing the people to buy the government bonds. Such loans (for example, war bonds) are termed as forced loans.

**3. Internal and external public debt:** The government of a country can go to any national and/or international capital market and borrow funds from there. Internal debt is contracted by the government from the individuals and institutions within the country. On the contrary, external debt is taken by the government from the

individuals, institutions and/or governments of foreign countries. For instance, under the British rule, the government of India used to take (i) rupee loans which were taken by the government from the people of the country, and (ii) sterling loans which were raised in the London money market. At present, the government of India has profusely borrowed from international financial institutions like the World Bank, the International Development Association, friendly foreign governments and from international capital markets.

There is a general feeling that an internal debt is better than an external debt. Many people denounce the resort to external loans on the part of the government on political grounds by arguing that a foreign loan may carry with it foreign control on political grounds by arguing that a foreign loan may carry with it foreign control of the country's economy. The main objection to an external loan seems to be based on the misconception that it involves a drain of wealth from the country. When loans are taken from the foreigners, the country has to pay annually a heavy sum of money by way of payment of interest on these loans. This results in the remittance of huge funds to foreign countries. Consequently, a large chunk of the country's limited foreign exchange earnings from exports become non-available for the country's economic development. Moreover, an external debt can also pose a danger to the economic and political independence of the country. On the other hand, if we borrow money in the home market, there is no drain of the scarce national resources and the wealth remains in the country.

A country cannot, however, be rendered bankrupt by an internally held debt because it only causes the redistribution of wealth within the country while an external debt, if not used productively with care, may cause great hardship to the nation by increasing her debt burden beyond her debt repaying capacity. For example, for most of world's underdeveloped countries, the external debt servicing burden absorbs a major part of their total foreign exchange earnings through their limited exports. Among the top twenty developing debtor countries, India's external debt stock to Gross National Income (GNI) at 23.4 per cent was the fifth lowest and in terms of the foreign exchange cover for external debt, India's position was the sixth highest at 69.7 per cent in 2015.

**4. Funded and unfunded public debt:** Funded debt is that public debt for the payment of which the government establishes a separate fund which is called the sinking fund. Every year the government credits a certain amount of money to this fund. On maturity, the debt is repaid out of this particular fund.

As against this, an unfunded public debt is a debt for the repayment of which the government creates no separate fund. The interest on this debt is paid by the government out of its ordinary income. The principal amount is repaid by the government by contracting additional loans from the market. It is on this account that a funded debt is sometimes also referred to as a floating debt or a long-term debt whereas an unfunded debt is called a short-term debt. Unfunded debt is generally paid off within a year. Treasury bills are an example of unfunded debt because these are generally for a period of three or six months and are never for a period longer than a year.

Unfunded debts are incurred for purposes of financing the temporary deficit gap in the budget. Although the public revenue may be equal to public expenditure, but it may be that due to mismatching of the income and expenditure in the first half of the year the expenditure is greater than the revenue while in the second half the revenue is greater than the expenditure. In such a case, the government would have to borrow some money temporarily during the first six months as this debt can easily be repaid during the second

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half of the year out of the budget surplus. Such borrowings are, therefore, always in anticipation of public earnings.

**5. Redeemable and irredeemable public debt:** Redeemable public debt refers to that debt, the principal amount of which is repaid by the government after a predetermined period of time. The government regularly pays interest on this debt. On the expiry of the maturity period of the debt, the government pays the principal amount to the lenders. It is on this account that it is known as a redeemable debt. In order to repay this loan, the government establishes a sinking fund and credits a fixed amount of money every year to this fund. On the expiry of the debt period, the principal amount is repaid out of this sinking fund. Public loans are mostly redeemable on maturity.

As against this, a non-redeemable public debt is that debt, the principal amount of which is never returned by the government, although the government continues to pay interest on it permanently. The British Consols issued in 1750 by Prime Minister Henry Pelham's government is an example of such an irredeemable public debt.

The difference between the two kinds of loans is that when a loan is redeemable, the government has to make some arrangement for its repayment and funds have to be obtained for the loan to be repaid. It may be decided to repay it from tax-money and that is, in most cases, the best thing to do. For this purpose, either the old tax rates have to be enhanced and/or fresh taxes have to be imposed on people. In other words, there may be deepening and/or broadening of the tax structure. Which particular tax is better depends on a variety of considerations.

Certainly, it is not wise to go on borrowing without paying off the debt little by little because such a policy would plunge the government in heavy and an ever-growing burden of public debt. Moreover, the interest burden on public loans goes on mounting and the taxpayers will have to pay heavily in the end. Consequently, the redeemable debt is preferable to the irredeemable one because of its convenient method of payment.

### 5.3 SOURCES OF PUBLIC DEBT

There are two important sources of public borrowings, viz., internal sources and external sources. Internally, the government may borrow funds from individuals, charitable trusts, financial institutions, commercial banks and other financial intermediaries and the central bank in the country. Externally, the government may borrow from individuals, international financial institutions and foreign governments. We shall discuss the important sources of public borrowing in the following manner. It may be mentioned at the outset that the exact effects of public borrowing will depend to a large extent on the sources of the borrowed funds.

**1. Borrowing from individuals:** If individuals purchase government bonds, some adjustment in their consumption pattern or in the use of their accumulated savings must occur. When government bonds are sold to individuals, there will be very little direct curtailing either of consumption or business investment. The government bonds will be bought largely from funds that would have been used to buy other securities and perhaps in part from idle cash balances. The diversion from other securities may indirectly have some contradictory effects which will be considered after the review of the other sources of funds since the effect is common to all of them. The net benefit here is that although individually people possess a very small amount to be spent on any small project but the government may use the entire collected amount successfully in building a big project.

#### Check Your Progress

1. What constitutes revenue of the state?
2. Define external public debt.

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**2. Borrowing from non-banking financial institutions:** Another source of government borrowing is the borrowing from non-banking financial institutions. When the non-banking financial institutions such as insurance companies, investment trusts, mutual savings banks, chit funds, and others buy government bonds, they reduce their surplus cash balances by making investment in the government bonds. These institutions prefer to invest their funds in government bonds on account of these bonds being perfectly free from credit-risk and also due to their high negotiability and liquidity. The rate of interest paid on government bonds is, however, relatively low. Consequently, in many cases, financial institutions prefer to invest in the high-risk high-return giving securities, particularly in the equity shares of companies under the management of known and experienced industrialists. When the non-banking financial institutions purchase the government bonds, they do so in order to reduce their cash holdings.

**3. Borrowing from commercial banks:** Both the individuals and the non-banking financial institutions purchase government bonds out of their own cash funds. The commercial banks can do so by creating additional purchasing power. The commercial banking system can make additional loans up to an amount determined by the credit multiplier which is determined by their excess cash reserves and the required cash reserve ratio. The credit creation is made possible by the fact that money given as loan by a bank is typically added to the accounts of the borrowers and is paid to people who have accounts with other banks.

**4. Borrowing from the central bank:** The central bank of the country subscribes, at times substantially, to government loans by supporting these loans in the money and capital markets. This action creates the purchasing power in the same manner as the commercial banks do. By purchasing government bonds, the central bank credits the account of the government. The latter pays to its creditors by drawing cheques on its account maintained with the central bank. Those bond-holders who receive the cheques from the government deposit these cheques with their banks. As a consequence, these banks find themselves with large reserves which become the basis for additional loans and advances.

**5. Borrowings from external sources:** Apart from borrowing from different individual and institutional sources in the country, the government may also borrow from other countries. These borrowings can be used to finance war expenditure or to buy the much-needed defence equipment or to pay for the import of capital goods required for the various development projects and so forth. In recent years, the two important external sources of government borrowings are first, international financial institutions like the International Monetary Fund, the World Bank Group and the International Finance Corporation. These financial institutions provide loans to the member countries both for short-term, for overcoming the temporary balance of payments difficulties and also for long-term, for development purposes. The second external source of borrowing is the government assistance from friendly nations which is generally received for development projects. In modern times, for the less developed countries, like India, external sources of government borrowings have become considerably important. India received a loan of \$3.8 billion in 2015 from the World Bank comprising the International Bank for Reconstruction and Development (IBRD) and the International Development Association (IDA).

#### Check Your Progress

3. Name the internal sources of public borrowing.
4. Mention the two important external sources of public borrowing.



## 5.4 EFFECTS OF GOVERNMENT BORROWING

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Following the well-known German economist Adolph Wagner, economists have argued that the government should use its tax income in order to finance its current expenditure and it should take recourse to borrowing from the public only in order to finance its capital expenditure. In modern times, it is commonly accepted that taxation and borrowing can be used for either type of expenditure depending upon the circumstances. In case of less developed countries, both taxation and borrowing are used to finance development projects. The economic effects of government expenditure financed by public borrowing are basically different from the effects of similar expenditure financed by taxation in the following two important aspects:

- Taxation curtails the wealth of the taxpayers while loans do not reduce the wealth of the lenders but merely change its form.
- In taxation, the funds are transferred from the public to the government compulsorily while in the case of borrowing such a transfer of funds is voluntary.

The uniqueness of public debt lies in the fact that it has its 'revenue effects' as well as its 'expenditure effects'. In the first place, the raising of money by means of a loan makes the people change their budgets. Although it may not directly reduce the consumption expenditure as taxation does because it is not out of the current incomes but out of savings generally that the public loans are purchased by the people but it is certain that the raising of money affects the overall expenditure, consumption and capital expenditure. Thus, as its first effect, public debt affects the overall expenditure of people in the country.

Secondly, the benefits conferred on the people by the expenditure of money raised by public loans, have another kind of effects on the economy. These benefits of the loan need not always be different from those that are conferred on the public by spending the money raised by taxes provided that the borrowed money is used for the same purposes as the money raised by taxes is used.

### 1. Effects on Consumption and Investment

Government borrowing should not normally result in the curtailment of consumption because lending to the government, being voluntary, will be mostly met out of savings and not through reduction in consumption expenditure; only in case of war-time borrowing programme, substantial pressure is applied on the individuals to reduce their consumption in order to buy government bonds. Otherwise, the possible direct adverse effect on consumption is that which may result from special advantages of the new government bonds or the higher interest rates as these might offer some inducement to individuals to save more out of their given income by curtailing their current consumption.

There is greater possibility of adverse effect of public debt on investment. We know that the sale of bonds to the commercial banks having excess cash reserves increases the purchasing power through credit creation. Consequently, it should not curtail investment. On the other hand, the sale of government bonds to individuals reduces the funds which they have for expansion of their own business. There will be no contradictory effect if the bonds are sold to the central bank, to the commercial banks if they have excess cash reserves which they utilize to purchase the bonds, or to the individual lenders who purchase them out of surplus funds.

Apart from these effects, there is one direct effect. The growth of public debt may give rise to the fear of increased taxes in future. The profitability of investment running over a long period of years will appear to be less if it is felt by the people that the government borrowing will result in higher taxes in future.

### 2. Effects on the National Income

Since under usual circumstances, the borrowing of funds will have little contractionary effect on the economy, the net effect of a programme of government expenditure financed by borrowing is almost certain to be expansionary. The extent of the expansionary effect will be greater than that arising out of the financing of the same expenditure by taxation. Borrowing will have almost no adverse effect on consumption and no great adverse effect on investment. In contrast, any programme of taxation is certain to have considerable contractionary effect. If government bonds are sold to the central bank, and the commercial banks increase loans on the basis of their larger cash reserves, the borrowing itself, as well as the expenditure of the borrowed funds, will have an expansionary effect on the economy. The only instance in which the overall effect of public borrowing is likely to be contractionary is that in which the borrowing creates great fear about future financial stability of the government.

### 3. Effects on the Distribution of Income

A programme of government expenditure financed by borrowing increases the real income of those people who benefit from the expenditure without currently reducing the income of those people who benefit from the expenditure (with full employment). If the purchase of the bonds (except through price increases with full employment). If the government expenditure is meant to provide greater economic welfare to the lower income groups, the result will be a reduction in the inequalities and a more equal distribution of income between people. However, to the extent the loan finance becomes inflationary some of the favourable effects on the distribution of income may be neutralized.

Another point to be considered here is the payment of interest on the bonds. Interest payment represents a transfer of real income from the taxpayers to the bondholders because the government will have to tax the people so as to pay to the bondholders the interest and later the principal amount as well. If the bond-holders and the taxpayers are identical persons, there will be no net redistribution of income. This will, however, be possible only in a very rare situation. Consequently, some redistribution of income will take place so long as the taxpayers and the bond-holders belong to the different income groups in the community.

### 4. Effects on the Allocation of Resources

The public debt, in itself has little effect on resource allocation and, therefore, on the composition of national product. However, to the extent that public debt curtails business investment activity in the economy, the output of capital goods compared with the total output will be less. Furthermore, the decline in investment will not be equal in all the industries, being greater in some industries than in the others. The allocation of resources is not affected by the method of financing.

### 5.4.1 Effects of Government Borrowing on Price Level and Aggregate Demand

It is claimed that most public borrowings *from the market* only divert funds into the hands of the government. As a result, there is no net addition in aggregate demand and, hence no increased pressures on prices. This reasoning is quite misleading because it

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tries to hide some basic facts.

Firstly, even if public debt does not add to aggregate demand, it is bound to be inflationary because the economy's productive resources get diverted from the production of consumption goods into that of capital goods. By their very nature, investment goods industries have longer gestation periods and therefore during the intervening period, the demand for consumption goods tends to exceed their supply.

Secondly, borrowings used for war activities, for meeting natural calamities and for other relief measures are most likely to be inflationary in their impact because they are basically consumption-oriented.

Thirdly, when a government borrows from the central bank, there is an addition in money supply which in turn adds to demand and pushes up prices.

Fourthly, holding of public debt by commercial banks can also lead to an addition in demand and inflationary pressures. Banks rate government securities as highly liquid which can be encashed at any time with minimum risk of capital loss. This assured liquidity position, therefore, tempts them to increase their loans and advances and thus add to the inflationary pressures in the market.

However, if public debt is used to bring about an increase in productivity of the economy leading to an increased supply of the demanded goods, inflationary forces would be checked to that extent. In addition, the authorities may resort to price controls, rationing and other measures to keep prices under control.

## 5.5 SUMMARY

- The government of a country finances its expenditure from its income. The income of the government consists of what is called public revenue and public debt.
- In a broad sense, public debt may be called 'revenue' of the state. Just as the taxes levied and collected in any given year constitute the income of the government, in the same way loans raised or debt incurred and received in that year also constitute the income of the government of that year.
- In the matter of public borrowing, the government is placed in almost a similar position as is a private borrower. The relationship between the government and the holders of the government bonds is the same as that between a private borrower and a private lender.
- The size of public debt has increased tremendously in modern times. There is hardly any government today which has not contracted loans both from abroad and in the country from its people.
- People generally do not like to pay taxes to the government. Taxation, whether old or new, has always been unpopular with the public. The citizens generally oppose the imposition of new taxes and enhancement of the old rates of taxation.
- Public loans differ from one another in many aspects. These differences are due to either the markets in which the loans are floated, the rate of interest offered on the government bonds, the conditions of repayment or the purpose for which they are used.
- Public debt is incurred for various purposes. Sometimes, a government borrows money in order to construct a railway line or a canal. Sometimes money is borrowed for purposes of famine relief and sometimes it is borrowed to wipe off a deficit in the government budget.

## Check Your Progress

5. What is the effect of government borrowing on the allocation of resources?
6. What is the difference in the economic effects between government expenditure financed by public borrowing and similar expenditure financed by taxation?

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- Voluntary debt is taken from the people on a voluntary basis without coercing the people. Ordinarily, public debt is a voluntary debt.
- Unfunded debts are incurred for purposes of financing the temporary deficit gap in the budget. Although the public revenue may be equal to public expenditure, but it may be that due to mismatching of the income and expenditure in the first half of the year the expenditure is greater than the revenue while in the second half the revenue is greater than the expenditure.
- Redeemable public debt refers to that debt, the principal amount of which is repaid by the government after a predetermined period of time. The government regularly pays interest on this debt.
- There are two important sources of public borrowings, viz., internal sources and external sources.
- Following the well-known German economist Adolph Wagner, economists have argued that the government should use its tax income in order to finance its current expenditure and it should take recourse to borrowing from the public only in order to finance its capital expenditure.
- Government borrowing should not normally result in the curtailment of consumption because lending to the government, being voluntary, will be mostly met out of savings and not through reduction in consumption expenditure; only in case of war-time borrowing programme, substantial pressure is applied on the individuals to reduce their consumption in order to buy government bonds.
- A programme of government expenditure financed by borrowing increases the real income of those people who benefit from the expenditure without currently reducing the purchase of the bonds (except through price increases with full employment).

## 5.6 KEY TERMS

- **Public debt:** It refers to a part of the total borrowings by the Union Government which includes such items as market loans, special bearer bonds, treasury bills and special loans and securities issued by the Reserve Bank. It also includes the outstanding external debt.
- **Monetary policy:** It is the macroeconomic policy laid down by the central bank. It involves management of money supply and interest rate and is the demand side economic policy used by the government of a country to achieve macroeconomic objectives like inflation, consumption, growth and liquidity.
- **Sinking fund:** It is a fund made up of sums of money set aside at intervals, usually invested at interest, in order to meet a specified future obligation.

## 5.7 ANSWERS TO 'CHECK YOUR PROGRESS'

1. The taxes levied and collected in any given year constitute the revenue of the government; in the same way, loans raised or debt incurred and received in that year also constitute the revenue of the government of that year.
2. External debt is taken by the government from the individuals, institutions and/or governments of foreign countries.



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3. Internally, the government may borrow funds from individuals, charitable trusts, financial institutions, commercial banks and other financial intermediaries and the central bank in the country.
4. The two important external sources of public borrowing are the following:
  - International financial institutions like the International Monetary Fund, the World Bank Group and the International Finance Corporation.
  - The government assistance from friendly nations which is generally received for development projects.
5. The public debt, in itself has little effect on resource allocation and, therefore, on the composition of the national product. However, to the extent that public debt curtails business investment activity in the economy, the output of capital goods compared with the total output will be less.
6. The economic effects of government expenditure financed by public borrowing are basically different from the effects of similar expenditure financed by taxation in the following two important aspects:
  - Taxation curtails the wealth of the taxpayers while loans do not reduce the wealth of the lenders but merely change its form.
  - In taxation, the funds are transferred from the public to the government compulsorily while in the case of borrowing; such a transfer of funds is voluntary.

## 5.8 QUESTIONS AND EXERCISES

### Short-Answer Questions

1. What are the causes for the increase in public debt?
2. Write short notes on the following:
  - (a) Redeemable debt (b) Productive debt
3. Write a short note on the effect of government borrowing on the price level.

### Long-Answer Questions

1. Differentiate between private debt and public debt.
2. Discuss the classification of public debt.
3. Critically analyse the effects of government borrowing.

## 5.9 FURTHER READING

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# UNIT 6 STATISTICS

## Structure

- 6.0 Introduction
- 6.1 Unit Objectives
- 6.2 Primary and Secondary Sources of Data
- 6.3 collection and Tabulation of Data
  - 6.3.1 Types of Tables
- 6.4 Measures of Central Tendency
- 6.5 Measures of Dispersion
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- 6.6 Summary
- 6.7 Key Terms
- 6.8 Answers to 'Check Your Progress'
- 6.9 Questions and Exercises
- 6.10 Further Reading

## 6.0 INTRODUCTION

In this unit, you will study about primary and secondary sources of data, collection and tabulation of data, measures of central tendency and dispersion. The most important object of calculating and measuring central tendency is to determine a 'single figure' which may be used to represent a whole series involving magnitudes of the same variable. You will also learn about arithmetic mean, median and mode. Finally, you will also learn about weighted arithmetic mean, geometric mean and harmonic mean. Measures of dispersion refer to statistics that signify the extent of the scatteredness of items around a measure of central tendency.

## 6.1 UNIT OBJECTIVES

After going through this unit, you will be able to:

- Explain the primary and secondary sources of data
- Discuss tabulation of data
- Interpret the measures of central tendency
- Identify the measures of dispersion

## 6.2 PRIMARY AND SECONDARY SOURCES OF DATA

Primary data is the information collected during the course of an experiment in experimental research. It can also be obtained through observation or through direct communication with the person associated with the selected subject by conducting surveys and interviews. There are several methods of collecting primary data. Some of these are as follows:

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- Observation
- Interviews
- Questionnaires
- Schedules
- Surveys

**Observation Method**

Observation is the most common method of studying behavioural sciences. It is not a scientific method, but it becomes a scientific tool when used for formulating the purpose of a research. In this method, the information collected by the researcher is totally based on his observation. If the researcher is studying different brands of shoes, he will not ask the person wearing the shoes of that particular brand. Rather, he will observe it himself and then come to some conclusion.

Firstly, the main advantage of this method is that there are no chances of partiality if the observation is done accurately. Second, the information or the data collected through observation is related to what is currently happening and is not affected by past behaviour or future intentions. Third, this method is independent of a person's willingness to respond and does not require much cooperation on the part of the person, as it happens to be the case in the interview or questionnaire methods. The observation method is suitable in those situations where the respondent is not capable, for some reason, of expressing the feelings verbally.

In the observation method, researchers must keep in mind the following points:

- What should be observed?
- How should the observation be recorded?
- How can the accuracy of observation be ensured?

**Types of Observation Methods**

Observation methods can be categorized into different types depending on various factors, such as style for recording observed information, data needed for observation and activity of the observer. The different types of observation methods are as follows:

- **Structured observation:** It is an observation method in which the following points need to be considered:
  - Careful definition of the matter that needs to be observed.
  - Identification of the style that must be used to record the observed information.
  - Standardization of the condition of observation.
  - Selection of the data required for observation.
- **Unstructured observation:** It is an observation method in which a definition of the matter to be observed, the style to be recorded, standardized conditions of observation and selection of the required data of observation are not known to the researcher. This method is most appropriate where an explored study of the matter under observation is required.
- **Participant observation:** It is an observation method in which the observer is a member of the group he is observing, in order to understand the needs and the problems faced by the group better. For example, a team leader observes all his team members and does the same work as his team members. There are several advantages of participant observation, which are stated as follows:

- The researcher is able to record the natural behaviour of the group.
- The researcher can even gather information, which could not easily be obtained if he observes in a disinterested fashion.
- The researcher can even verify the truth of the statements made by the informants in the context of the questionnaires or a schedule.

- **Non-participant observation:** It is an observation method in which the observer is not a member of the group under observation. This method has a disadvantage—the observer is unable to understand what the team members are feeling.
- **Disguised observation:** It is an observation method in which the members of the group are unaware of the fact that they are being observed.
- **Controlled observation:** Observation that takes place according to definite pre-arranged plans, involving experimental procedures is called controlled observation.
- **Uncontrolled observation:** Observation that takes place in a natural setting is called uncontrolled observation. The main aim of this method is to have spontaneous picture of the situation and for this the prime requirement is sufficient time.

**Limitations of Observation Method**

Though the observation method provides different ways of studying behavioural science, there are some limitations in using these methods. These limitations are as follows:

- An observation method is generally expensive.
- It provides very limited information on the observed matter.
- It may be affected by some unwanted factors; for example, people who are not involved in direct observation might create problems while collecting data through the observation method.

**Interview Method**

An interview is a method of collecting data that involves presentation of oral and verbal stimuli and the reply is in oral and verbal responses. The most common method of interview is personal interview.

**Personal Interview**

A personal interview involves two persons, i.e., the interviewer and the interviewee. The interviewer is the person who questions the interviewee. There is a face-to-face discussion between them. There can be more than one interviewer while taking a personal interview. There are two types of interviews: direct personal interview and indirect oral interview.

In a direct personal interview, the interviewer collects information from the concerned sources. He should be present at the site from where the data has to be collected. This method is most appropriate for intensive investigations, but this method may not be suitable in situations where a direct contact with the concerned person is not possible. In such cases, an indirect oral examination or investigation takes place where the interviewer cross-examines the interviewee to check his knowledge about the problem under investigation. The information exchanged between the interviewee and the interviewer is recorded for future reference.

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A personal interview can be of the following types:

- **Structured interview:** If the personal interview takes place in a structured way, it is called a structured interview. In this type of personal interview, the set of questions to be asked is predefined and the techniques used to record the information are highly standardized. Structured interviews are economical, as they do not require much information from the interviewer and are used as the main technique to collect information for descriptive research studies. The following are samples of structured interview questions:
  - o What is the main function of your production department?
  - o Why do we need to check an order for clearing a product when they have already been cleared for production?
- **Unstructured interview:** If the personal interview takes place in an unstructured way, it means that the questions to be asked to the interviewee are decided at the time of interview. In this type of personal interview, the set of questions to be asked is not predetermined and there are no standardized techniques are used. A list of additional questions is provided to the interviewer and it depends on him to ask them or not. This method demands deep knowledge and greater skills of the interviewer. You can use an unstructured interview as the main technique to collect information in the explorative manner and formulate research studies. The following are samples of unstructured interview questions:
  - o How would you evaluate the benefits of new machinery that is installed in your production department?
  - o If you are provided with a choice, how would you have designed the present production department?

### Surveys Method

A survey is a scientific process of acquiring data and opinion from the public. Researchers undertake surveys in order to determine the opinion of the public regarding products, candidates and other topics; for example, a sample of voters is surveyed before an election to determine how the public perceives the candidates and their issues. A manufacturer makes a survey of the potential market before introducing a new product. The information acquired from the public is used to develop new products, improve services and for various other purposes. Thus, a survey is an important key to improve or maintain the quality of life.

The process of conducting a survey is a complex task. In order to conduct a survey, a large number of skilled and trained persons is required. There are many ways in which data for a survey can be collected, such as by phone, mail and the Internet.

The principle focus of a survey is on the design and collection of data in which many intricacies involved are frequently overlooked. However, a researcher, while conducting a survey, also gives attention to the need for proper evaluation of the survey data as well as its proper analysis. A researcher collects the information or data by means of standardized questions so that every individual surveyed responds to exactly the same questions. The results of the surveys are presented in the form of summaries such as statistical tables and charts.

Those who conduct a survey are typically large organizations, government agencies and institutions who know that listening carefully to the consumers is important for their success. Researchers cannot divulge the name of the client for whom they are undertaking the survey because if the respondents get to know the name of the organization, it might

create a bias in their responses. Researchers only reveal the name of the organizations as and when they are directed to do so.

### Other Methods

There are some other methods that are also used for data collection. These are as follows:

- **Warranty cards:** These are cards that dealers use for collecting information regarding their products. The information required is printed in the form of questions on the warranty cards, which are placed inside the package along with the product. The consumer is requested to fill the card and post it back to the dealer.
- **Distributor or store audits:** Distributors and manufactures, through their salesmen, conduct distributor or store audits at regular intervals. Retailers also get their stores audited by salesmen and use the information to estimate the market size, market share, seasonal purchasing pattern and so on. The data is not by questioning, but by observation; for example, while doing an audit for grocery, a sample of stores is visited periodically and data is recorded on inventories either by observation or by copying the data from store records. The advantage of this method is that it offers the most efficient way to evaluate the effect of different techniques on sales.
- **Pantry audits:** Pantry audit is used to estimate the consumption of goods at the consumer level. In this type of audit, the researcher collects information, such as list of different products, quantities of each product and the prices of each product consumed. All this data is recorded by observing the consumer's pantry. The main objective of a pantry audit is to determine which brand and type of product is being used by which category of consumer, assuming that the contents of the pantry accurately signify their favourites. Pantry audits do not require a series of operations; only one visit is enough to determine the actual preferences of the consumers. An important drawback of pantry audits is that it is not possible to determine the actual preferences of consumers only from the audit data.
- **Consumer panels:** A consumer panel is an extension of the pantry audit. In this technique, the daily record of a set of consumers is maintained to obtain information about consumer preferences. Later, these records are provided to the officers investigating the consumer preferences. Alternatively, you can say that a consumer panel includes a sample of consumers who are interviewed over a fixed interval of time. Consumer panels are of two types:
  - o **Transitory consumer panel:** A transitory consumer panel is set up in order to determine the influence of a particular phenomenon. A transitory consumer panel is performed on a before-and-after basis. This means that the panel examines the consumer response before and after implementing a particular phenomenon. In this technique, the initial interview of the consumers is conducted before implementing the phenomenon. A second round of interview is conducted after that phenomenon has occurred, to determine the changes in consumer attitude, if any. Such panels are mostly used in advertising and social research.
  - o **Continuing consumer panel:** A continuing consumer panel is set up for an indefinite period of time to obtain data about certain aspects of the attitude of consumers over a particular period of time. This panel acts as a general-purpose panel to help investigators on different subjects. Such panels are

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mostly used in the areas of consumer expenditure, public opinion, radio and TV listenership.

- **Use of mechanical devices:** Mechanical devices are extensively used to obtain information related to consumers. The devices used for collecting information are as follows:
  - o **Eye camera:** These are used to collect information about the focus of the respondents on a specific portion of a sketch or diagram or written material. The information collected with the help of eye cameras is used to design advertising material.
  - o **Pupillometric camera:** These are used to record the dilation of pupils because of a visual stimulus. The extent of dilation of pupils helps determine the amount of interest produced by the stimulus.
  - o **Psychogalvanometer:** It is used to measure the degree of body excitement aroused by a visual stimulus.
  - o **Motion picture camera:** It is used to record the body movements language of a buyer when he/she decides whether to buy a particular product from a shop or a big store.
- **Projective techniques:** These are also known as direct interviewing techniques. These techniques were developed by psychologists to collect data about the primary reason, desire or intention of respondents by using projections. In a projective technique, while providing information about a particular topic, the respondent automatically projects his/her own attitude or feelings on that subject. The projective technique is mostly used in inspirational research and in attitude surveys. Some of the important projective techniques are as follows:
  - o **Word association test:** It is a test that provides information regarding words that have maximum correlation.
  - o **Sentence completion test:** It is an extension of the word association test. In this technique, the informant is asked to complete a sentence in order to determine the perception of the informant about a topic.
  - o **Story completion test:** It is a technique where the informant is given a story to help focus on the given subject and then asked to give the conclusion for the story.
  - o **Verbal projection test:** It is a technique where the informant is asked to give a comment or an explanation on a particular topic.
  - o **Play technique:** It is the technique where the informants are given a situation and are asked to perform for improving the situation. For this, the informants are given various roles.
  - o **Quizzes, tests and examinations:** It is a technique that helps in extracting information regarding specific ability of the candidates on various subjects.
  - o **Sociometry:** It is the technique that describes social relationships among individuals in a group.
- **Depth interview:** These interviews are designed to determine the underlying reason and desire of the consumer. This technique is most commonly used in inspirational research. In a depth interview, the interviewer needs to explore the hidden needs, desires and feelings of the respondents, so it is necessary for the interviewer to be a skilled one. Therefore, the researchers and interviewers must

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be given proper training before they start the work. This is not an easy task and takes a great deal of time.

A depth interview can either be projective or non-projective. Projective interviews involve indirect questions that are not very closely related to the subject under study, whereas in non-projective interviews, the interview questions are subject-specific. Non-projective interviews are sufficient enough to provide details about the psycho-social behaviour of consumers.

- **Content analysis:** This is a data collection technique that involves analysis of documentary materials, such as books, magazines, newspapers and the contents of all the verbal materials.

### Secondary Data: Collection Methods and Instruments

Secondary data is the data which has already been collected and examined earlier by other investigators. While making use of the secondary data, the investigator has to first determine the sources from where the secondary data can be obtained. In this method, the researcher is not at all aware of the problems related to how the data was originally collected. The secondary data can either be published data or unpublished data. Published data is available mostly from the following sources:

- Publications of the central, state or local governments.
- Publications of foreign governments.
- Technical and trade journals.
- Books, magazines and newspapers.
- Reports prepared by research scholars, universities and economists.
- Public records, statistics and historical documents.

The sources of unpublished data include diaries, letters, unpublished biographies and autobiographies. While making use of secondary data, researchers must carefully examine the available data to decide whether the data is suitable for the subject under study or not. The characteristics that a researcher must ensure in the secondary data before using it are stated as follows:

- **Reliability of data:** The secondary data available on a particular subject must be reliable. The reliability of secondary data can be determined by obtaining answers to the following questions:
  - o Who collected the data?
  - o What were the data sources?
  - o Was the data collected using proper methods?
  - o At what time was it collected?
  - o Was there any bias on the part of the compiler?
  - o What was the level of accuracy desired?
  - o Was the desired level of accuracy achieved?
- **Suitability of data:** The secondary data available on a particular subject must be suitable for that subject. The data suitable for one subject may not be suitable for another. Therefore, the researcher should properly examine the available data and verify the definitions of different terms and the units of data collection before using that data.



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- **Adequacy of data:** The secondary data available should be adequate in terms of accuracy. If the accuracy level of the available data is lower than what is required, the data is considered inadequate.

**Selection of Appropriate Method for Data Collection**

Various methods are available for a researcher to use the collection of data on a particular subject. The factors that a researcher must consider for selection of the appropriate method for data collection are as follows:

- **Nature, scope and object of enquiry:** This is an important factor that must be considered while selecting the data collection method. The selected data collection method should suit the type of enquiry to be performed by the researcher. This factor helps determine whether the data available is sufficient or some other information is required to be collected.
- **Availability of funds:** Availability of funds also determines the data collection method to be used. If the researcher is provided with only a limited amount of funds, then he will be bound to select a comparatively cheaper method, which may or may not be as effective and efficient as some expensive methods.
- **Time factor:** The amount of time available for a particular research project should also be considered while selecting the data collection method. Some methods take relatively greater amount of time as compared to the others. Therefore, the researcher must select the method that suits the time limitations of the project.
- **Precision required:** The precision level required for a particular project also determines the method that should be selected for data collection.

**Case Study Method**

The case study method is the most common method of collecting secondary data. It is mainly used for the purpose of qualitative analysis. It involves a thorough and complete examination of a social unit. A social unit can either be a person, a family, an institution, a cultural group or even the entire community. A case study involves in-depth study of a particular subject. The case study method emphasizes on the complete investigation of only restricted number of events related to a subject and the relationship between the different events. The main objective of a case study is to determine the factors that are responsible for the behaviour patterns of the given unit in totality.

In the words of the eminent researcher H. Odum, 'The case study method is a technique by which individual factor, whether it be an individual or just an episode in the life of an individual or a group, is analysed in its relationship to any other in the group'. Thus, a fairly exhaustive study of a person or group is known as life or case study. Burgess has used the words, the 'Social Microscope' for the 'Case Study' method. Another researcher, Pauline V. Young, has defined the concept of case study as a 'Comprehensive study of a social unit of a person, a group, a social institution, a district, individual or a situation or an institution.

**Characteristics of the Case Study Method**

The following are certain characteristics of the case study method:

- In this method, the researcher is allowed to take one or more than one social unit for study. Instead of a social unit, the researcher can also select a situation for study.

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- This method involves intensive study of the selected unit. As each unit is studied for its minute details, the study takes a long period of time. This helps ensure the correctness of the information collected about a particular unit.
- This method helps determine the complex factors of a particular unit.
- It also helps determine the integrity of the selected unit with the other units.
- This method follows the qualitative approach rather than the quantitative approach.
- In the case study method, efforts are made to determine the mutual interrelationship of the causal factors.

**Evolution and Scope of the Case Study Method**

In the field of Sociology, the case study method is an extensively used research technique. Frederic Le Play introduced this method in the field of social investigation. Herbert Spencer was the first to make use of case materials in his comparative study of different cultures. This method is also used by anthropologists, historians, novelists and dramatists to solve their problems related to their areas of interest. Even management experts use this method to obtain clues of certain management problems. Conclusively, the case study method is used in different disciplines.

**Major Phases of the Case Study Method**

The major phases involved in the case study method are as follows:

- Identification and resolution of the status of the phenomenon or the unit to be examined.
- Accumulation of data and selection of the phenomenon.
- Investigation of the history of the selected phenomenon.
- Analysis and recognition of informal factors related to the selected phenomenon.
- Application of corrective measures.
- Review of programme to identify the effectiveness of the treatment applied.

**Advantages of the Case Study Method**

Some of the important advantages of the case study method are as follows:

- As the case study method involves exhaustive study of a particular unit, the complete behaviour pattern of the concerned unit is understood. According to Charles Horton Cooley, case study deepens our perception and gives us a clearer insight into life. It gets at behaviour directly and not by an indirect and abstract approach.
- With the help of a case study, a researcher can obtain genuine and progressive record of personal experiences.
- It helps a researcher determine the natural history of the selected unit. It also helps determine the relationship of the selected unit with the social factors of the surrounding environment.
- It also helps frame relevant hypotheses along with the data, which may be helpful in testing them.
- It helps obtain in-depth knowledge of a particular subject, which is possible neither with the help of the observation method nor with the help of the schedule method.



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- The researcher is allowed to use one or more than one method under this method, depending upon the situation. Alternatively, the use of different methods, such as depth interviews, questionnaires, documents, study reports of individuals and letters is possible in case of case study.
- It helps determine the nature of the selected unit along with the nature of the universe.
- It helps increase the experience of the researcher, which in turn enhances his/her analysing ability and skills.
- It enables the researcher to observe social changes.
- It helps obtain conclusions and maintain continuity in the research process.
- It helps obtain data necessary for taking decisions on some management problems.

### Limitations of the Case Study Method

Some of the important limitations of this method are as follows:

- The situations of case study are mostly incomparable.
- According to Read Bain, case data is significant data as it does not provide any knowledge of the impersonal, universal, non-ethical, non-practical and repetitive aspects of a phenomenon.
- There are always some chances of false generalization because there are no specific rules of data collection.
- It is a time-taking technique and requires a lot of expenditure.
- It is based on certain assumptions which may not be true in some cases. This decreases the usefulness of the case data collected for a particular social unit.
- It can be used only in a limited geographic area.

## 6.3 COLLECTION AND TABULATION OF DATA

Tabulation is another way of summarizing and presenting the given data in a systematic form in rows and columns. Such presentation facilitates comparisons by bringing related information close to each other and helps in further statistical analysis and interpretation.

### Parts of a Table

1. **Table number:** A table should be numbered for easy identification and reference in future. The table number may be given either in the centre or side of the table but above the top of the title of the table. If the number of columns in a table is large, then these can also be numbered so that easy reference to these is possible.
2. **Title of the table:** Each table must have a brief, self-explanatory, and complete title which can
  - (a) indicate the *nature* of data contained.
  - (b) explain the *locality* (i.e., geographical or physical) of data covered.
  - (c) indicate the *time* (or period) of data obtained.
  - (d) contain the *source* of the data to indicate the authority for the data, as a means of verification and as a reference. The source is always placed below the table.

### Check Your Progress

1. List the various methods of collecting primary data.
2. What is secondary data?
3. Name the most common method of collecting secondary data.

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3. **Caption and stubs:** The headings for columns and rows are called caption and stub, respectively. They must be clear and concise.
4. **Body:** The body of the table should contain the numerical information. The numerical information is arranged according to the descriptions given for each column and row.
5. **Prefactory or head note:** If needed, a prefactory note is given just below the title for its further description in a prominent type. It is usually enclosed in brackets and is about the unit of measurement.
6. **Footnotes:** Anything written below the table is called a footnote. It is written to further clarify either the title captions or stubs. For example, if the data described in the table pertain to profits earned by a company, then the footnote may define whether it is profit before tax or after tax. There are various ways of identifying footnotes:
  - (a) Numbering footnotes consecutively with small number 1, 2, 3, ..., or letters a, b, c, ..., or star \*, \*\*, ...
  - (b) Sometimes symbols like @ or \$ are also used to identify footnotes.

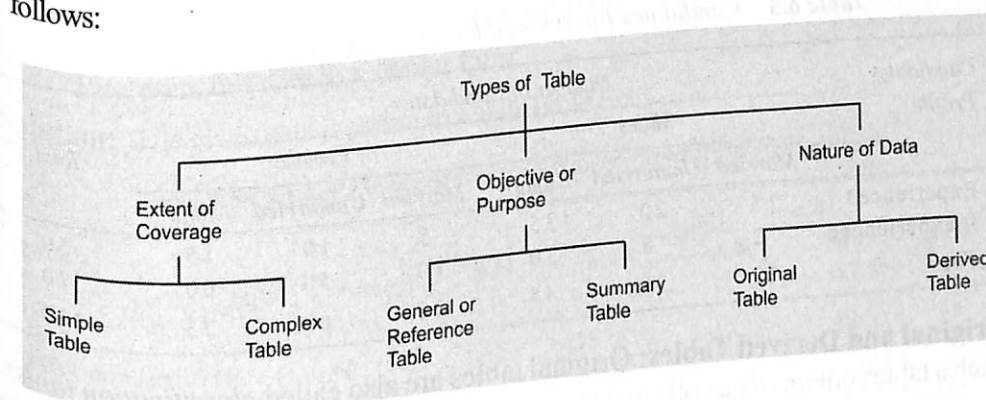
A blank model table is given as follows:

**Table Number and Title [Head or Prefactory Note (if any)]**

Table Number and Title [Head of Table]					Total (Rows)
Stub Heading	Caption				
	Subhead		Subhead		
	Column-head	Column-head	Column-head	Column-head	
Stub Entries					
Total (Columns)					
Footnote :					
Source Note :					

### 6.3.1 Types of Tables

The classification of tables depends on various aspects: objectives and scope of investigation, nature of data (primary or secondary) for investigation, extent of data coverage, and so on. The different types of tables used in statistical investigations are as follows:



**Fig. 6.1 Types of Table**



**Simple and Complex Tables:** In a *simple table* (also known as one-way table), data are presented based on only one characteristic. Table 6.1 illustrates the concept.

**Table 6.1** Candidates Interviewed for Employment in a Company

Candidate's Profile	Number of Candidates
Experienced	50
Inexperienced	70
Total	120

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In a *complex table* (also known as a manifold table) data are presented according to two or more characteristics simultaneously. The complex tables are two-way or three-way tables according to whether two or three characteristics are presented simultaneously.

1. **Double or Two-Way Table:** In such a table, the variable under study is further subdivided into two groups according to two inter-related characteristics. For example, if the total number of candidates given in Table 6.1 are further divided according to their sex, the table would become a two-way table because it would reveal information about two characteristics, namely male and female. The new shape of the table is shown in Table 6.2.

**Table 6.2** Candidates Interviewed for Employment in a Company

Candidates Profile	Number of Candidates		Total
	Males	Females	
Experienced	35	15	50
Inexperienced	10	60	70
Total	45	75	120

2. **Three-Way Table:** In such a table, the variable under study is divided according to three interrelated characteristics. For example, if the total number of male and female candidates given in Table 6.2 are further divided according to the marital status, the table would become a three-way. The new shape of the table is shown in Table 6.3.
3. **Manifold (or Higher Order) Table:** Such tables provide information about a large number of inter-related characteristics in the data set. For example, if the data given in Table 6.3 is also available for other companies, then the table would become a manifold table.

**Table 6.3** Candidates Interviewed for Employment in a Company

Candidates Profile	Number of Candidates						Total
	Males			Females			
	Married	Unmarried	Total	Married	Unmarried	Total	
Experienced	15	20	35	5	10	15	50
Inexperienced	2	8	10	10	50	60	70
Total	17	28	45	15	60	75	120

**Original and Derived Tables:** Original tables are also called *classification tables*. Such a table contains data collected from a primary source. But if the information given in a table has been derived from a general table, then such a table is called a *derived table*.

**Example 6.1:** A state government has taken up a scheme of providing drinking water to every village. During the first 4 years of a five-year plan, the government has installed 39,664 tubewells. Out of the funds earmarked for natural calamities, the government has sunk 14,072 tubewells during the first 4 years of the plan. Thus, out of the plan fund 9245 and 8630 tubewells were sunk in 2000–01 and 2001–02, respectively. Out of the natural calamities fund, the number of tubewells sunk in 1998–99 and 1999–2000 were 4511 and 637, respectively. The expenditure for 2000–01 and 2001–02 was ₹ 863.41 lakh and ₹ 1185.65 lakh, respectively.

The number of tubewells installed in 2002–03 was 16,740 out of which 4800 were installed out of the natural calamities fund and the expenditure of sinking of tubewells during 2002–03 was ₹ 1411.17 lakh.

The number of tubewells installed in 2003–04 was 13,973, out of which 9849 tubewells were sunk out of the fund for the plan and the total expenditure during the first 4 years was ₹ 5443.05 lakh.

Represent this data in a tabular form.

**Solution:** The data of the problem is summarized in Table 6.4.

**Table 6.4** Tubewells for Drinking Water for Villages in a State

Year	Number of Tubewells		Expenditure (in ₹ lakh)
	Out of Fund Plan	Out of Natural Calamities Fund	
2000–01	9245	4511	863.41
2001–02	8630	637	1185.65
2002–03	(16,740 – 4800) = 11,940	4800	1411.17
2003–04	9849	(13,973 – 9849) = 4124	1982.82
Total	39,664	14,072	5,443.05

**Example 6.2:** In a sample study about coffee-drinking habits in two towns, the following information was received:

- Town A : Females were 40 per cent. Total coffee drinkers were 45 per cent and male non-coffee drinkers were 20 per cent
- Town B : Males were 55 per cent. Male non-coffee drinkers were 30 per cent and female coffee drinkers were 15 per cent.

Represent this data in a tabular form.

**Solution:** The given data is summarized in Table 6.5.

**Table 6.5** Coffee Drinking Habit of Towns A and B (in Percentage)

Attribute	Town A			Town B			Total (1) + (2)
	Males	Females	Total (1)	Males	Females	Total (2)	
Coffee drinkers	(45 - 5) = 40	(40 - 35) = 5	45	(55 - 30) = 25	15	40	85
Non-coffee drinkers	20	(55 - 20) = 35	(100 - 45) = 55	30	(60 - 30) = 30	(100 - 40) = 60	115
Total	(100 - 40) = 60	40	100	55	(100 - 55) = 45	100	200

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**Example 6.3:** Industrial finance in India has showed great variation in respect of sources of funds during the first, second, and third five-year plans. There were two main sources—internal and external. The internal sources of funds are depreciation, free reserves, and surplus. The external sources of funds are capital issues and borrowings.

During the first plan, internal and external sources accounted for 62 per cent and 38 per cent of the total, and of the depreciation, fresh capital, and other sources formed 29 per cent, 7 per cent, and 10.6 per cent, respectively.

During the second plan, internal sources decreased by 17.3 per cent compared to the first plan, and depreciation was 24.5 per cent. The external finance during the same period consisted of 10.9 per cent fresh capital and 28.9 per cent borrowings.

Compared to the second plan, external finance during the third plan decreased by 4.4 per cent, and borrowings and 'other sources' were 29.4 per cent and 14.9 per cent respectively. During the third plan, internal finance increased by 4.4 per cent and free reserves and surplus formed 18.6 per cent.

Tabulate this information with the above details as clearly as possible observing the rules of tabulation.

**Solution:** The given information is summarized in Table 6.6.

**Table 6.6** Pattern of Industrial Finance (in Percentage)

Five Year Plan	Sources of Funds						
	Internal			External			
	Depre- ciation	Free Reserves and Surplus	Total	Capital Issues	Borrowings	Other Sources	Total
First	29	62 - 29 = 33	62	7	38 - 7 - 10.6 = 20.4	10.6	38
Second	24.5	44.7 - 24.5 = 20.2	62 - 17.3 = 44.7	10.9	28.9	55.3 - 10.9 = 44.4	100 - 44.7 = 55.3
Third	49.1 - 18.6 = 30.5	18.6	44.7 + 4.4 = 49.1	50.9 - 29.4 = 21.5	29.4	28.9 - 14.9 = 14.0	55.3 - 4.4 = 50.9

## 6.4 MEASURES OF CENTRAL TENDENCY

There are several commonly used measures of central tendency such as arithmetic mean, mode and median. These values are very useful not only in presenting the overall picture of the entire data but also for the purpose of making comparisons among two or more sets of data.

As an example, questions like 'How hot is the month of June in Delhi?' can be answered, generally by a single figure of the average for that month. Similarly, suppose we want to find out if boys and girls at age 10 years differ in height for the purpose of making comparisons. Then, by taking the average height of boys of that age and average height of girls of the same age, we can compare and record the differences.

While arithmetic mean is the most commonly used measure of central location, mode and median are more suitable measures under certain set of conditions and for certain types of data. However, each measure of central tendency should meet the following requisites.

### Check Your Progress

- Name the different parts of a table.
- Mention the sub-categories of a complex table.

- It should be easy to calculate and understand.
- It should be rigidly defined. It should have only one interpretation so that the personal prejudice or bias of the investigator does not affect its usefulness.
- It should be representative of the data. If it is calculated from a sample, then the sample should be random enough to be accurately representing the population.
- It should have sampling stability. It should not be affected by sampling fluctuations. This means that if we pick 10 different groups of college students at random and compute the average of each group, then we should expect to get approximately the same value from each of these groups.
- It should not be affected much by extreme values. If few very small or very large items are present in the data, they will unduly influence the value of the average by shifting it to one side or other, so that the average would not be really typical of the entire series. Hence, the average chosen should be such that it is not unduly affected by such extreme values.

Let us consider the three measures of central tendency:

### (I) Arithmetic Mean

This is also commonly known as simply the mean. Even though average, in general, means any measure of central location, when we use the word average in our daily routine, we always mean the arithmetic average. The term is widely used by almost every one in daily communication. We speak of an individual being an average student or of average intelligence. We always talk about average family size or average family income or Grade Point Average (GPA) for students and so on.

**Combined Mean:** If the arithmetic averages and the number of items in two or more related groups are known, the combined (or composite) mean of the entire group can be obtained by the following formula:

$$\bar{X} = \frac{n_1\bar{x}_1 + n_2\bar{x}_2}{n_1 + n_2}$$

The advantage of combined arithmetic mean is that, one can determine the overall mean of the combined data without having to go back to the original data.

### An example:

Find the combined mean for the data given below.

$$n_1 = 10, x_1 = 2, n_2 = 15, x_2 = 3$$

**Solution:**

$$\begin{aligned}\bar{X} &= \frac{n_1\bar{x}_1 + n_2\bar{x}_2}{n_1 + n_2} \\ &= \frac{10 \times 2 + 15 \times 3}{10 + 15} \\ &= \frac{20 + 45}{25} \\ &= 2.6\end{aligned}$$

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For discussion purposes, let us assume a variable  $X$  which stands for some scores such as the ages of students. Let the ages of 5 students be 19, 20, 22, 22 and 17 years. Then variable  $X$  would represent these ages as follows:

$$X: 19, 20, 22, 22, 17$$

Placing the Greek symbol  $\Sigma$  (Sigma) before  $X$  would indicate a command that all values of  $X$  are to be added together. Thus:

$$\Sigma X = 19 + 20 + 22 + 22 + 17$$

The mean is computed by adding all the data values and dividing it by the number of such values. The symbol used for sample average is  $\bar{X}$  so that:

$$\bar{X} = \frac{19 + 20 + 22 + 22 + 17}{5}$$

In general, if there are  $n$  values in the sample, then

$$\bar{X} = \frac{X_1 + X_2 + \dots + X_n}{n}$$

In other words,

$$\bar{X} = \frac{\sum_{i=1}^n X_i}{n}, \quad i = 1, 2, \dots, n.$$

The above formula states, add up all the values of  $X_i$  where the value of  $i$  starts at 1 and ends at  $n$  with unit increments so that  $i = 1, 2, 3, \dots, n$ .

If instead of taking a sample, we take the entire population in our calculations of the mean, then the symbol for the mean of the population is  $\mu$  (mu) and the size of the population is  $N$ , so that:

$$\mu = \frac{\sum_{i=1}^N X_i}{N}, \quad i = 1, 2, \dots, N.$$

If we have the data in grouped discrete form with frequencies, then the sample mean is given by:

$$\bar{X} = \frac{\Sigma f(X)}{\Sigma f}$$

where  $\Sigma f$  = Summation of all frequencies  
 $\Sigma f(X)$  = Summation of each value of  $X$  multiplied by its corresponding frequency ( $f$ )

**Example 6.4:** Let us take the ages of 10 students as follows:

19, 20, 22, 22, 17, 22, 20, 23, 17, 18

## NOTES

This data can be arranged in a frequency distribution as follows:

(X)	(f)	f(X)
17	2	34
18	1	18
19	1	19
20	2	40
22	3	66
23	1	23
Total = 10		200

In the above case, we have  $\Sigma f = 10$  and  $\Sigma f(X) = 200$ , so that:

$$\begin{aligned} \bar{X} &= \frac{\Sigma f(X)}{\Sigma f} \\ &= 200/10 = 20 \end{aligned}$$

## Characteristics of the Mean

The arithmetic mean has three interesting properties. These are:

1. The sum of the deviations of individual values of  $X$  from the mean will always add up to zero. This means that if we subtract all the individual values from their mean, then some values will be negative and some will be positive, but if all these differences are added together then the total sum will be zero. In other words, the positive deviations must balance the negative deviations. Or symbolically:

$$\sum_{i=1}^n (X_i - \bar{X}) = 0, \quad i = 1, 2, \dots, n.$$

2. The second important characteristic of the mean is that it is very sensitive to extreme values. Since the computation of the mean is based upon inclusion of all values in the data, an extreme value in the data would shift the mean towards it, thus, making the mean unrepresentative of the data.
3. The third property of the mean is that the sum of squares of the deviations about the mean is minimum. This means that if we take differences between individual values and the mean and square these differences individually and then add these squared differences, then the final figure will be less than the sum of the squared deviations around any other number other than the mean. Symbolically, it means that:

$$\sum_{i=1}^n (X_i - \bar{X})^2 = \text{Minimum}, \quad i = 1, 2, \dots, n.$$

## (II) Mode

The mode is another form of average and can be defined as the most frequently occurring value in the data. The mode is not affected by extreme values in the data and can easily be obtained from an ordered set of data. It can be useful and more representative of the data under certain conditions and is the only measure of central tendency that can be used for qualitative data. For instance, when a researcher quotes the opinion of an average person, he is probably referring to the most frequently expressed opinion which is the modal opinion. In our example of ages of 10 students as:

19, 20, 22, 22, 17, 22, 20, 23, 17 and 18

The mode is 22, since it occurs more often than any other value in this data.

**(III) Median****NOTES**

The second measure of central tendency that has a wide usage in statistical works is the median. Median is that *value* of a variable which divides the series in such a manner that the number of items below it is equal to the number of items above it. Half the total number of observations lie below the median, and half above it. The median is thus a positional average.

The median of ungrouped data is found easily if the items are first arranged in order of the magnitude. The median may then be located simply by counting, and its value can be obtained by reading the value of the middle observations. If we have five observations whose values are 8, 10, 1, 3 and 5, the values are first arrayed: 1, 3, 5, 8 and 10. It is now apparent that the value of the median is 5, since two observations are below that value and two observations are above it. When there is an even number of cases, there is no actual middle item and the median is taken to be the average of the values of the items lying on either side of  $(N+1)/2$ , where  $N$  is the total number of items. Thus, if the values of six items of a series are 1, 2, 3, 5, 8 and 10, then the median is the value of item number  $(6+1)/2 = 3.5$ , which is approximated as the average of the third and the fourth items, i.e.,  $(3+5)/2 = 4$ .

Thus, the steps required for obtaining median are:

1. Arrange the data as an array of increasing magnitude.
2. Obtain the value of the  $(N+1)/2$ th item.

Even in the case of grouped data, the procedure for obtaining median is straightforward as long as the variable is discrete or non-continuous as is clear from the following example.

**Example 6.5:** Obtain the median size of shoes sold from the following data.

Number of Shoes Sold by Size in One Year		
Size	Number of Pairs	Cumulative Total
5	30	30
$5\frac{1}{2}$	40	70
6	50	120
$6\frac{1}{2}$	150	270
7	300	570
$7\frac{1}{2}$	600	1170
8	950	2120
$8\frac{1}{2}$	820	2940
9	750	3690
$9\frac{1}{2}$	440	4130
10	250	4380
$10\frac{1}{2}$	150	4530
11	40	4570
$11\frac{1}{2}$	39	4609
		Total 4609

**Solution:** Median, is the value of  $\frac{(N+1)}{2}$ th =  $\frac{4609+1}{2}$ th = 2305th item. Since the items are already arranged in ascending order (size-wise), the size of 2305th item is easily

determined by constructing the cumulative frequency. Thus, the median size of shoes sold is  $8\frac{1}{2}$ , the size of 2305th item.

In the case of grouped data with continuous variable, the determination of median is a bit more involved. Consider the following table where the data relating to the distribution of male workers by average monthly earnings is given. Clearly the median of 6291 is the earnings of  $(6291+1)/2 = 3146$ th worker arranged in ascending order of earnings.

From the cumulative frequency, it is clear that this worker has his income in the class interval 67.5–72.5. But, it is impossible to determine his exact income. We therefore, resort to approximation by assuming that the 795 workers of this class are distributed uniformly across the interval 67.5 to 72.5. The median worker is  $(3146-2713) = 433$ rd of these 795, and hence, the value corresponding to him can be approximated as,

$$67.5 + \frac{433}{795} \times (72.5 - 67.5) = 67.5 + 2.73 = 70.23$$

Distribution of Male Workers by Average Monthly Earnings

Group No.	Monthly Earnings (₹)	No. of Workers	Cumulative No. of Workers
1	27.5–32.5	120	120
2	32.5–37.5	152	272
3	37.5–42.5	170	442
4	42.5–47.5	214	656
5	47.5–52.5	410	1066
6	52.5–57.5	429	1495
7	57.5–62.5	568	2063
8	62.5–67.5	650	2713
9	67.5–72.5	795	3508
10	72.5–77.5	915	4423
11	77.5–82.5	745	5168
12	82.5–87.5	530	5698
13	87.5–92.5	259	5957
14	92.5–97.5	152	6109
15	97.5–102.5	107	6216
16	102.5–107.5	50	6266
17	107.5–112.5	25	6291
			Total 6291

The value of the median can thus be put in the form of the formula,

$$Me = l + \frac{\frac{N+1}{2} - C}{f} \times i$$

Where  $l$  is the lower limit of the median class,  $i$  its width,  $f$  its frequency,  $C$  the cumulative frequency upto (but not including) the median class, and  $N$  is the total number of cases.

**NOTES**



## NOTES

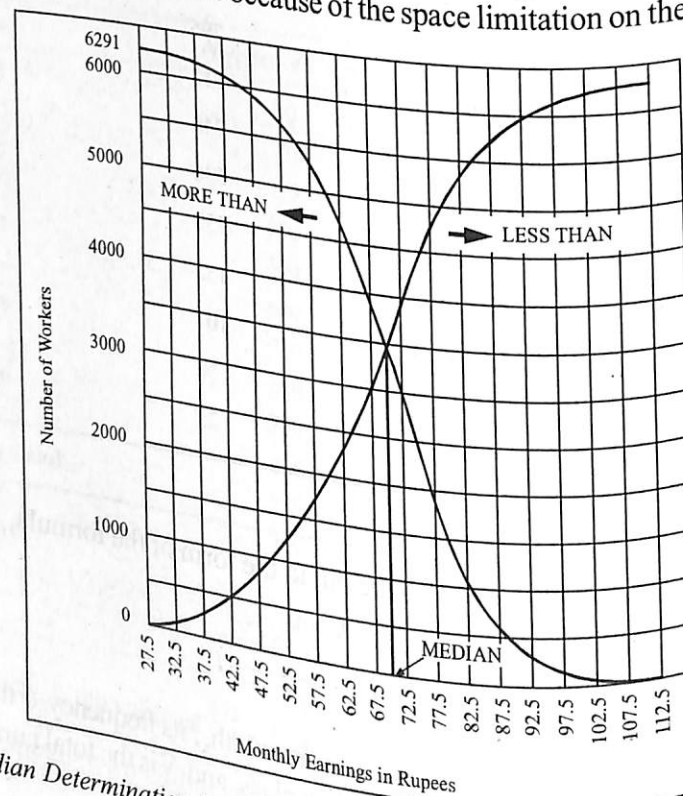
## Finding median by graphical analysis

The median can quite conveniently be determined by reference to the ogive which plots the cumulative frequency against the variable. The value of the item below which half the items lie, can easily be read from the ogive.

**Example 6.6:** Obtain the median of data given in the following table.

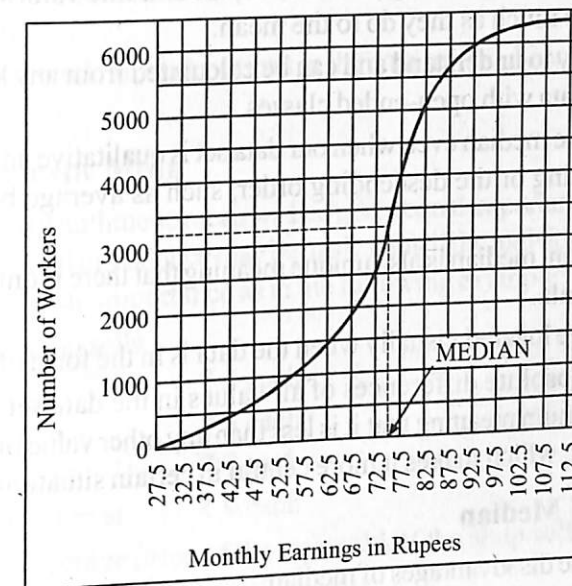
Monthly Earnings	Frequency	Less Than	More Than
27.5	—	0	6291
32.5	120	120	6171
37.5	152	272	6019
42.5	170	442	5849
47.5	214	656	5635
52.5	410	1066	5225
57.5	429	1495	4796
62.5	568	2063	4228
67.5	650	2713	3578
72.5	795	3508	2783
77.5	915	4423	1868
82.5	745	5168	1123
87.5	530	5698	593
92.5	259	5957	334
97.5	152	6109	182
102.5	107	6216	75
107.5	50	6266	25
112.5	25	6291	0

**Solution:** It is clear that this is grouped data. The first class is 27.5–32.5, whose frequency is 120, and the last class is 107.5–112.5, whose frequency is 25. Figure 6.2 shows the ogive of less than cumulative frequency. The median is the value below which  $N/2$  items lie, is  $6291/2 = 3145.5$  items lie, which is read of from Figure 6.3 as about 70. More accuracy than this is unobtainable because of the space limitation on the earning scale.



**Fig. 6.2** Median Determination by Plotting Less than and More than Cumulative Frequency

The median can also be determined by plotting both 'less than' and 'more than' cumulative frequency as shown in Figure 6.2. It should be obvious that the two curves should intersect at the median of the data.



**Fig. 6.3** Median

## Advantages of Mean

The following are advantages of mean:

- Its concept is familiar to most people and is intuitively clear.
- Every data set has a mean, which is unique and describes the entire data to some degree. For instance, when we say that the average salary of a professor is ₹ 25,000 per month, it gives us a reasonable idea about the salaries of professors.
- It is a measure that can be easily calculated.
- It includes all values of the data set in its calculation.
- Its value varies very little from sample to sample taken from the same population.
- It is useful for performing statistical procedures, such as computing and comparing the means of several data sets.

## Disadvantages of Mean

The following are disadvantages of mean:

- It is affected by extreme values and, hence, not very reliable when the data set has extreme values especially when these extreme values are on one side of the ordered data. Thus, a mean of such data is not truly a representative of such data. For instance, the average age of three persons of ages 4, 6 and 80 years gives us an average of 30.
- It is tedious to compute for a large data set as every point in the data set is to be used in computations.
- We are unable to compute the mean for a data set that has open-ended classes either at the high or at the low end of the scale.
- The mean cannot be calculated for qualitative characteristics, such as beauty or intelligence, unless these can be converted into quantitative figures, such as intelligence into IQs.

## NOTES



## NOTES

## Advantages of Median

The following are the advantages of median:

- Median is a positional average and, hence, the extreme values in the data set do not affect it as much as they do to the mean.
- Median is easy to understand and can be calculated from any kind of data, even for grouped data with open-ended classes.
- We can find the median even when our data set is qualitative and can be arranged in the ascending or the descending order, such as average beauty or average intelligence.
- Similar to mean, median is also unique meaning that there is only one median in a given set of data.
- Median can be located visually when the data is in the form of ordered data.
- The sum of absolute differences of all values in the data set from the median value is minimum meaning that it is less than any other value of central tendency in the data set, which makes it more central in certain situations.

## Disadvantages of Median

The following are the disadvantages of median:

- The data must be arranged in order to find the median. This can be very time consuming for a large number of elements in the data set.
- The value of the median is affected more by sampling variations. Different samples from the same population may give significantly different values of the median.
- The calculation of median in case of grouped data is based on the assumption that the values of observations are evenly spaced over the entire class interval and this is usually not so.
- Median is comparatively less stable than the mean, particularly for small samples, due to fluctuations in sampling.
- Median is not suitable for further mathematical treatment. For instance, we cannot compute the median of the combined group from the median values of different groups.

## Advantages of Mode

The following are the advantages of mode:

- Similar to median, the mode is not affected by extreme values in the data.
- Its value can be obtained in open-ended distributions without ascertaining the class limits.
- It can be easily used to describe qualitative phenomenon. For instance, if most people prefer a certain brand of tea then this will become the modal point.
- Mode is easy to calculate and understand. In some cases, it can be located simply by observation or inspection.

## Disadvantages of Mode

The following are the disadvantages of mode:

- Quite often, there is no modal value.
- It can be bi-modal or multi-modal or it can have all modal values making its significance more difficult to measure.
- If there is more than one modal value, the data is difficult to interpret.

## NOTES

- A mode is not suitable for algebraic manipulations.
- Since the mode is the value of maximum frequency in the data set, it cannot be rigidly defined if such frequency occurs at the beginning or at the end of the distribution.
- It does not include all observations in the data set and, hence, less reliable in most of the situations.

## Weighted Arithmetic Mean

In the computation of arithmetic mean we had given equal importance to each observation in the series. This equal importance may be misleading if the individual values constituting the series have different importance as in the following example:

The Raja Toy shop sells

Toy Cars at	₹ 3 each
Toy Locomotives at	₹ 5 each
Toy Aeroplanes at	₹ 7 each
Toy Double Decker at	₹ 9 each

What shall be the average price of the toys sold, if the shop sells 4 toys, one of each kind?

$$\text{Mean Price, i.e., } \bar{x} = \frac{\sum x}{4} = \text{Rs } \frac{24}{4} = ₹ 6$$

In this case the importance of each observation (Price quotation) is equal in as much as one toy of each variety has been sold. In the above computation of the arithmetic mean this fact has been taken care of by including 'once only' the price of each toy.

But if the shop sells 100 toys: 50 cars, 25 locomotives, 15 aeroplanes and 10 double deckers, the importance of the four price quotations to the dealer is **not equal** as a source of earning revenue. In fact, their respective importance is equal to the number of units of each toy sold, i.e.,

The importance of Toy Car	50
The importance of Locomotive	25
The importance of Aeroplane	15
The importance of Double Decker	10

It may be noted that 50, 25, 15, 10 are the quantities of the various classes of toys sold. It is for these quantities that the term 'weights' is used in statistical language.

Weight is represented by symbol 'w', and  $\sum w$  represents the sum of weights. While determining the 'average price of toy sold' these weights are of great importance and are taken into account in the manner illustrated below:

$$\bar{x} = \frac{w_1x_1 + w_2x_2 + w_3x_3 + w_4x_4}{w_1 + w_2 + w_3 + w_4} = \frac{\sum wx}{\sum w}$$

When  $w_1, w_2, w_3, w_4$  are the respective weights of  $x_1, x_2, x_3, x_4$  which in turn represent the price of four varieties of toys, viz., car, locomotive, aeroplane and double decker, respectively.

$$\begin{aligned} \bar{x} &= \frac{(50 \times 3) + (25 \times 5) + (15 \times 7) + (10 \times 9)}{50 + 25 + 15 + 10} \\ &= \frac{(150) + (125) + (105) + (90)}{100} = \frac{470}{100} = ₹ 4.70 \end{aligned}$$

The table summarizes the steps taken in the computation of the weighted arithmetic mean.



## NOTES

$$\Sigma w = 100; \Sigma wx = 470$$

$$\bar{x} = \frac{\Sigma wx}{\Sigma w} = \frac{470}{100} = 4.70$$

The weighted arithmetic mean is particularly useful where we have to compute the mean of means. If we are given two arithmetic means, one for each of two different series, in respect of the same variable, and are required to find the arithmetic mean of the combined series, the weighted arithmetic mean is the only suitable method of its determination.

Weighted Arithmetic Mean of Toys Sold by the Raja Toy Shop

Toys	Price per Toy ₹x	Number Sold w	Price × Weight xw
Car	3	50	150
Locomotive	5	25	125
Aeroplane	7	15	105
Double Decker	9	10	90
		$\Sigma w = 100$	$\Sigma xw = 470$

**Example 6.7:** The arithmetic mean of daily wages of two manufacturing concerns A Ltd. and B Ltd. is ₹ 5 and ₹ 7, respectively. Determine the average daily wages of both concerns if the number of workers employed were 2,000 and 4,000, respectively.

**Solution:** (i) Multiply each average (viz. 5 and 7) by the number of workers in the concern it represents.

(ii) Add up the two products obtained in (i) above and

(iii) Divide the total obtained in (ii) by the total number of workers.

Weighted Mean of Mean Wages of A Ltd. and B Ltd.

Manufacturing Concern	Mean Wages x	Workers Employed w	Mean Wages × Workers Employed wx
A Ltd.	5	2,000	10,000
B Ltd.	7	4,000	28,000
		$\Sigma w = 6,000$	$\Sigma wx = 38,000$

$$\begin{aligned}\bar{x} &= \frac{\Sigma wx}{\Sigma w} \\ &= \frac{38,000}{6,000} \\ &= ₹ 6.33\end{aligned}$$

The above mentioned examples explain that 'Arithmetic Means and Percentage' are not original data. They are derived figures and their importance is relative to the original data from which they are obtained. This relative importance must be taken into account by weighting while averaging them (means and percentage).

### Harmonic Mean

If  $a, b, c$  are in HP, then  $b$  is called a *Harmonic Mean* between  $a$  and  $c$ , written as HM.

### Harmonical Progression

Non zero quantities whose reciprocals are in AP, are said to be in *Harmonical Progression*, written as HP

Consider the following examples:

(i)  $1, \frac{1}{3}, \frac{1}{5}, \frac{1}{7}, \dots$

(ii)  $\frac{1}{2}, \frac{1}{5}, \frac{1}{8}, \frac{1}{11}, \dots$

(iii)  $2, \frac{5}{2}, \frac{10}{3}, \dots$

(iv)  $\frac{1}{a}, \frac{1}{a+b}, \frac{1}{a+2b}, \dots, a, b > 0$

(v)  $5, \frac{55}{9}, \frac{55}{7}, 11, \dots$

It can be easily checked that in each case, the series obtained by taking reciprocal of each of the term is an AP.

**To Insert  $n$  Harmonic Means between  $a$  and  $b$**

Let  $H_1, H_2, H_3, \dots, H_n$  be the required Harmonic Means. Then  $a, H_1, H_2, \dots, H_n, b$  are in HP

i.e.,  $\frac{1}{a}, \frac{1}{H_1}, \frac{1}{H_2}, \dots, \frac{1}{H_n}, \frac{1}{b}$  are in AP

Then,  $\frac{1}{b} = (n+2)\text{th term of an AP}$   
 $= \frac{1}{a} + (n+1)d$

Where  $d$  is the common difference of AP

This gives,  $d = \frac{a-b}{(n+1)ab}$

Now,  $\frac{1}{H_1} = \frac{1}{a} + d = \frac{1}{a} + \frac{a-b}{(n+1)ab}$   
 $= \frac{nb+b+a-b}{(n+1)ab} = \frac{a+nb}{(n+1)ab}$

So,  $\frac{1}{H_1} = \frac{a+nb}{(n+1)ab}$   
 $\Rightarrow H_1 = \frac{(n+1)ab}{a+nb}$

Again,  $\frac{1}{H_2} = \frac{1}{a} + 2d = \frac{1}{a} + \frac{2(a-b)}{(n+1)ab}$   
 $= \frac{nb+b+2a-2b}{(n+1)ab} = \frac{2a-b+nb}{(n+1)ab}$

$\Rightarrow H_2 = \frac{(n+1)ab}{2a-b+nb}$

Similarly,  $\frac{1}{H_3} = \frac{1}{a} + 3d = \frac{3a-2b+nb}{(n+1)ab}$

$\Rightarrow H_3 = \frac{(n+1)ab}{3a-2b+nb}$  and so on,

$\frac{1}{H_n} = \frac{1}{a} + nd = \frac{1}{a} + \frac{n(a-b)}{(n+1)ab}$

## NOTES



## NOTES

$$= \frac{nb + b + na - nb}{(n+1)ab}$$

$$= \frac{na + b}{(n+1)ab} \Rightarrow H_n = \frac{(n+1)ab}{na + b}$$

**Example 6.8:** Find the 5th term of  $2, 2\frac{1}{2}, 3\frac{1}{3}, \dots$

**Solution:** Let 5th term be  $x$ . Then,  $\frac{1}{x}$  is 5th term of corresponding AP  $\frac{1}{2}, \frac{2}{5}, \frac{3}{10}, \dots$

$$\text{Then, } \frac{1}{x} = \frac{1}{2} + 4\left(\frac{2}{5} - \frac{1}{2}\right) = \frac{1}{2} + 4\left(\frac{-1}{10}\right)$$

$$\Rightarrow \frac{1}{x} = \frac{1}{2} - \frac{2}{5} = \frac{1}{10} \Rightarrow x = 10$$

**Example 6.9:** Insert two harmonic means between  $\frac{1}{2}$  and  $\frac{4}{17}$ .

**Solution:** Let  $H_1, H_2$  be two harmonic means between  $\frac{1}{2}$  and  $\frac{4}{17}$

Thus,  $2, \frac{1}{H_1}, \frac{1}{H_2}, \frac{17}{4}$  are in AP. Let  $d$  be their common difference

$$\text{Then, } \frac{17}{4} = 2 + 3d$$

$$\Rightarrow 3d = \frac{9}{4} \Rightarrow d = \frac{3}{4}$$

$$\text{Thus, } \frac{1}{H_1} = 2 + \frac{3}{4} = \frac{11}{4} \Rightarrow H_1 = \frac{4}{11}$$

$$\frac{1}{H_2} = 2 + 2 \times \frac{3}{4} = \frac{7}{2} \Rightarrow H_2 = \frac{2}{7}$$

Required harmonic means are  $\frac{4}{11}, \frac{2}{7}$ .

## 6.5 MEASURES OF DISPERSION

A measure of dispersion, or simply dispersion may be defined as statistics signifying the extent of the scatteredness of items around a measure of central tendency.

A measure of dispersion may be expressed in an 'absolute form', or in a 'relative form'. It is said to be in an absolute form when it states the actual amount by which the value of an item on an average deviates from a measure of central tendency. Absolute measures are expressed in concrete units, i.e., units in terms of which the data have been expressed, for example, rupees, centimetres, kilograms, and so on, and are used to describe frequency distribution.

A relative measure of dispersion computed is a quotient obtained by dividing the absolute measures by a quantity in respect to which absolute deviation has been computed. It is as such a pure number and is usually expressed in a percentage form. Relative measures are used for making comparisons between two or more distributions.

### Check Your Progress

- What are the different methods of measuring central tendency?
- List two essential characteristics of the mean.

## NOTES

A measure of dispersion should possess all those characteristics which are considered essential for a measure of central tendency, which are as follows:

- It should be based on all observations.
- It should be readily comprehensible.
- It should be fairly easily calculated.
- It should be affected as little as possible by fluctuations of sampling.
- It should be amenable to algebraic treatment.

Some common measures of dispersion are (i) The range, (ii) the semi-interquartile range or the quartile deviation, (iii) the mean deviation, and (iv) the standard deviation. Of these, the standard deviation is the best measure.

### 6.5.1 Range

The crudest measure of dispersion is the range of the distribution. The range of any series is the difference between the highest and the lowest values in the series. If the marks received in an examination taken by 248 students are arranged in ascending order, then the range will be equal to the difference between the highest and the lowest marks.

In a frequency distribution, the range is taken to be the difference between the lower limit of the class at the lower extreme of the distribution and the upper limit of the class at the upper extreme.

Consider the data on weekly earnings of worker on four workshops given in Table 6.8.

From these figures in Table 6.8, it is clear that the greater the range, the greater is the variation of the values in the group.

The range is a measure of absolute dispersion and as such cannot be usefully employed for comparing the variability of two distributions expressed in different units. The amount of dispersion measured, say, in pounds, is not comparable with dispersion measured in inches. Thus, the need of measuring relative dispersion arises.

An absolute measure can be converted into a relative measure if we divide it by some other value regarded as standard for the purpose. We may use the mean of the distribution or any other positional average as the standard.

For Table 6.8, the relative dispersion would be,

$$\text{Workshop A} = \frac{9}{25.5} \quad \text{Workshop C} = \frac{23}{25.5}$$

$$\text{Workshop B} = \frac{15}{25.5} \quad \text{Workshop D} = \frac{15}{25.5}$$

An alternate method of converting an absolute variation into a relative one would be to use the total of the extremes as the standard. This will be equal to dividing the difference of the extreme items by the total of the extreme items. Thus,

$$\text{Relative Dispersion} = \frac{\text{Difference of extreme items, i.e., Range}}{\text{Sum of extreme items}}$$

The relative dispersion of the series is called the coefficient or ratio of dispersion. In our example of weekly earnings of workers considered earlier, the coefficients would be,



## NOTES

$$\text{Workshop A} = \frac{9}{21+30} = \frac{9}{51} \quad \text{Workshop B} = \frac{15}{17+32} = \frac{15}{49}$$

$$\text{Workshop C} = \frac{23}{15+38} = \frac{23}{53} \quad \text{Workshop D} = \frac{15}{19+34} = \frac{15}{53}$$

**Merits and Limitations of Range****Merits**

Of the various characteristics that a good measure of dispersion should possess, the range has only two, which are as follows:

- (i) It is easy to understand.
- (ii) Its computation is simple.

**Limitations**

Besides the aforesaid two qualities, the range does not satisfy the other test of a good measure and, hence, it is often termed as a crude measure of dispersion.

The following are the limitations that are inherent in the range as a concept of variability:

- (i) Since it is based upon two extreme cases in the entire distribution, the range may be considerably changed if either of the extreme cases happens to drop out, while the removal of any other case would not affect it at all.
- (ii) It does not tell anything about the distribution of values in the series relative to a measure of central tendency.
- (iii) It cannot be computed when distribution has open-end classes.
- (iv) It does not take into account the entire data. These can be illustrated by the following illustration. Consider the data given in Table 6.7.

**Table 6.7** Distribution with the Same Number of Cases, but Different Variability

Class	No. of students		
	Section A	Section B	Section C
0-10	...	...	...
10-20	1	...	...
20-30	12	...	...
30-40	17	12	19
40-50	29	20	18
50-60	18	35	16
60-70	16	25	18
70-80	6	10	18
80-90	11	8	21
90-100	...	...	...
Total	110	...	...
Range	80	110	110
		60	60

The table is designed to illustrate three distributions with the same number of cases but different variability. The removal of two extreme students from Section A would make its range equal to that of B or C.

## NOTES

The greater range of A is not a description of the entire group of 110 students, but of the two most extreme students only. Further, though sections B and C have the same range, the students in Section B cluster more closely around the central tendency of the group than they do in Section C. Thus, the range fails to reveal the greater homogeneity of B or the greater dispersion of C. Due to this defect, it is seldom used as a measure of dispersion.

**Specific Uses of Range**

In spite of the numerous limitations of the range as a measure of dispersion, it is the most appropriate under the following circumstances:

- (i) In situations where the extremes involve some hazard for which preparation should be made, it may be more important to know the most extreme cases to be encountered than to know anything else about the distribution. For example, an explorer, would like to know the lowest and the highest temperatures on record in the region he is about to enter; or an engineer would like to know the maximum rainfall during 24 hours for the construction of a storm water drain.
- (ii) In the study of prices of securities, range has a special field of activity. Thus, to highlight fluctuations in the prices of shares or bullion, it is a common practice to indicate the range over which the prices have moved during a certain period of time. This information, besides being of use to the operators, gives an indication of the stability of the bullion market, or that of the investment climate.
- (iii) In statistical quality control, range is used as a measure of variation. We, for example, determine the range over which variations in quality are due to random causes, which is made the basis for the fixation of control limits.

**6.5.2 Mean Deviation**

In the following section, you will study that a weakness of the measures of dispersion, based upon the range or a portion thereof, is that the precise size of most of the variants has no effect on the result. As an illustration, the quartile deviation will be the same whether the variates between  $Q_1$  and  $Q_3$  are concentrated just above  $Q_1$  or they are spread uniformly from  $Q_1$  to  $Q_3$ . This is an important defect from the viewpoint of measuring the divergence of the distribution from its typical value. The mean deviation is employed to answer the objection.

Mean deviation, also called average deviation, of a frequency distribution is the mean of the absolute values of the deviation from some measure of central tendency. In other words, mean deviation is the arithmetic average of the variations (deviations) of the individual items of the series from a measure of their central tendency.

We can measure the deviations from any measure of central tendency, but the most commonly employed ones are the median and the mean. The median is preferred because it has the important property that the average deviation from it is the least.

Calculation of mean deviation then involves the following steps:

- (i) Calculate the median (or the mean)  $Me$  (or  $\bar{X}$ ).
- (ii) Record the deviations  $|d| = |x - Me|$  of each of the items, ignoring the sign.
- (iii) Find the average value of deviations.

...(6.1)

$$\text{Mean Deviation} = \frac{\sum |d|}{N}$$



## NOTES

Example 6.10 explains it better.

**Example 6.10:** Calculate the mean deviation from the following data giving marks obtained by 11 students in a class test.

14, 15, 23, 20, 10, 30, 19, 18, 16, 25, 12.

**Solution:**

Median = Size of  $\frac{11+1}{2}$  th item  
= size of 6th item = 18.

Serial No.	Marks	$ x - \text{Median} $ $ d $
1	10	8
2	12	6
3	14	4
4	15	3
5	16	2
6	18	0
7	19	1
8	20	2
9	23	5
10	25	7
11	30	12
		$\Sigma  d  = 50$

$$\text{Mean deviation from median} = \frac{\Sigma |d|}{N}$$

$$= \frac{50}{11} = 4.5 \text{ marks}$$

For grouped data, it is easy to see that the mean deviation is given by

$$\text{Mean deviation} = \frac{\Sigma f|d|}{\Sigma f}$$

where,

$|d| = |x - \text{median}|$  for grouped discrete data

$|d| = M - \text{median}$  for grouped continuous data with  $M$  as the mid-value of a particular group.

Examples 6.10 and 6.11 illustrate the use of this formula.

**Example 6.11:** Calculate the mean deviation from the following data:

Size of item	6	7	8	9	10	11	12
Frequency	3	6	9	13	8	5	4

**Solution:**

Size	Frequency $f$	Cumulative frequency	Deviations from median (9) $ d $	$f d $
6	3	3	3	9
7	6	9	2	12
8	9	18	1	9
9	13	31	0	0
10	8	39	1	8
11	5	44	2	10
12	4	48	3	12
				60
				48

Median = the size of  $\frac{48+1}{2} = 24.5$ th item which is 9.

Therefore, deviations  $d$  are calculated from 9, i.e.,  $|d| = |x - 9|$ .

$$\text{Mean deviation} = \frac{\Sigma f|d|}{\Sigma f} = \frac{60}{48} = 1.25$$

**Example 6.12:** Calculate the mean deviation from the following data:

$x$	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
$f$	18	16	15	12	10	5	2	2

**Solution:**

This is a frequency distribution with continuous variable. Thus, deviations are calculated from mid-values.

$x$	Mid-value	$f$	Less than c.f.	Deviation from median $ d $	$f d $
0-10	5	18	18	19	342
10-20	15	16	34	9	144
20-30	25	15	49	1	15
30-40	35	12	61	11	132
40-50	45	10	71	21	210
50-60	55	5	76	31	155
60-70	65	2	78	41	82
70-80	75	2	80	51	102
		80			1182

Median = the size of  $\frac{80}{2}$  th item

$$= 20 + \frac{6}{15} \times 10 = 24$$

## NOTES



## NOTES

$$\text{and then, mean deviation} = \frac{\sum f|d|}{\sum f}$$

$$= \frac{1182}{80} = 14.775.$$

**Merits and Demerits of the Mean Deviation****Merits**

The merits are as follows:

- It is easy to understand.
- As compared to standard deviation (discussed later), its computation is simple.
- As compared to standard deviation, it is less affected by extreme values.
- Since it is based on all values in the distribution, it is better than range or quartile deviation.

**Demerits**

The demerits are as follows:

- It lacks those algebraic properties which would facilitate its computation and establish its relation to other measures.
- Due to this, it is not suitable for further mathematical processing.

**Coefficient of Mean Deviation**

The coefficient or relative dispersion is found by dividing the mean deviations recorded. Thus,

$$\text{Coefficient of MD} = \frac{\text{Mean Deviation}}{\text{Mean}} \quad (\text{when deviations were recorded from the mean}) \quad \dots(6.3)$$

$$= \frac{\text{MD}}{\text{Median}} \quad (\text{when deviations were recorded from the median}) \quad \dots(6.4)$$

$$\text{Coefficient of MD} = \frac{14.775}{24}$$

$$= 0.616$$

**6.5.3 Standard Deviation**

By far the most universally used and the most useful measure of dispersion is the standard deviation or root mean square deviation about the mean. We have seen that all the methods of measuring dispersion so far discussed are not universally adopted for want of adequacy and accuracy. The range is not satisfactory as its magnitude is determined by most extreme cases in the entire group. Further, the range is notable because it is dependent on the item whose size is largely a matter of chance. Mean deviation method is also an unsatisfactory measure of scatter, as it ignores the algebraic signs of deviation. We desire a measure of scatter which is free from these shortcomings. To some extent standard deviation is one such measure.

The calculation of standard deviation differs in the following respects from that of mean deviation. First, in calculating standard deviation, the deviations are squared. This is done so as to get rid of negative signs without committing algebraic violence. Further,

the squaring of deviations provides added weight to the extreme items, a desirable feature for certain types of series.

Second, the deviations are always recorded from the arithmetic mean because although the sum of deviations is the minimum from the median, the sum of squares of deviations is minimum when deviations are measured from the arithmetic average. The deviation from  $\bar{x}$  is represented by  $d$ .

Thus, standard deviation,  $\sigma$  (sigma) is defined as the square root of the mean of the squares of the deviations of individual items from their arithmetic mean.

$$\sigma = \sqrt{\frac{\sum (x - \bar{x})^2}{N}} \quad \dots(6.5)$$

For grouped data (discrete variables),

$$\sigma = \sqrt{\frac{\sum f(x - \bar{x})^2}{\sum f}} \quad \dots(6.6)$$

and, for grouped data (continuous variables),

$$\sigma = \sqrt{\frac{\sum f(M - \bar{x})^2}{\sum f}} \quad \dots(6.7)$$

where  $M$  is the mid-value of the group.

**Example 6.13:** Compute the standard deviation for the following data:

11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21.

**Solution:**

Here, formula (7) is appropriate. We first calculate the mean as  $\bar{x} = \sum x/N = 176/11 = 16$ , and then calculate the deviation as follows:

$x$	$(x - \bar{x})$	$(x - \bar{x})^2$
11	-5	25
12	-4	16
13	-3	9
14	-2	4
15	-1	1
16	0	0
17	+1	1
18	+2	4
19	+3	9
20	+4	16
21	+5	25
176		110

Thus, by formula (7),

$$\sigma = \sqrt{\frac{110}{11}} = \sqrt{10} = 3.16$$

## NOTES



**Example 6.14:** Find the standard deviation of the data in the following distributions:

$x$	12	13	14	15	16	17	18	20
$f$	4	11	32	21	15	8	6	4

## NOTES

**Solution:**

For this discrete variable grouped data, we use formula (8). Since for calculation of  $\bar{x}$ , we need  $\sum fx$  and then for  $\sigma$  we need  $\sum f(x - \bar{x})^2$ , the calculations are conveniently made in the following format.

$x$	$f$	$fx$	$d = x - \bar{x}$	$d^2$	$fd^2$
12	4	48	-3	9	36
13	11	143	-2	4	44
14	32	448	-1	1	32
15	21	315	0	0	0
16	15	240	1	1	15
17	8	136	2	4	32
18	5	90	3	9	45
20	4	80	5	25	100
	100	1500			304

$$\text{Here, } \bar{x} = \sum fx / \sum f = 1500/100 = 15$$

$$\text{and } \sigma = \sqrt{\frac{\sum fd^2}{\sum f}} = \sqrt{\frac{304}{100}} = \sqrt{3.04} = 1.74$$

### Calculation of Standard Deviation by Short-Cut Method

In most cases, it is very unlikely that  $\bar{x}$  will turn out to be an integer simplifying problems. In such cases, the calculation of  $d$  and  $d^2$  becomes quite time-consuming. Short-cut methods have consequently been developed. These are on the same lines as those for calculation of mean itself.

In the short-cut method, we calculate deviations  $x'$  from an assumed mean  $A$ . Then for ungrouped data,

$$\sigma = \sqrt{\frac{\sum x'^2}{N} - \left(\frac{\sum x'}{N}\right)^2} \quad \dots(6.8)$$

and for grouped data

$$\sigma = \sqrt{\frac{\sum fx'^2}{\sum f} - \left(\frac{\sum fx'}{\sum f}\right)^2} \quad \dots(6.9)$$

This formula is valid for both discrete and continuous variables. In case of continuous variables,  $x$  in the equation  $x' = x - A$  stands for the mid-value of the class in question. Note that the second term in each of the formulae is a correction term because of the difference in the values of  $A$  and  $\bar{x}$ . When  $A$  is taken as  $\bar{x}$  itself, this correction is automatically reduced to zero. Examples 3.7 to 3.11 explain the use of these formulae.

**Example 6.15:** Compute the standard deviation by the short-cut method for the following data:

11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21

**Solution:** Let us assume that  $A = 15$ .

## NOTES

	$x' = (x - 15)$	$x'^2$
11	-4	16
12	-3	9
13	-2	4
14	-1	1
15	0	0
16	1	1
17	2	4
18	3	9
19	4	16
20	5	25
21	6	36
$N = 11$	$\sum x' = 11$	$\sum x'^2 = 121$

$$\begin{aligned} \sigma &= \sqrt{\frac{\sum x'^2}{N} - \left(\frac{\sum x'}{N}\right)^2} \\ &= \sqrt{\frac{121}{11} - \left(\frac{11}{11}\right)^2} \\ &= \sqrt{11 - 1} \\ &= \sqrt{10} \\ &= 3.16 \end{aligned}$$

### Another Method

If we assume  $A$  as zero, then the deviation of each item from the assumed mean is the same as the value of item itself. Thus, 11 deviates from the assumed mean of zero by 11, 12 deviates by 12 and so on. As such, we work with deviations without having to compute them and the formula takes the following shape:

$x$	$x^2$
11	121
12	144
13	169
14	196
15	225
16	256
17	289
18	324
19	361
20	400
21	441
176	2,926



## NOTES

$$\sigma = \sqrt{\frac{\sum x^2}{N} - \left(\frac{\sum x}{N}\right)^2}$$

$$= \sqrt{\frac{2926}{11} - \left(\frac{176}{11}\right)^2} = \sqrt{266 - 256} = 3.16$$

**Combining Standard Deviations of Two Distributions**

If we were given two sets of data of  $N_1$  and  $N_2$  items with means  $\bar{x}_1$  and  $\bar{x}_2$  and standard deviations  $\sigma_1$  and  $\sigma_2$  respectively, we can obtain the mean and standard deviation  $\bar{x}$  and  $\sigma$  of the combined distribution by the following formulae:

$$\bar{x} = \frac{N_1\bar{x}_1 + N_2\bar{x}_2}{N_1 + N_2} \quad \dots(6.10)$$

$$\text{and } \sigma = \sqrt{\frac{N_1\sigma_1^2 + N_2\sigma_2^2 + N_1(\bar{x} - \bar{x}_1)^2 + N_2(\bar{x} - \bar{x}_2)^2}{N_1 + N_2}} \quad \dots(6.11)$$

**Example 6.16:** The mean and standard deviations of two distributions of 100 and 150 items are 50, 5 and 40, 6 respectively. Find the standard deviation of all taken together.

**Solution:**

Combined mean,

$$\bar{x} = \frac{N_1\bar{x}_1 + N_2\bar{x}_2}{N_1 + N_2} = \frac{100 \times 50 + 150 \times 40}{100 + 150}$$

$$= 44$$

Combined standard deviation,

$$\sigma = \sqrt{\frac{N_1\sigma_1^2 + N_2\sigma_2^2 + N_1(\bar{x} - \bar{x}_1)^2 + N_2(\bar{x} - \bar{x}_2)^2}{N_1 + N_2}}$$

$$= \sqrt{\frac{100 \times (5)^2 + 150 \times (6)^2 + 100(44 - 50)^2 + 150(44 - 40)^2}{100 + 150}}$$

$$= 7.46.$$

**Example 6.17:** A distribution consists of three components with 200, 250, 300 items having mean 25, 10 and 15 and standard deviation 3, 4 and 5, respectively. Find the standard deviation of the combined distribution.

**Solution:**

In the usual notations, we are given here

$$N_1 = 200, N_2 = 250, N_3 = 300$$

$$\bar{x}_1 = 25, \bar{x}_2 = 10, \bar{x}_3 = 15$$

The formulae (12) and (13) can easily be extended for combination of three series as

$$\bar{x} = \frac{N_1\bar{x}_1 + N_2\bar{x}_2 + N_3\bar{x}_3}{N_1 + N_2 + N_3}$$

$$= \frac{200 \times 25 + 250 \times 10 + 300 \times 15}{200 + 250 + 300}$$

## NOTES

$$= \frac{12000}{750} = 16$$

and,

$$\sigma = \sqrt{\frac{N_1\sigma_1^2 + N_2\sigma_2^2 + N_3\sigma_3^2 + N_1(\bar{x} - \bar{x}_1)^2 + N_2(\bar{x} - \bar{x}_2)^2 + N_3(\bar{x} - \bar{x}_3)^2}{N_1 + N_2 + N_3}}$$

$$= \sqrt{\frac{200 \times 9 + 250 \times 16 + 300 \times 25 + 200 \times 81 + 250 \times 36 + 300 \times 1}{200 + 250 + 300}}$$

$$= \sqrt{51.73} = 7.19$$

**6.6 SUMMARY**

- Primary data is the information collected during the course of an experiment in experimental research. It can also be obtained through observation or through direct communication with the person associated with the selected subject by conducting surveys and interviews.
- There are several methods of collecting primary data. Some of these are:
  - o Observation
  - o Interviews
  - o Questionnaires
  - o Schedules
  - o Surveys
- Observation is the most common method of studying behavioural sciences. It is not a scientific method, but it becomes a scientific tool when used for formulating the purpose of a research.
- Though the observation method provides different ways of studying behavioural science, there are some limitations in using these methods.
- A personal interview involves two persons, i.e., the interviewer and the interviewee. The interviewer is the person who questions the interviewee. There is a face-to-face discussion between them.
- A survey is a scientific process of acquiring data and opinion from the public. Researchers undertake surveys in order to determine the opinion of the public regarding products, candidates and other topics; for example, a sample of voters is surveyed before an election to determine how the public perceives the candidates and their issues.
- Secondary data is the data which has already been collected and examined earlier by other investigators. While making use of the secondary data, the investigator has to first determine the sources from where the secondary data can be obtained.
- The case study method is the most common method of collecting secondary data. It is mainly used for the purpose of qualitative analysis. It involves a thorough and complete examination of a social unit.
- Tabulation is another way of summarizing and presenting the given data in a systematic form in rows and columns. Such presentation facilitates comparisons by bringing related information close to each other and helps in further statistical analysis and interpretation.

**Check Your Progress**

8. Define measure of dispersion.
9. Name the common measures of dispersion.



## NOTES

- The classification of tables depends on various aspects: objectives and scope of investigation, nature of data (primary or secondary) for investigation, extent of data coverage, and so on.
- Original tables are also called *classification tables*. Such a table contains data collected from a primary source. But if the information given in a table has been derived from a general table, then such a table is called a *derived table*.
- There are several commonly used measures of central tendency such as arithmetic mean, mode and median. These values are very useful not only in presenting the overall picture of the entire data but also for the purpose of making comparisons among two or more sets of data.
- While arithmetic mean is the most commonly used measure of central location, mode and median are more suitable measures under certain set of conditions and for certain types of data.
- In the computation of arithmetic mean we had given equal importance to each observation in the series.
- A measure of dispersion or simply dispersion may be defined as statistics signifying the extent of the scatteredness of items around a measure of central tendency.
- There are many types of measures of dispersion; one of this is the semi-interquartile range, usually termed as 'quartile deviation'.
- Mean deviation, also called average deviation, of a frequency distribution is the mean of the absolute values of the deviation from some measure of central tendency. In other words, mean deviation is the arithmetic average of the variations (deviations) of the individual items of the series from a measure of their central tendency.
- By far the most universally used and the most useful measure of dispersion is the standard deviation or root mean square deviation about the mean. We have seen that all the methods of measuring dispersion so far discussed are not universally adopted for want of adequacy and accuracy.

## 6.7 KEY TERMS

- **Primary data:** It is the information collected during the course of an experiment in experimental research.
- **Survey:** It is a scientific process of acquiring data and opinion from the public.
- **Tabulation:** It is another way of summarizing and presenting the given data in a systematic form in rows and columns.
- **Median:** The median is a measure of central tendency and it appears in the centre of an ordered data.

## 6.8 ANSWERS TO 'CHECK YOUR PROGRESS'

1. The various methods of collecting primary data are the following:
  - Observation
  - Interviews

## NOTES

- Questionnaires
  - Schedules
  - Surveys
2. Secondary data is the data which has already been collected and examined earlier by other investigators. While making use of the secondary data, the investigator has to first determine the sources from where the secondary data can be obtained.
  3. The case study method is the most common method of collecting secondary data.
  4. A table consists of a table number, title, caption and stubs, body, prefatory or head note and footnotes.
  5. The sub-categories of a complex table include the following:
    - Double or two-way table
    - Three-way table
    - Manifold (or Higher Order) table
  6. There are several commonly used measures of central tendency such as arithmetic mean, mode and median.
  7. Two essential characteristics of the mean are the following:
    - (i) The sum of the deviations of individual values of  $X$  from the mean will always add up to zero. This means that if we subtract all the individual values from their mean, then some values will be negative and some will be positive, but if all these differences are added together then the total sum will be zero.
    - (ii) The second important characteristic of the mean is that it is very sensitive to extreme values. Since the computation of the mean is based upon inclusion of all values in the data, an extreme value in the data would shift the mean towards it, thus making the mean unrepresentative of the data.
  8. A measure of dispersion or simply dispersion may be defined as statistics signifying the extent of the scatteredness of items around a measure of central tendency.
  9. Some common measures of dispersion are (i) The range, (ii) the semi-interquartile range or the quartile deviation, (iii) the mean deviation, and (iv) the standard deviation. Of these, the standard deviation is the best measure.

## 6.9 QUESTIONS AND EXERCISES

## Short-Answer Questions

1. Mention the types of observation methods.
2. What are the factors governing the selection of appropriate method for data collection?
3. List the essential requisites of the measurement of central tendency.
4. List the merits and demerits of range.
5. Mention the steps involved in the computation of mean deviation.



## Long-Answer Questions

### NOTES

1. Discuss the other methods of collecting primary data.
2. Explain the advantages and disadvantages of the case study method.
3. Write a detailed note on the types of tables.
4. Summarize the advantages and disadvantages of median.
5. Give examples of computation of harmonic mean.
6. Differentiate between the calculation of standard deviation and mean deviation.

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## 6.10 FURTHER READING

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