Chapter II

GROWTH AND IMPACT OF GOVERNMENT EXPENDITURE: A REVIEW

It is generally recognised that the relationship between the government expenditure and the national income is mutually interdependent. On the one hand, the size and the composition of government expenditure affect the national income through the multiplier process, and on the other, the process of economic development is found to have a significant effect on the size and the composition of government expenditure. However, the actual mechanism involved in these two processes is not yet clear and has remained controversial. Nevertheless, in contrast to the orthodox theory, which was hostile to the increasing role of government, the macroeconomic theory advocated by Lord Keynes recognised the need for government intervention. The present disagreement, on this issue, is about the magnitude of government intervention but not its desirability, as it used to be.\footnote{For similar view, see S.T. Cook and Jackson P.M., \textit{Current Issues in Fiscal Policy}, Oxford: Martin Robertson 1979, p.2.}

2.1 Views on the Role of Government Expenditure

2.1.1 The Classical View

The suggestion that government spending might raise the level of economic activity, though goes back far beyond
nineteenth century,¹ more influential among the classicals viewed the role of government with scepticism. For them, the role of government was no role at all² and public expenditure was a waste if spent beyond what was absolutely necessary for preservation of social order and for protection against foreign attack.³ This position followed from the notion that maximum level of the national product could be attained mainly at the private initiative, in the environment of minimum government intervention.


³ For instance, Adam Smith, David Ricardo, J.S. Mill among others, advocated for limited government, viewing government expenditure as a waste. Even some of the early 20th century experts on public finance like Hugh Dalton and A.C. Pigou paid no attention to the study of public expenditure, for whatever reasons. Most of the earlier writers' concern was about the taxation part of the government activity.

This was, by no means the only opinion of the entire classical school. More radical among them suggested: "state action which is said to be beneficial - from accumulation, for instance, of large stocks of food against famine in circumstances where the private market does not function adequately in this respect, to intervention to prevent overspeculation in stock market and to the desirability of public works as a means of relieving unemployment." 1/

The differences among classicals were more pronounced on the question of government intervention to maintain effective demand. These differences could be traced to the differences in their perception about the general 'glut'. More 'orthodox' (or the mainstream classical economists) among them believed that 'glut' was a result of partial over production. 2/

1/ Bentham, as quoted by Lord Robbins, op.cit., p.41, Emphasis added.

2/ The orthodox classical's argument is based on Say's law which, in brief, states that: "because supply creates its own demand, it is impossible to have a general excess supply or general deficiency of demand in the economy as a whole", (emphasis added). Richard T. Gill, Great Debates in Economics, Pacific Palisades: Goodyear Publ. 1976, p.12.

The implication of the original formulation of this law is that, "income received is always spent on consumption or investment: in other words money is never hoarded, the money or expenditure stream remains constant, or in still other terminology money remains neutral". The real commodity world of Say naturally ensured equality between aggregate supply and aggregate demand. See G. Haberler, "The General Theory (4)", in Seymour E. Harris (ed.), The New Economics London: Dennis Dobson, 1952, p.174.
Ricardo's assertion on this issue succinctly summarises the position of orthodox school, as follows: stating, "public extravagance is made up by private frugality and savings", he argued, "idle resources must be the result of partial over production, so that, how will the government expenditure procure a market for them? How should they do it when the proprietors cannot"? 1/ Following this line of argument, they held that, ceteris paribus, government spending meant a reduction in communities real income. Public expenditure for investment purpose involved only a transfer, but if used for consumption outlay, led to a reduction in wage fund or general stock available for investment. In contrast to this, the 'heterodox' school with Thomas R. Malthus as its central figure, argued that government demand meant, ceteris paribus, that the level of economic activity was higher than it would otherwise have been. 2/ This line of thinking has originated in their doubts about the J.y's law and recognised the possibility of existence of general over supply and under utilisation of resources. 3/

1/ Ricardo as quoted by B.A. Corry, op.cit., p.43.
3/ Ibid., p.42. Also see Richard T. Gill, op.cit., pp.18-20.
These differences sparked off a prolonged and well-known debate\(^1\) between Ricardo and Malthus on the possibility of general gluts. Malthusian position in the debate, in many ways, foreshadowed what was to be the most important single development in twentieth century economics: the Keynesian revolution. However, his failure to give an adequate theoretical account of the phenomenon, which he thought could exist, resulted in almost total obliteration of his line of approach and complete domination of Ricardo's till the advent of Keynesian era.

What Malthus needed in order to prove his line of argument was: first, to rebate the real-commodity world of Say's law in favour of monetary world in which actual economic transactions take place. This he never did, although he did show a remarkable awareness that money might somehow be at the root of general gluts. Secondly, he did not make the sharp distinction between investment decisions and savings decisions which Keynes made in his framework. But he did recognise that those decisions were much more complicated than what Ricardo thought them to be.\(^2\)

2.1.2 The Keynesian View:

The classical doctrine which denied the possibility of 'prolonged general glut' was confuted by the great post

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First World War depression in the West. It was not for the first time that the untenability of the classical synthesis was revealed. The fortunes of classical philosophy always moved with the great swings of business activity. It survived each time until it was confronted by Keynes, with an alternative and complete theoretical system which could swallow the classical system as a special case.\footnote{Paul A. Samuelson, "The General Theory", in Joseph E. Stiglitz (Ed.), The Collected Scientific Papers of Paul A. Samuelson, New Delhi: Oxford IBH, 1970, Vol. 2, p. 1920.}

Keynes' attack on the orthodox doctrine was not on the internal consistency of its logical structure, but on the unreality of its fundamental empirical assumptions.\footnote{W. Leontief, "Postulates: Keynes' General Theory and the Classicists," in Seymour E. Harris (Ed.), \textit{op. cit.}, Ch. XIX, p. 232.} He stated, at the outset of his \textit{General Theory}, the classical's main assumptions as: (i) that the real wage is equal to the marginal disutility of the existing employment, (ii) that there is no involuntary unemployment and, (iii) that supply creates its own demand, i.e., the aggregate supply price is equal to aggregate demand price at all levels of output and employment. He then, argued that "all (these three assumptions) amount to the same thing in the sense that
they all stand and fall together, any one of them logically involving the other two. In the subsequent pages he criticized the validity of Say's law of Markets (the third assumption). Flat rejection of Say's law is crucial for Keynesian synthesis because all his attacks on classicals, though they appear to be directed against a variety of specific theories, collapse if the validity of Say's law is upheld.

Keynes' main concern was the problem of involuntary unemployment. The position of classical economists on this issue was that, in the absence of any institutional rigidities like state intervention or trade unions, the existence of unemployment would lower the wage rates. The reduction in wages, they argued, would make industrial activity more profitable so that industry would employ more people. This process, they believed, would continue till full employment was restored. On the basis of this logic they pleaded for wage cuts. Thus they sought to explain the phenomenon of unemployment by the existence

2/ See Ibid., p.26 and Ch. 2, sections VI and VII.
3/ Paul M. Sweezy, "Keynes the Economist (3)" in Seymour E. Harris (Ed.), *op.cit.*, pp. 102-103.
of artificially high wage rates. This kind of explanation "yielded the two fold benefit of absolving the capitalists from the blame for unemployment and the slumps and, at the same time, giving them a stick with which to beat the trade unions."\(^1\)

Keynes rejected this explanation and looked at the issue from a different angle. In his framework the economy at macro level is, by its very nature, interdependent. Thus, wages which appear as costs to the firm eventually appear on its demand side as sales to households. Therefore, money wage cuts which appear to be profitable at firm level would be a disaster at macro level, for a general wage cut results in a fall in aggregate demand. In this framework, wage reductions need not necessarily result in any increase in employment.\(^2\)

Apart from the direct influence of a general reduction in money wages on employment through aggregate demand, it has various indirect implications on the level of employment. These indirect implications include its effects on the demand for money, the rate of interest, the entrepreneur's expectations of future prices, the distribution of wealth and spending. All these factors, in turn,


\(^2\) For an elaborate discussion on this mechanism see, Abba P. Lerner, "The General Theory (1)", in Seymour E. Harris (ed.), *op.cit.*, Ch. XI, pp.115-120.
influence the level of employment in divergent directions and some of them with a time-lag. The effect of money wage reduction on the level of employment, therefore, is a complex phenomenon and is not so simple as the classicals envisaged it to be. 1/ A clear implication of this analysis is that price mechanism (wages being the price of the factor, labour) on its own cannot ensure full employment, which the classicals thought it would.

Arguing on similar lines, about savings and investment, Keynes concluded that there was no effective mechanism inherent in capitalist system assuring that private investment would meet exactly the full employment level of income. 2/ The orthodox belief on this issue was that the rate of interest would balance the savings and investment at full employment level, which implied that decisions to save were the same thing as the decisions to invest. In Keynesian framework, the rate of interest was determined not simply by equality of savings and investment but by meeting the liquidity preferences (speculative motive) of the savers as well. Keynes argued that decisions to save and decisions to invest were

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1/ Ibid., p.120.

made by different sets of people and determined by factors independent of each other; the rate of interest was one among such factors. In a world of imperfect information and uncertainties, people's expectations about future events also, to a great extent, influence the savings and investment decisions. As long as the rate of interest does not provide accurate information about the future, a perfect harmony between savings and investment decisions, that would ensure full employment level of investment, would be more of an accident than anything else.

In view of the absence of an inherent mechanism to ensure full employment in a capitalist economy, Keynes emphasised on the need for government intervention. He pleaded for "establishing certain central controls in matters which are now left in the main to individual initiative.... The state will have to exercise a guiding influence on the propensity to consume; partly through its scheme of taxation, partly by fixing the rate of interest and partly, perhaps in other ways. Furthermore, it seems unlikely that the influence of banking policy on the rate of interest will be sufficient by itself to determine an optimum rate of investment.... therefore,.... a somewhat comprehensive socialisation of investment
will prove the only means of securing an approximation to full employment.  

Thus, it was Keynesian synthesis which provided theoretical sanctity on government intervention. However, while the controversy over the role of government in economic management was prevailing among classical economists, some continental economists hypothesized expansion of state activity. Some studies conducted during that period even provided empirical evidence to that hypothesis. The paradoxical situation of expansion in state activities in the hay-days of laissez-faire capitalism generated considerable interest in the study of public expenditure growth and its determinants.

2.2 Approaches to the Study of Government Expenditure

The empirical research at macro level on public expenditure can be divided into two broad streams. The contributions to the first stream seek to understand the social and economic forces, which determine the level and the pattern of public expenditure during the process of economic development. This stream is referred to as 'Determinant Studies'. The second stream of studies analyses

the impact of public expenditure on various macroeconomic aggregates such as output, income, employment, income distribution and balance of payments etc. This type of studies are generally called 'Impact Studies'. What follows is a review of some of the important approaches in these two broad streams.

2.2.1 Determinant Studies

This stream mainly consists of studies on secular and time pattern growth of public expenditure, and the approach is essentially historical. But the division within this stream is only due to the differences in the perception of different researchers about the phenomenon of 'the growth of public expenditure'. The first generalisation on the growth of public expenditure was made by Adolf Wagner,¹ This was followed by Peacock and Wiseman's displacement effect hypothesis² and Baumol's 'productivity lag hypothesis'.³


Wagner's Law: In the later half of nineteenth century
Adolf Wagner, a leading German economist, formulated
the law of expanding state expenditure. 1/ However,
Wagner did not make it explicit whether his 'law
of expanding state activity' refers to the absolute
expansion of public expenditure or expansion of its
share in the national income. But, his occasional
reference to "quotas" suggest the latter. 2/
Thus one can safely state that 'Wagner's law' postulates an
increase in the share of public expenditure in the national
income as the economy develops. This observation was
based on empirical evidence which he found in a number
of developed countries in Europe and North America. He
explained this phenomenon by dividing the state activities
into three components, viz, (a) the maintenance and enfor­
cement of law and order internally and externally, (b)
participation in material production, and (c) provision of
economic and social services such as postal, educational
and banking services. 3/

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1/ Other writers before Wagner have recognised that state
expenditure would expand relative to national income.
However, it was Wagner who attempted to demonstrate the
fact empirically. Though he has written extensively
on this topic in German, only a brief relevant passage
is available in English in Richard A. Musgrave and
Alan T. Peacock (Eds.), op. cit., pp.1-5.


3/ For an excellent interpretation of 'Wagner's law'
see, among others, Richard M. Bird, "Wagner's Law
of Expanding State Activity", Public Finance, Vol. 26,
No. 1, 1971, pp.2-4, and Alan T. Peacock and Jack
Wiseman (1957), op. cit., pp.16-20.
The need for increase in outlay on the first type of activity, Wagner explained, would arise as a result of the increased complexity of legal relationships and communications, that inevitably accompanied the greater division of labour with industrialisation. He also anticipated that the process of development would increase the frictions of urban life. In other words, the public expenditure on law and order and on economic regulation would increase, in order to ensure efficient performance of the economy.

While explaining the second type of government activity, he argued that the inevitable changes in technology and the increasing scale of investment would proliferate large private monopolies, whose effect would have to be offset even by taking over by the state in the interest of economic efficiency. This process would lead to public corporations replacing the joint stock companies.

The explanation Wagner offered for an increase in the third type of expenditure was ambiguous. This led to varied explanations to Wagner's prediction of expansion in 'cultural and welfare' expenditures. One

explanation is that such expenditures are 'superior goods or luxuries', therefore the income elasticity of demand for such products would be greater than unity, so that more of them would be demanded as income rose. Other explanation is in terms of market failure due to externalities and non-exclusiveness. In such circumstances private sector cannot provide certain services (e.g. public health). Hence the need for state intervention in the production of such goods and services is in the interest of stability.

Empirical Evidence of Public Expenditure Growth: Wagner's generalisation on the growth of public expenditure initiated a substantial amount of empirical research on the subject.

The earliest empirical studies, which reviewed the evidence for 'Wagner's law', were done by Graziani in 1887 and

1/ Ibid., p. 2.


Sitta in 1893, almost immediately after its formulation. After reviewing the evidence for 'Wagner's law', Graziani offered an explanation (for the 'law of increasing state activity') in terms of people's preference for public goods in contrast to Wagner's assertions of 'state's preferences' and 'state's will'. He attempted to incorporate people's preferences, in his analysis, by following income elasticity approach.

Most of the subsequent empirical studies have also followed the 'elasticity' approach to estimate the growth of public expenditure in relation to the growth of national income. But the results obtained by them are often not comparable and at times contradictory. This is mainly because different studies have used different concepts of measurement, or different formulations of the 'law' for empirical estimation of income elasticities. For instance, various cross section studies have used five different formulations of income elasticity. The reason

1/ These two studies have been reported in Alan T. Peacock and Jack Wiseman, "Approaches to the Analysis of Government Expenditure Growth", Public Finance Quarterly, Vol. 7, No. 1, 1979, pp. 3-23.

2/ For a review of various formulations of income elasticity, see N.A. Michas, "Wagner's Law of Public Expenditure; What is the Appropriate Measurement for a Valid Test", Public Finance, Vol. 30, No. 1, 1975, pp. 77-85.

for such varied formulations of the 'law' could be attributed, partly, to Wagner's own ambiguous formulation of his hypothesis and partly to the inconsistencies in various English translations of his work.\(^1\) Against this background of inconsistent formulations and non comparability of results, the empirical evidence provided by time-series and cross-section studies for expenditure growth and Wagner's law have been briefly reviewed.

The time-series studies carried out mostly in the context of advanced countries and in a few developing countries by and large provided empirical support to Wagner's law. However, Jindrich Veverka\(^2\) among few others found evidences contradicting the 'law'. But reinterpretation of his own data revealed that except for the period 1850 through 1880, the law holds good in the context of the United Kingdom.\(^3\) Similarly, Musgrave while analysing the United States data in early fifties found stability\(^4\) in the ratio of civilian expenditure to the national income, in his latter analysis he found that the

\(^1\) N.A. Michas, op.cit., p.77.


\(^3\) Richard Bird (1971), op.cit., p.6.

ratio increased.\footnote{1}

Though the substance in the above two studies somewhat contradict 'Wagner's law', the inherent weakness in their analysis only strengthened the already overwhelming evidence in favour of the growth of public expenditure. Most of these studies, however, are related to advanced countries, India and some other Caribbean countries being the exception. The main reason for this state of affairs is that the time series data for developing economies are limited in availability and quality.\footnote{2} Therefore, the time series evidence for 'Wagner's law' is scanty in developing countries as compared to the developed countries. From this it appears that Wagner's law holds good in aggregate terms\footnote{3} in most of the developed and a few developing economies.

The cross-section evidence\footnote{4} on 'Wagner's law' is

\footnote{1}{See Richard A. Musgrave, Fiscal Systems, op. cit., pp. 93 & 94. The table on p. 94 shows that the ratio of civilian government expenditure to GNP has doubled during 1890-1948 (the period of his earlier study) and tripled during the period 1890-1963.}

\footnote{2}{"Jack Diamond, 'Wagner's Law' and the Developing Countries", The Developing Economies, Vol. 15, No. 1, 1977, p. 35.}

\footnote{3}{Richard Bird (1971), op. cit., p. 8.}

full of contradictory claims. While some of the studies apparently supported it, most of them contradicted it. For example, Musgrave while studying rich and poor countries found a high positive relationship between public expenditure and national income when all the countries are grouped together, but the relationship became very weak when the rich and the poor countries are considered separately. Similarly, another important cross-section study revealed a diminishing rate of increase in the expenditure GNP ratio which was explained by the existence of international demonstration effect.

These conflicting evidences are due to a variety of reasons, the main reason being, combining heterogeneous sample of developed and less developed countries. The

Footnote cont'd. from last page.


1/ See J. G. Williams, op.cit., p. 43 and Richard A. Thoron, op.cit., p. 20.

2/ Musgrave, Fiscal Systems, op.cit., p. 111. Similar conclusion was reached by another study see Martin & Lewis, op.cit.


average level of public expenditure share is higher in developed countries, and therefore, when pooled with less developed countries, where the average level of public expenditure shares is low, one is likely to get a positive relationship. Such a relationship, it is found, ceases to exist when these two groups of countries are studied separately. From this, it is quite clear that in a homogeneous sample of countries, it is quite likely that non-economic factors play a substantial role in explaining the expenditure levels. This makes it difficult to isolate the effect of economic factors in determining the level of public expenditure.

Further, the validity of cross-sectional approach to test the 'Wagner's law' has been questioned by some scholars. They argue that this approach implicitly assumes that the time dimension (which takes care of the process of economic development) in Wagner's hypothesis will be taken care of by the differences in the levels of development across the countries in a cross-sectional setting, which is untenable.1/

All the evidence marshalled so far, in favour of or against public expenditure growth is based on nominal magnitudes. The nominal growth of public expenditure may

not reflect the real picture if the prices change differently in public and private sectors.\(^1\) Working in this direction, Moris Beck estimated the real growth in public expenditures and noted: "in real terms the era of public sector growth in most developed economies may have ended."\(^2\)

This claim was immediately questioned on the ground that he might have underestimated the growth in real government expenditure by using the implicit price deflator for government final consumption expenditure for both final consumption expenditure and transfer payments.\(^3\) In a more recent and detailed work following a more refined methodology, Prof. Beck himself concluded that his new findings were consistent with Wagner's law.\(^4\)

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1/ Particularly in the light of Prof. Baumol's hypothesis one expects public sector prices to rise faster than the private sector prices. In that case the real growth in public sector will be less than the nominal growth. See W.J. Baumol, op.cit.


Despite the mounting evidence in favour of 'Wagner's law', most of the important analysis are sceptical about its validity mainly on two counts. Firstly, the law is based on predominantly economic factors and secondly, it ignores the revenue constraints. It was found that almost every study that has looked into the growth of public expenditure in particular countries, have cited special (mostly non-economic) reasons to explain the observed growth, such as governmental changes, political crisis, political reforms, changes in financing and so on. This type of evidence casts doubts on a theory predominantly based on economic factors.\(^1\)

Arguing on similar lines (without referring to Wagner's law) Martin and Lewis noted that there is no model which can show what government expenditure ought to be without taking into account different political pressures.\(^2\)

**The Displacement Effect Hypothesis:** Wagner's law being a sweeping generalisation about the secular growth of public expenditure ignores the time pattern growth of

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public expenditure. By that, it overlooks the influence of certain phenomenon such as wars, social upheavels, and other crisis on the growth of public expenditure. This drawback follows from the fact that it covers only the demand side of the picture, i.e. it studies only those factors which induce growth in public expenditure. The influence of supply side (the revenue side) which, by all means, is equally important did not receive much attention in Wagner's analysis. Whatever may be the pressure for higher outlays on public services, government's ability to meet such demands depends on its ability to raise necessary revenues. In most of the modern societies, the government's ability to mobilise additional revenue depends on people's willingness to bear additional tax burden. If people are no more willing to accept a higher tax burden, revenue constraint will come into operation and hamper any further expansion in public expenditure until some how the revenue constraint is eased by making people accept additional burden of taxation.

Noting that people's ideas about the tolerable burden of taxation translated into ideas of reasonable

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2/ The link between people's willingness to pay and its influence on expenditure growth was made explicit by Richard A. Musgrave and J.M. Culbertson, op.cit.
tax rates tend to be fairly stable under normal times, Peacock and Wiseman argued that large scale social disturbances such as wars would pre-empt peoples' willingness to pay. Such disturbances, they further postulated, would create a 'displacement effect' by shifting public revenues and expenditures to a new level. Even after the disturbance is over, new ideas of tolerable taxation emerge and a new plateau of expenditure would be reached with public expenditure taking a higher share in national product.¹ This formulation was criticised mainly because of its ambiguity in defining the concept of tolerable burden of taxation,² which led to diverse interpretations.

On the empirical side, the first comprehensive study suggested the existence of war related displacement effect in all the countries which directly participated in world wars.³ However, subsequent studies provided conflicting evidences as to the nature and significance of 'displacement effect'.⁴ These differences are mainly due to the fact that


all the empirical studies share a demand side interpretation of displacement phenomenon. This in turn is due to "the relative tractability of demand influences to econometric evaluation rather than any serious belief of supply influences being irrelevant".1/

To sum up, almost all the countries in the world have experienced a phenomenal growth in the levels of their public expenditure. The determinant studies made a substantial contribution in identifying some of the important variables (both economic and non-economic) affecting the growth of public expenditure and changes in its composition. But the influence of these variables, it was found, differed markedly across countries and often in a particular country over time. It was also found that non-economic variables such as, institutional structure, political ideology and exigencies like wars and social upheavals, played a crucial role in the determination of the level and composition of public expenditure.

The variables, economic and non-economic are in turn highly interrelated, making the relationship between them and public expenditure very complex. This reason made it difficult to determine the extent of the influence of a particular variable on public expenditure. Moreover, the

1/ A.T. Peacock and J. Wiseman (1979) op.cit., p.15.
characteristics of non-economic variables are often 'country specific'. Hence, their influence on public expenditure will be unique in each situation, and may as well result in each country, having its own pattern of evolution of public expenditure, even if their major economic characteristics are similar. The intricacies in the relationship between the economic and non-economic variables and public expenditure, and the ‘country specificity’ in the character of non-economic variables foiled the attempts of determinant studies to establish a theory of public expenditure, which would explain the changing levels and composition of public expenditure.¹/

This apart, all the determinant studies have failed to recognise an important facet of public expenditure development, that is the possibility of present level and composition of public expenditure having a strong influence on the evolution of future public spending. This possibility is particularly strong in most of the developing mixed economies, where public expenditure is being treated more as an initiator of economic development rather than a product of it. All the nations in Wagner's world experienced the industrial revolution during the heydays of classical *laissez-faire* policies and minimum

¹/ See N.A. Michas, *op.cit.*, pp.78-80.
governments. Therefore, in those days maybe, the impetus to public expenditure growth came from the process of economic development. Thus, by no means, is the case in most of the developing mixed economies, like ours. In these countries, unlike in Wagner's world, the governments have assumed the role of 'growth initiators' and are directly participating in the developmental process. Though Wagner anticipated the possibility of government intervention, there exists a sea of difference between the reasons for state intervention in developing mixed economies, and the reasons advanced by him.

This difference is more due to ideological factors than economic efficiency as understood by Wagner. No doubt, such ideological differences about the perception of the role of government will be reflected in the composition of public expenditure. In the situations where it is being used as a policy instrument to achieve developmental objectives, public expenditure may have a decisive influence on future structure and evolution of the economy. Therefore, the composition of present expenditure (coupled with other fiscal instruments and public policies) may largely determine the direction of evolution of the economy. This in turn influences the future levels

1/ During Wagner's time, it was essentially for monopoly control.
and composition of public expenditure.

This intricate relationship between the present public spending and economic development can best be understood by assessing the short and long term impact of public expenditure on various macro aggregates. Such studies, apart from providing insight into the influence of different spending patterns on the economy may help in understanding its influence on future spending patterns.

Studies on the long term impact of public expenditure are not available. However, a few comprehensive studies on short term impact of public expenditure (in input-output framework) have been carried out by various researchers. What follows is a review of some of the important 'impact studies'.

2.3 Review of Impact Studies in General Equilibrium Framework

Contributions of Keynes, growing size of public sector, and increasing role of Government in the economic management of developing mixed economies were some of the events which aroused interest of researchers in the 'impact analysis' of public expenditure. Keynesian macroeconomic models which generated considerable interest in public expenditure analysis, incorporate aggregate concepts like; aggregate consumption, aggregate investment, aggregate
output etc. and analyse their behaviour. In this framework, only the changes in aggregate public spending can have an influence on the economy, but not the changes in its composition. In fact, it has been argued that "whatever the character of initial expenditure, whether private or public investment or .... consumption.... the effort as far as multiplier process is concerned is the same.1/ Implicit in this argument is the assumption that the composition of private or public expenditure has no effect on the economy. This assumption may not hold true if one takes into account the fact that there are several investment and consumption goods, and each one of them has different production requirements and uses.

Aggregate macro models, thus, disregard all the indirect effects, that derive from the structure of the economic system, which may be considerable. If one takes these effects into account, the composition and not simply the level of public expenditure becomes important for economic policy decisions. Considered from this point of view, both the level and the composition of the budget required to attain a given objective of economic policy, may turn out to be different from budget level arrived at from a consideration of only direct effects.2/


Similarly, the phenomenon like increasing share of public expenditure in the national economy and the role of government in the economic management of a developing economy calls for a careful planning of expenditure decisions. Most of the governments in developing economies have directly involved themselves in promoting rapid economic development. The possibility of growth in these predominantly highly populated countries depends on the quick and efficient building of economic infrastructure, which necessitates heavy public investment. Such a heavy investment, if improperly planned in an environment of structural rigidities and bottlenecks, may disturb the stability of economy by creating excess demand in certain critical sectors. Therefore, a careful evaluation of direct and indirect demand a particular expenditure decision generates on different sectors of the economy vis-a-vis the capacities in the respective sectors is crucially important. This type of analysis cannot be carried out in an aggregate macro model.

The question of impact of expenditure also becomes important while making a decision about the choice of expenditure programme. If a particular policy objective can be achieved by two or more alternative expenditure programmes involving the same outlay, but having altogether
different composition of expenditure, one has to select that programme which will have the most favourable effect on the economy. An evaluation of this type, as has already been seen, cannot be carried out by aggregate models and partial equilibrium methods which are useful for measuring relative costs and benefits at micro level.

These drawbacks made the conventional macro models inappropriate to study the impact of public expenditure. The sectoral effects of public expenditure decisions can best be captured by analysing it in a general equilibrium framework, which treats the national economy as a system of mutually interdependent economic activities.

2.3.1 Evolution of General Equilibrium Framework

The first development in the analysis of interdependence or interconnectedness among the participants in the market economy, incidentally, marked the transition to classical economics.1/ Earliest of these circular flow models were developed by John Law and his contemporary Richard Cantillon independently. Cantillon, for example, visualised a three cornered exchange between landlords, farmers and artisans. Francois Quesnay later on improved

Cantillon approach. 1/

For the purpose of his analysis, Quesnay also, divided the economy into three classes viz., (a) the proprietary class (landlords), (b) the productive class (farmers), (c) the sterile class (artisans and manufacturers). In this framework, the exchange process begins with proprietary class's expenditure which constitutes the autonomous expenditure component in this analysis. Proprietary class expends all their rental income on productive and sterile classes' output. This sets in a zig-zag process of expenditure and income interaction through an infinite series of exchange between sterile and productive classes. His assumption that the propensity to spend out of received incomes (or productive and sterile classes) is less than unity, ensured convergence of the series. This analysis is very much akin to well known multiplier analysis.

This understanding of the structural interdependence in the economic system culminated in the development of a very comprehensive theory of general equilibrium by Leon Walras. 2/ It presents an overall synthesis of economic

1/ For an excellent review of Quesnay's approach and analysis of static and dynamic properties of his model, see Ibid., chapter 2.

equilibrium, in the framework of a general model, in which all prices and quantities are determined simultaneously by a system of equations.

Walras defined the equilibrium of a market economy as "a situation where a single set of prices exists for all operators, where the preference indexes of all consumption units and the net incomes of producing units are maximised, prices being considered by operators as given, and where the demand for and supply of each goods is in equilibrium". The determination of equilibrium price is described by Walras as the outcome of a process of tatonnement. His analysis is very comprehensive; it covers all consumption, production and exchange operations and takes into account the role played by money.

In order to study the operating conditions of the economy and those of general equilibrium, Walras used a model consisting of three sets of structural equations expressing cost identities. The structural equations express:

1. The demand relationship among all goods produced and consumed

2. The allocation of productive factors (factor supply relationship)
3. The determination of optimum production function for each commodity.

With the help of this model, he argued, under the conditions of free competition and full employment, with given utility functions for individuals, individual and market demand functions and also the production structure, there exists a unique vector of prices of which the quantity of each commodity demanded equals the supply including money. The Walrasian approach drew a closed circle of interdependence between product and factor markets, making it very clear that equilibrium in one occurs only with equilibrium in the other.\(^1\)

The Walrasian analysis, however, was limited to observing that the number of conditions (equations) was the same as the number of unknowns under equilibrium. He did not demonstrate the existence of equilibrium and its stability.\(^2\) Moreover, highly disaggregated nature of the model restricted its applicability in applied economic analysis. However, in the words of Leontief, general

\(^1\) Robert V. Eagly, op.cit., p.7.
\(^2\) Maurice Allais, op.cit., p.136.
equilibrium theory is essentially "a grand classificatory
taxonomic device" meant to illuminate and describe
economic interrelationship in a very general form, and is
not intended by its creators to become a tool of factual
analysis.\(^1\) Whatever may be its weakness or defects, it
marked the beginning of modern economic analysis.\(^2\)

The empirical application of general equilibrium
approach was made possible through the development of
input output technique.\(^3\) Leontief has achieved this
feat by reducing the dimensionality of Walrasian system
sharply by aggregating the economy into broad sectors.
The interdependence of economic activity is now expressed
by an input-output matrix which shows the flow of sectoral
output among the sectors of the economy.

2.3.2 Impact of Public Expenditure in Open Input Output
Framework

All the earlier 'Impact Studies' have adopted the
open Leontief input output system. One of the earlier
studies was made for the United Kingdom, by Peacock and

\(^1\) W. Leontief, 'Input Output Analysis and the General
Equilibrium Theory', in T. Barna (ed.), \textit{The Structural
Interdependence of the Economy}, Newyork: Macmillan,
1963, pp.41-42.

\(^2\) Maurice Allais, \textit{op. cit.}, p.129.

\(^3\) W. Leontief, \textit{The Structure of the American Economy 1919-
They have tried to "generalise the theory of fiscal policy" by making an attempt to explain the fact that, "the composition of government expenditure, as well as its aggregate amount, is obviously important in examining the multiplier effects of the government expenditure". In their study, which was based on a small 6 x 6 input-output table for the year 1956, they estimated the direct (primary) and indirect (secondary) effects of government purchases on the sectoral incomes. Based on the results of their study, they concluded: "the multiplier effects of changes in the levels of government expenditure may be extremely complex" and that "there appeared a strong case for disaggregating expenditures in ways other than that produced by simple division between expenditure on goods and services on the one hand and expenditures on transfers on the other."  

The two studies that immediately followed Peacock and Stewart's, were simulation type of studies done for the United States. Both of them have tried to find out the economic impact of disarmament policy viz., transfer of a substantial part of expenditure from defence to non-


2/ Ibid., p. 144.
defence uses. First study in this framework was done by Leontief and Hoffenberg. For the purpose of their study, they divided the American economy into 57 processing sectors and identified 8 different, military and non military final demand vectors. The elements of this 57 x 8 matrix of final demands were ratios which were derived after computing the direct and indirect requirements of the ith sector to each jth demand component, necessary to support the level and composition of final demands for the year 1958. With the help of this matrix, the net effect of shifting the final demand from defence to non-defence uses on the processing sectors was estimated by obtaining the scalar vector product of the assumed defence cut times any non-defence demand vector, and finally substituting the military product vector. The resultant vector yielded the net gains and losses in total output across sectors consistent with the magnitude assumed to be shifted from defence to non-defence demands.

This method offers flexibility and generality in estimating the impact of shift of expenditure from any type of final demand to any other type. However, the

flexibility of this method does impose some limiting assumptions on the model, which may effect the accuracy of the derived impact. This is so because the method adopted to estimate the net effects incorporates only the shifts in magnitudes from one final demand to another without changing their internal composition. This has three implications:

(a) any cut in defence expenditure assumes reduction in purchases from each and every sector (or say outlays on each and every such programme) by the same proportion).

(b) if the shift of expenditure is to personal consumption expenditure, it assumes unitary income elasticity of demand for all the commodities so that there is a proportionate increase in demand for all industries,

(c) if the shift of expenditure is to non-defence government expenditure, it assumes proportionate increase in all the existing government expenditure programmes.

These simplifying assumptions may facilitate flexibility for analysing the impact of marginal shifts in expenditure,

but might become too restrictive if one wants to analyse 
shifts of fairly high magnitude which may require radical 
changes in the composition.

In a subsequent study R.G. Kokat\(^1\) substantially 
improved the Leontief-Hoffenberg methodology by relaxing 
the assumption of constant proportionality between demand 
categories and production sectors when working out a 
shift of expenditure. This required derivation of 
composition of new direct requirements for all the final 
demands while shifting the expenditure from defence to 
non-defence uses.

He estimated the probable impact, in 1970, of fifty 
per cent cut in defence expenditure offset by tax 
reduction and consequent increase in private consumption 
as one alternative and by compensating increase in 
government's non-defence expenditure as the second 
alternative, using the input-output table of late fifties. 
For this purpose he projected the values of aggregate macro 
parameters both on supply and demand side for 1970. He 
then used these aggregates as control figures to construct 
the new non-defence final demand vectors, while shifting 
the expenditure from defence to non-defence uses.

Unlike Leontief-Hoffenberg, his assumed fifty per cent cut in defence expenditure was distributed disproportionately to the composite military vectors reflecting the policy of nuclear disarmament and thus changing the internal composition of direct defence requirements.

As a first alternative, he kept the non-defence expenditure constant and reduced the income and corporate taxes to offset the budget surplus created by a cut in defence expenditure. He then computed the new private consumption vector incorporating the effects of increase in disposable incomes, dispensing with the unitary income elasticity assumption. As his second alternative, he increased the non defence spending to offset the cut in defence spending. In order to change the internal composition of non-defence expenditure, he allocated 25% of the shifted expenditure to federal budget (of which one half to space programme and the other half to all other federal programmes) and the remaining 75% of the expenditure was transferred to state and local governments.

Incorporation of probable changes in the internal composition of final demand made this study less flexible, but at the same time more realistic. On the basis of this analysis he concluded that a fifty per cent reduction in defence outlays, offset by compensating increase in
expenditures within either the private or public sectors, would affect the industries producing weapons substantially but would have little effect on supporting industries. It was so because the production base of supporting industries was common to other elements of final demand besides military establishment.1/

The chief aim of the above two studies was to investigate some of the major structural problems which might arise when there was a substantial shift in a particular type of expenditure. However, more comprehensive study is required to assess the impact of alternative spending policies than what has been done in the above studies. Because the studies have covered only the employment and output aspects, ignoring the impact on other macro parameters such as factor incomes and income distribution, balance of payments and tax feedback etc. A study of all these macro aspects is extremely useful for short term policy purposes. This is so because the changes in the level and the composition of public expenditure, in most cases, will have impact on all these policy aspects,2/ which incidentally are the major objectives of fiscal policy. These fiscal objectives are often competitive and therefore, any changes in expenditure

1/ Ibid., p.499.

programmes intended to achieve a particular fiscal objective, may have an adverse impact on the other objectives. 1/

First such comprehensive study was carried out by Roskamp, 2/ for the West German economy, using a 55 sector input-output table. He first estimated the impact of increments to government expenditure, without changing its composition, on capital income, labour income, tax revenues and import requirements. Then he proceeded to the main aim of his analysis i.e. to demonstrate the problem of choosing between alternative expenditures. He did this by taking a simple case of two different industrial sectors producing similar public goods or services (for example a question of choice between railway transport or road transport) at the same direct cost to the government.

The choice becomes a matter of indifference if the expenditures on these two industries have same total impact on all the macro policy objectives, which seldom happens. If the total effect of one industry is favourable in all respects, it will become an obvious choice. The choice becomes difficult if each of the industries have some favourable and some unfavourable impact on different objects. For example, spending on rail transport may generate

1/ Ibid., p.34.
2/ Ibid., pp.33-47.
more tax revenue and may have a favourable impact on distribution, but road transport may generate more factor income and may require very little imports. In this case the choice becomes difficult.

However, the knowledge of the magnitude of these multiple effects will immensely help policy makers in deciding about the industry from which to buy to further the multiple objectives of fiscal policy. This simple analysis of Roskamp, which deals with choice of industry sectors, can be extended to a more realistic and general situation of evaluating two or more public expenditure programmes which are intended to deliver the same public goods. But he did not give any answer to resolve the problem of choice, when the impacts of different expenditures on different macro objectives are different. In such situations choice involves an element of value judgement on the part of policy makers.

This problem was taken up subsequently by Roskamp himself, in a methodological article on determination of optimum size and composition of the budget. Once the fiscal policy objectives or targets are decided upon, the government tries to implement them by using policy parameters, such as tax rates, subsidies, transfers, purchases and other types of government expenditures over

which it has control. These parameters are known as instruments. Policy targets and instruments belong to the same economic system. The first are endogenous and the second are pre-determined. The values policy targets take, depend on the type of instruments employed, and the relation between them will be determined by the structure of the economy. Thus, different sets of policy instruments generate different sets of policy targets such as total income, income distribution, employment, balance of payments and changes in price level. The problem of economic policy is to choose an optimum set from among the feasible sets.\(^1\)

The competitive nature of different fiscal policy objectives and socio-political constraints make such choice difficult, and trade-off between the competing objectives becomes inevitable. For this purpose one has to take into account the social preference function which stipulates the parameters which the society wishes to maximise. It specifies the targets, states the relationship among them, sets the priorities for attainment of different targets and also indicates the trade-offs among targets. Once such function is available, it becomes the objective function of the economic decision model, which is to be maximised subject to the constraints imposed by the structure of the economy.\(^2\)

\(^{1}\) Ibid., p.365.
\(^{2}\) Ibid., p.366.
Roskamp considered a simple quadratic social preference function, which includes targets as well as instruments of the form:

\[ \phi = \sum \alpha_i (x_i - \bar{x}_i)^2 + \sum \alpha_{m+j} (y_i - \bar{y}_i)^2 \]

\[ i = 1, 2, \ldots, n \]
\[ j = 1, 2, \ldots, n \]

Where,

- $x_i$ actual target values
- $\bar{x}_i$ desired target values
- $y_i$ actual instrument values
- $\bar{y}_i$ desired instrument values
- $\alpha_i$ and $\alpha_{m+j}$ preference intensity coefficients for targets and instruments respectively
- $\phi$ is an index of social disability.

In his analysis he assumed that the policy makers knew the socially desirable targets, and the range of values both instruments and the actual targets could take would be determined by the political, social and cultural factors. The objective function of this model was to minimise the index of social disutility - subject to the constraints imposed by:
(a) the structure of the economy, and
(b) the range of values both targets and instruments can take.

The solution to this model can be obtained by non-linear programming method. 1/

A different approach to the determination of optimal government expenditure was suggested by Jones and Kubursi. 2/

This approach differs from Roskamp's approach in the following respects. Firstly, this adopts a single target approach in contrast to multiple target approach suggested by the earlier study. This means the policy makers will have an option to select one target, considering the economic situation and achieve it, minimising undesirable effects on the other targets. For example, economic situation warrants a policy to increase employment which can be achieved by various sets of programmes. Due to competitiveness of fiscal objectives, many of them may have undesirable consequences on other policy objectives. To overcome this problem, the policy makers specify a tolerable range of values which all other targets and each of the expenditure programme can take. Secondly, this approach has an

1/ Roskamp used impact multipliers of jth instrument on ith target to link changes in policy instruments to changes in policy targets in his constraint structure. However, one can use input-output model as constraint structure if one is interested in more disaggregated analysis. See ibid., p.373.

advantage of dispensing with formal specification of social preference function which is very difficult to determine.

Instead of specifying a formal social preference function the policy makers can choose a range of values all other targets can take after considering the constraints imposed by political and social factors. Simplicity of the model sacrifices the generality of Roskamp's approach where optimality can be determined when there is a need to achieve more than one target.

Finally, Jones and Kubursi model determines the optimal composition of government expenditure in terms of its major expenditure functions, in contrast to the sectoral classification adopted by all the earlier authors. With the help of functional classification one can directly arrive at the optimal programme composition. Sectoral classification of expenditure gives an optimal sectoral composition of expenditure. Translating this in terms of different expenditure programmes is a difficult task, which makes Jones-Kubursi approach more realistic.

Indian Studies: In India the first attempt to analyse the government expenditure in Input-Output framework was made

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by Mathur, who studied the probable impact of substantial stepping up of defence efforts. After Indo-Chinese conflict in 1962 the Government of India took a policy decision to increase defence outlays without much reducing the development outlay. Pointing at the sudden spurt in defence spending, he argued, "extra defence effort is not only a financial question but depends on attaining necessary physical balances both between availability and requirement of each commodity. Unlike financial resources, physical resources are not as elastic and homogeneous. Their specificity and inelasticity (bottle necks) put severe limitations on the whole process of economic expansion."

In order to achieve physical balances, he argued, careful planning is necessary to match the capacity with the direct and indirect demand generated by additional defence outlay on commodity purchases and wages and salary disbursals. In his article he made an attempt to estimate the direct and indirect demand generated by commodity purchases made out of additional defence outlay. For this purpose he used 17 sector input-output table and the pattern of defence ministry's purchase in the year 1958-59.

2/ Ibid., p. 353.
3/ He considered only the expenditure made on Army for his analysis. Even the commodity composition of army budget which he used is approximate one, see Ibid., p. 348.
He worked out the sectoral output requirement of an additional outlay of Rs. 200 crores at 1958-59 prices that was made in 1963-64. Since he could not get the commodity composition for 1963-64, he based his analysis on the pattern observed in 1958-59. Using this information he found that there were likely to be bottlenecks in the supply of agricultural products, animal husbandry and fishery products, power, chemicals, iron & steel and transportation.

This was followed by a comprehensive study made by Paithankar. His study covered the entire Central Government commodity purchases during the period 1961-62 to 1965-66. He used a 65 sector input-output table for the purpose of the study. He also studied the regional impact of commodity purchase by taking the purchases made in different states, and concluded that the government demand accentuated the regional inequalities instead of removing them. About 70 to 80 per cent of the annual total direct purchases were made in the most developed regions consisting of Maharashtra, Punjab, West Bengal and Union Territories which together accounted for only 23.2 per cent of the national population. The under developed


2/ Ibid., see page 47 and Chapter 6.
states like Madhya Pradesh, Orissa, Rajasthan and Bihar together accounted for only 3 to 6 per cent of the annual total direct purchase. These states accounted for about 26.6 per cent of the national population.

Reddy et al. in a recent study attempted, inter-alia, to work out a reliable commodity composition of the Union Government expenditure on goods and services and their impact using 20 sector input-output table derived from the Planning Commission's 89 sector 6th Plan table. They also attempted to measure the sectoral impact of the expenditure on goods and services by eight major ministries of the Union Government for the period 1973-74 to 1977-78. Additionally, as a case study, they studied the sectoral impact of the Gujarat Government purchases. The major efforts of the authors were directed to obtain "as accurate a commoditywise breakdown of government expenditure as possible," with better access to some of the important data sources, the authors could improve the estimation of commodity composition of the government expenditure. Yet given the present state of relevant data system, recourse to substantive data adjustments remained inevitable.

2/ Ibid., p.105.
2.3.3 **Impact of Public Expenditure in a Closed Input-Output Framework:**

Morishima\(^1\) has used such mixed Keynesian-Leontief model for estimating the impact of fiscal policy in United Kingdom. Noting that "Keynes' theory of multiplier can be valid only if it is supplemented by accurate information about the structure of industrial output" he proceeded to build what he calls, a pair of semi detached houses to Keynes and Leontief.\(^2\) This he achieved by linking Leontief's input-output model and Keynesian multiplier model with the help of a consumption function, which translates the induced income generated by changes in gross output into consumption. He arrived at sectoral consumption quotas or coefficients using a log-linear (Cobb-Douglas) utility function. With the help of his mixed Leontief-Keynes model he made a very exhaustive study of the impact of fiscal policy in the United Kingdom for the year 1954.

He computed the impact multipliers of a unit change in government expenditure under two different cases. In the first case, he kept the outputs of all the sectors flexible and estimated the impact multipliers on domestic income both at factor cost and market price and on disposable

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incomes. In the second case, he worked out the multipliers in a more general situations of bottlenecks, where some sectors' output is fixed and cannot be changed in short run. After estimating the impact multipliers of different types, he examined the question of optimal government expenditure in linear programming framework. In the subsequent sections he estimated balanced budget multipliers, which were in the range of 1.26 to 1.3 depending on the type of tax used to balance the budget.

Subsequent studies by Forsell and Dahlberg on the impact of public expenditure are similar in spirit to Morishima's study. Of these studies, Dahlberg's study is different from the other two studies (Morishima's and Forsell's). He specified the public sector in a very detailed manner and studied, "how trade off between public and private consumption varies according to different distribution patterns of public consumption growth within the various branches of public sector." This question of trade-off between public and private consumption was not covered by the earlier studies.


To sum up, studies on the impact of government expenditure are few compared to the studies on its growth and determinants. Even the few studies which have been carried out are not comprehensive in their coverage. More important they are deficient in three respects as the review has brought out. They are deficient (i) in terms of the models used, (ii) not covering a major part of government expenditure viz. salary disbursals and, (iii) their failure to analyse the implications of relaxing some of the standard assumptions behind impact multipliers. In this respect the present study makes a modest attempt to overcome the above three deficiencies.