CHAPTER 7

THEORETICAL FRAMEWORK AND THEORETICAL ANALYSIS

7.1 Theoretical Framework

The subject of this study, which is the expenditure on roads by an urban local government, is based on the following theoretical framework.

Roads can be classified as public goods, but they are a type of impure public good. Public goods, because of their peculiar characteristics, need to be provided by the government. However, an important issue here is, which level of government should provide different public goods, and why. The provision of public goods by the government (at any level) entails incurring public expenditure. How is public expenditure allocated among the various goods and services provided by the government? In other words, who decides which goods are to be produced and in what quantities? In a democracy, the parties involved in this decision are the voters, the politicians and the bureaucracy. The relative roles of each of these parties are important in resource allocation. The actual allocation of public expenditure is done through the government budget, the making of which is governed by various factors like interests of various groups, priorities of the government, resource availability, etc.

There are several theories about each of the issues mentioned above in the Public Economics literature. In fact, Local Government Economics, a branch of Public Economics, has grown into a broad area of study during the 1980s and 1990s. It pays more attention to, among other things, local government spending and taxation, to the internal efficiency of local governments and to the quality of services provided by local governments (Bailey 1999: 1).

7.2 Theory of Public Goods


Samuelson defined private goods as those that can be ‘parcelled out’ i.e., divided between different individuals so that each person’s quantity of consumption is
known and each can be charged a price for what he consumes. When one person consumes such a good, others cannot consume it, i.e., there is rivalry in consumption. At the same time, it is possible to exclude individuals from consuming such a good, either by charging a price or through some other means, thereby making consumption excludable.

On the other hand, Samuelson identified some goods that are both non-rival and non-excludable in consumption. He called such goods ‘pure’ public goods. The consumption of such goods by one individual does not reduce the amount of the good available for consumption by others and no one can be effectively excluded from using that good. The essence of a pure public good is, therefore, that the quantity of the good available for consumption is the same for everyone and that collective or joint consumption of such goods is possible. Because the good can be consumed jointly, the exact quantity consumed by any one individual is not known and hence it becomes impossible to charge a price. This results in what Samuelson called the ‘free rider problem’, i.e., everyone tries to consume the good without paying for it, since in a situation of collective consumption, the free rider cannot be isolated.

Samuelson pointed out that in such a situation, when consumption of a good is joint (non-rival) and because it is difficult to exclude free riders (non-excludable), private sector would not be interested in providing such goods. If individuals consume without paying, private producers will make a loss. Therefore, such ‘pure public goods’ need to be provided by the government.

It was well known even before Samuelson that goods like infrastructure need to be provided by the government – the writings of Classical and even earlier economists (O’Brien 1975: 272-274) show that – but no one had been able to prove exactly why this should be so. Samuelson for the first time showed the real proof by distinguishing between private and public goods.

He showed that for private goods, at a price fixed by the market (which is a competitive market), different individuals can consume different quantities of the good, depending on each person’s preference/need for that good. This means that at the same price, the quantity consumed by different individuals is different. This is possible because each person is paying a price for what he consumes. If he does not pay, he is not able to consume the good. The market produces the total quantity demanded by all the consumers of the good at the given price, which is determined by the market. At this price, the market will be in equilibrium because total demand is
equal to total supply. Individuals are also in equilibrium because marginal cost is equal to marginal benefit for each. The resources in the society will be allocated optimally and social benefit will be maximised because each individual is at equilibrium, i.e., at maximum benefit.

On the other hand, for a pure public good, the quantity of the good consumed by each individual is the same, that is, the availability of the good is the same for all, although the benefits derived from the good may be different for different individuals. It follows that for the same quantity, an individual who needs the good more will be willing to pay a higher price than another who needs it less. So the same quantity can be charged different prices for different individuals. However, Samuelson pointed out that this would be possible only on the condition that preferences of individuals are known, that is, only when individuals reveal their preferences.

But for a public good, people do not reveal their preferences since they do not want to pay for its consumption if possible. ‘…it is in the selfish interest of each person to give false signals, to pretend to have less interest in a given collective consumption activity than he really has, etc’ (Samuelson 1954: 388-389). Therefore the market cannot work in the case of such a good since it is not clear how much of it needs to be produced, as there is either no signal or a false signal from individuals. Typically, people will show less demand than what they actually want and try to be ‘free riders’. As a result, the market will produce less than optimum output. Moreover, public goods have positive externalities and if produced less, total social benefit will be reduced. Thus there will be a loss of social welfare if the provision of such a good is left to the market.

Samuelson, therefore, concluded that an organisation other than the market is required to provide such public goods. He felt that the government is the most appropriate agency for the provision of such goods, as they can be supplied out of public revenue. In this case there is no need to charge individuals separately for each unit consumed.

This theory emphasises that public expenditure is necessary for provision of public goods because of the very nature of public goods. The market cannot provide such goods, or if provided by the market, output will be less than optimum.

7.3. Impure Public Goods

One of the criticisms of the concept of a pure public good was that there were hardly any examples of such a good to be found in the real world. ‘A pure public
good is a good where the marginal cost of providing it to an additional person are strictly zero and where it is impossible to exclude people from receiving the good’ (Stiglitz 2000: 132). Going strictly by this definition, Stiglitz gives national defence as one of the few goods that comes close to the concept of a pure public good. Samuelson himself later pointed out that between the two extremes of pure private goods and pure public goods, there will exist impure public goods, for which many examples could be found in the real world. ‘Certainly it should be possible for the theorist to go beyond the polar cases of (1) pure private goods and (2) pure public goods to (3) some kind of a mixed model which takes account of all external, indirect, joint consumption effects’ (Samuelson 1958: 1233-39).

In order to identify various kinds of impure goods that lie along the continuum between pure private and pure public goods, economists classify all goods based on the two characteristics, rivalry and excludability. Taking these two characteristics, they have built a matrix which classifies all goods and services into four categories. This matrix is based on the fact that different goods display different levels of rivalry and excludability, as shown below.

<table>
<thead>
<tr>
<th>Excludable</th>
<th>Rival</th>
<th>Non-rival</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pure Private Goods</td>
<td>A</td>
<td>C</td>
</tr>
<tr>
<td>Club Goods</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Common Property Resources</td>
<td>B</td>
<td>D</td>
</tr>
<tr>
<td>Pure Public Goods</td>
<td></td>
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</tbody>
</table>

Source: Adapted from Figure 6.2, Publicly Provided Goods, in Stiglitz, J E (2000): Economics of the Public Sector, W. W. Norton and Co., New York, pg. 133.

The goods in category A are rival in consumption and excludable – they are pure private goods, e.g., a car. Goods that fall under category B are rival but non-excludable. Common resources like lakes or common grazing grounds or open sea fishing can be cited as examples. It is not possible to exclude anyone from grazing animals on the open land, but if everyone starts doing so, there will be congestion and not enough grass will be available for all the animals trying to feed there. Thus after a while, consumption becomes rival. In category C are goods that are non-rival but
excludable. Such goods are called Club Goods after the Theory of Clubs put forward by Buchanan. He pointed out that the services of a club can be made excludable (through price or other membership conditions), but once an individual becomes a member, he can enjoy the same services as other members without reducing anyone’s consumption of those services. Provision of such goods both by the private and public sectors is possible (Buchanan 1965: 1-14). Goods in category D are non-rival in consumption and non-excludable. They are pure public goods, such as national defence or street lighting. Since consumption is joint, each person can enjoy the good to the same extent without reducing anyone else’s share; also it is not easy to exclude anyone from using it. Hence no price can be charged for such a good and it will have to be provided through the public budget.

7.4. Provision of Local Public Goods

Having established the fact that public goods need to be provided by the government, the next question is which level of government should provide the various public goods. This question becomes pertinent particularly in a federation, which is a system of multi-level governments. A federation has been defined by R. L. Watts as ‘a form of political association in which two or more states constitute a political unity with a common government, but in which these member states retain a measure of internal autonomy’ (Quoted in Gupta 1970).

7.4.1 The Decentralization Theorem

In a federal system, there exists a central government and several sub-central government units, each of which has its own functions, usually laid down in the Constitution of that country. Wallace E. Oates, one of the foremost authorities on fiscal federalism, states that ‘Each level of government, rather than attempting to perform all the functions of the public sector, does what it can do best’ (Oates 1972: 14). Out of the three tasks of economic policy of Allocation, Distribution and Stabilisation as given by Musgrave (Musgrave 1999), Oates is of the opinion that the Central government would take on the tasks relating to stabilisation and distribution and of providing those public goods that have a significant bearing on the welfare of all individuals in society. On the other hand, the main function of local governments should be primarily related to the Allocation function, that is, the provision of goods and services whose consumption is limited to their own jurisdictions.

Oates pointed out that a centralised government can technically provide all public goods for all individuals in the community. The central government, however,
would provide a uniform good across all communities in the economy, regardless of the preferences of the people. On the other hand, the decentralised provision of the public good by each community would enable each local government to produce according to the preferences of the community, both in terms of quantity as well as the level of service. Some individuals may prefer an expanded and high quality programme of public services, while others may want less output of public goods and a correspondingly lower tax rate. If the central government were to provide the public good, it would inevitably result in a compromise for both communities, as the government would provide the good at a uniform level all over the country, which may be at the average or median level. This would involve some loss of welfare to all. This is particularly true of goods that have to be provided at the national level. However, for public goods whose benefits are limited to a particular locality, it is possible for a local government to produce it according to the needs of each community, thus increasing economic efficiency in terms of better resource allocation as well as increased welfare of the community (Oates 1972: 58-63).

Further, Oates felt that such decentralization in provision of public goods has two more advantages. Firstly, it will encourage greater experimentation and innovation that will, in the long run, lead to greater technical progress. Secondly, a large number of producers of the same product will create competitive pressures that will lead to more efficient techniques of production. A single central government, providing the same service, with no competition, will feel less pressure for innovation and efficiency.

Oates also believed that decentralization would lead to more efficient levels of public output because expenditure decisions are taken with respect to the real level of resources available with the community in the form of local taxes, which will be collected from local residents. Hence residents are likely to demand a level of service commensurate with their willingness to pay. If the service were being provided by the central government, residents may demand a high level of service since they would need to bear only a very small part of the total cost of providing the service (Oates 1972: 8-13).

Oates summarised the above argument in what he called the Decentralization Theorem. The Theorem states:
‘For a public good – the consumption of which is defined over geographical subsets of the total population, and for which the costs of providing each level of output of the good in each jurisdiction are the same for the central or the respective local government – it will always be more efficient (or at least as efficient) for local governments to provide the Pareto-efficient levels of output for their respective jurisdictions than for the central government to provide any specified and uniform level of output across all jurisdictions’ (Oates 1972: 35).

Oates’s assertion, therefore, is that welfare is maximised if each local government provides that level of output to its constituency, which is preferred by them. Any other level of output will necessarily reduce the level of satisfaction. The welfare of the residents of any community ‘must be at least as great, and in some areas greater, where local governments cater to local preferences, as compared to the case where central government provides a single level of output for all localities’ (Oates 1972: 36).

Oates pointed out that the welfare gains of local provision of a local public good will increase the more is the heterogeneity of preferences for that good across localities, but homogeneity of preferences within each locality. In that case, the argument for local provision is strengthened (Oates 1972: 37).

In such a case, where individuals have differing preferences, it is possible that they will move to those localities that provide a tax-service combination more suited to their needs. This corollary of Oates’ Decentralization Theorem had been discussed earlier by Charles Tiebout in his voting-with-the-feet theory.

7.4.2. The Tiebout Hypothesis

In his 1956 article ‘A Pure Theory of Local Expenditure’ (Tiebout 1956: 416-424), Tiebout distinguished the provision of public goods by a central or federal government from that by a local government. He maintained that the federal government’s objective would be to ascertain the wants of consumer-voters and try to ‘adapt to’ these preferences by providing the goods they want and tax them accordingly. On the other hand, local governments, he felt, ‘have their revenue and expenditure patterns more or less set’ depending on the preferences of older residents of the community and an optimum level of the bundle of services defined as that level of output at which average cost is least. The cost of producing these services, in turn,
would be determined by available resources (such as limited land) that act as a constraint. Since resource availability and hence optimum level of services would differ from one locality to another, each local government would provide a different set of services and charge different amounts of tax. Therefore would be, at least in theory, an almost infinite choice of communities for consumer-voters to live in.

The consumer-voters in these localities may or may not be satisfied with the given level of services. Given the assumption of full knowledge and costless perfect mobility made by Tiebout, the dissatisfied consumer-voter would ‘move to the community that satisfies his preference pattern’ (Tiebout 1956: 420). Thus the crux of Tiebout’s argument is that ‘there is no attempt on the part of local governments to ‘adapt to’ the preferences of consumer-voters. Instead, those local governments that attract the optimum number of residents may be viewed as being ‘adopted by’ the economic system’ (Tiebout 1956: 420).

The conclusion of this hypothesis is that decentralisation of revenues and expenditures would give local authorities enough autonomy to provide distinctive combinations of taxes and benefits so that individuals can match their preferences to these communities and accordingly choose their location for residence. This would maximise individual welfare and hence social welfare.

Tiebout’s hypothesis provides a strong argument for provision of local public goods by local authorities.

**7.4.3 The Principle of Subsidiarity**

Subsidiarity is an organising principle that matters ought to be handled by the smallest, lowest or least centralised competent authority. The Oxford English Dictionary defines Subsidiarity as the idea that a central authority should have a subsidiary function, performing only those tasks which cannot be performed effectively at a more immediate or local level. Subsidiarity is ideally, or in principle, one of the features of federalism, where it asserts the rights of the parts over the whole.

The word Subsidiarity is derived from the Latin *subsidiarius* and has its origin in Catholic social teaching. This principle has been followed by the Catholic religious institutions for several centuries but it was most clearly enunciated by Pope Pius XI in his 1931 circular. He wrote ‘-just as it is wrong to withdraw from the individual and
to commit to the community at large what private enterprise can accomplish, so it is likewise unjust and a grave disturbance of right order to turn over to a greater society of higher rank functions and services which can be performed by lesser bodies on a lower plane. This is a fundamental principle of social philosophy, unshaken and unchangeable.’ (Pope Pius XI 1931: 203).

The concept or principle of Subsidiarity is found in several Constitutions around the world such as the Tenth Amendment to the United States Constitution which asserts States’ rights and the 73rd and 74th Amendments to the Indian Constitution defining the roles and authority of rural and urban local governments, respectively. It is also defined in Article 5 of the Treaty of Maastricht under which the European Community was established. According to this principle, the EU may make laws only where the action of individual countries is insufficient (Mathur 1999: 234-237).

7.4.4 Other reasons for local provision of local public goods and services

a) Politician’s knowledge – Local politicians are more likely to have a better understanding of the wishes of the citizens in a particular locality since they live and work there. Hence they are more aware of local needs and public opinion than the central government. This helps them to be more responsive to local preferences in their expenditure decisions (King 1984: 22).

b) Higher costs for central government - Local provision of local public goods will be more efficient since electors may become aware of the costs of these services and hence be in a better position to weigh the benefits against the costs. This would enable citizens to decide on the level of service provision that best suits their needs at a level of taxes that they are willing to pay. If local goods were centrally provided, the local population would be called on to bear only a small portion of the cost and so they may demand a much higher level of service whose marginal benefits were much higher than their marginal costs. This would mean unnecessary expenditure on the part of the central government, which would have fewer resources available for providing some other service. This outcome would be socially inefficient since it entails a loss of welfare for the society as a whole (King 1984: 23).
7.5 Public Expenditure Theory

The provision of public goods by the government, whether at the central, state or local level, involves some expenditure. Public expenditure refers to the expenditure made by the government through its budget. It includes expenditure on social welfare, defence, public sector investment, provision of public services and expenditure for the growth and development of the economy.

Traditional economic theory gave more importance to the revenue side of the budget, particularly to taxation and the expenditure side was relatively neglected (Samuelson 1958: 332). It was believed that government spending should be kept at a minimum level, in keeping with the restricted role assigned to the government by classical economists.

7.5.1 Adam Smith’s views on public expenditure

Smith believed in the efficacy of the ‘invisible hand’ and the superiority of the market process over any government action. Smith advocated a very minimal role to the government, although he was aware that these functions were extremely important. Smith believed that according to the law of natural liberty there were three duties of the sovereign:

1. Protection of the society from violence and invasion by other independent societies.
2. Protection of every member of society from injustice or oppression by establishing a mechanism for administration of justice, that is, establishment of a legal system.
3. Erecting and maintaining public works and certain public institutions, like roads, bridges, canals, etc., which private individuals would not find profitable enough (Peacock 1979: 39).

Given these limited functions of the state, public expenditure for providing these services was also limited. Smith did not discuss the important question as to who should decide the amount and form of government expenditure on goods and services, as he did not mention any voting system or control over expenditure by Parliament. He was aware of the ‘publicness’ of certain goods, but he recommended only the use of public finance and not actual public production of such goods. Even
where public production becomes inevitable, he felt that efforts needed to be made to simulate market conditions in order to prevent inefficiency (Peacock 1979: 40).

In the important case of transport systems, Smith believed that the State must provide the finance for building, maintenance and improvement of roads, because of the external benefits that would not otherwise be captured if roads were left to private enterprise. Smith believed that availability of roads would break down local monopolies by improving accessibility, which was another benefit to the economy. Smith was against the use of the toll money being used for general expenditure of the state, since he felt that collecting toll at more places would only hinder trade. His recommendation was that trustees should operate the system of national roads, whereas local street-paving and lighting should be conducted by local public authorities and financed by local taxes because the benefits of such services were specific to the inhabitants of the locality (Peacock, 1979, p. 42-43).

7.5.2 Wagner’s Theory of Public Expenditure

One of the earliest attempts to explain the growth of public expenditure was that of Adolph Wagner, a German economist. Writing in the 1880s, he evolved a ‘law of increasing expansion of public, and particularly state, activities’. He anticipated that the development of modern industrial society would give rise to increasing political pressure for social progress and increasing importance to social considerations in industry. Consequently, the public sector would need to expand as well.

According to Wagner, the main cause of the growth in public expenditure was the growth of the economy. As the economy grows, the public sector also expands. Wagner’s hypothesis of increasing state activity holds that, as per capita income and output increase, especially in industrialising countries, the public sector or government expenditure in these countries grows as a proportion of total economic activity. Not only will the relative share of government expenditure in the economy increase, it will increase more than proportionately to the growth in output.

This ‘law’ was based on empirical evidence from the German economy for about fifty years. Wagner wrote, ‘That law is the result of empirical observation in progressive countries, at least in our Western European civilisation; its explanation, justification and cause is the pressure for social progress and the resulting changes in
the relative spheres of private and public economy, especially compulsory public economy.'

Wagner gave the following reasons for this growth of state activity:

1. Growing complexities of public life – With economic development and growing division of labour the gap between the rich and the poor would increase and with this, the causes of friction between different sections of society would increase. The state, therefore, would have to spend more on maintaining law and order, through a larger police force and more legal services.

2. Need for larger investments – New technology would create the need for large amounts of capital, which could only be provided by joint stock corporations of public corporations. Wagner favoured the public corporations, especially where technical conditions like large size of operation and no competitors created a monopoly.

3. Welfare expenditure – Wagner foresaw the expansion of the traditional functions of the government. With the progress of society, it becomes necessary for the government to provide needed infrastructure as well as health and education services, which are services having large positive externalities. A positive externality occurs when there is a benefit to a party not directly involved in an economic transaction, often from the use of a public good. The social benefits of such services cannot be measured in economic terms.

4. War and preparation for war – Although this was not a desirable activity, it was unavoidable, as every country is required to defend itself. The defence expenditure has also to be borne by the government.

Not only did Wagner assert the growing role of the central government, he has further commented on the growing role of local governments as well, in his book *Finanzwissenschaft*, published in 1883. Increasing public expenditure, he felt, would also lead to increasing demand for resources at all levels of government. ‘Both the State’s requirements grow and, often even more so, those of local authorities, when administration is decentralised and local government well organised. Recently there has been a marked increase in Germany in the fiscal requirements of municipalities, especially urban ones’ (Musgrave and Peacock 1958: 8).
Finally, Wagner foresaw that growth in public activity might be constrained by shortage of resources. ‘Financial stringency may hamper the expansion of state activities, causing their extent to be conditioned by revenue rather than the other way round, as is more usual’ (Musgrave and Peacock: 1958: 8). But development of the economy would continue, since ‘in the long run, the desire for development of a progressive people will always overcome these financial difficulties’ (Musgrave and Peacock 1958, p.8). Wagner thus believed that economic development would continue and with it, the increase in public expenditure would continue as well.

7.5.3 Wiseman-Peacock Hypothesis

The second thesis of the growth of public expenditure was put forward by Wiseman and Peacock in their study of public expenditure in the United Kingdom for the period 1890-1955, published in 1961 (Peacock and Wiseman 1961).

The main observation of this study was that public expenditure does not increase in a smooth and continuous manner, but in jerks or step-like fashion. ‘The growth of expenditures has not been regular; the change has come about through periodic jumps in the volume of public spending’ (Peacock and Wiseman 1961: xxi).

The data collected by Peacock and Wiseman showed that government expenditure in the United Kingdom increased forty seven times in money terms and ten times in real terms between 1890 and 1955. At the same time, they also found that there was ‘a considerable change in the relative importance and broad responsibilities of central and local authorities’ (ibid: xxi), which showed the central government taking on a larger share of the functions of the government.

Peacock and Wiseman have described the process of growth in public expenditure. They start with a normal situation, in which tax rates are low and stable and public expenditure is in keeping with taxes, the only growth in public expenditure coming from growth of real output, the community being averse to the idea of higher levels of taxation. A ‘social disturbance’ such as a major war at this point causes public expenditure to increase and public revenue becomes inadequate. Such disturbances cause what these two economists called the ‘displacement effect’ that is, both public expenditure and public revenue are shifted to a new, higher level.

Even after the disturbance is over, government spending remains at a high level as a result of the need to fulfil certain obligations connected with the disturbance
(such as war pensions) but also because government takes on added functions that were not thought ‘desirable’ before the disturbance. This higher level of public expenditure is possible because revenue also remains high due to an ‘inspection effect’ on the part of the people who accept the higher level of taxation as they become more conscious of the responsibilities of the government. The people reach a new level of tax tolerance and as a result, the general level of expenditure and revenue goes up.

In this way, the public expenditure and revenue get stabilised at a new level till another disturbance occurs to cause another displacement effect.

Since each major disturbance leads to the government assuming a larger proportion of the total national economic activity, more and more economic activity gets concentrated in the hands of the government. However, Peacock and Wiseman found that this greater responsibility is taken on more by the central government, the state and local governments failing to take on greater responsibilities. This tendency, called the ‘concentration effect’, could be the result of a change in technology that calls for large-scale production to be efficient and also of demands from the people for ‘equality of treatment’ in all parts of the country (ibid: xxiv-xxv).

7.5.4 Market Failure Theory

Both Wagner and Peacock-Wiseman have described and explained the rising trend in public expenditure, giving reasons like economic growth, war, social disturbances, etc. However, another justification for public expenditure comes from the basic role and functions of the public sector. This leads on to one of the main technical reasons for public provision of services: market failure.

Market failure theory, first put forward by Francis Bator, contends that there are some areas where the private sector would not produce at all if left to itself. More importantly, there are some goods that the private sector can produce, but they may not always be of the desired quality, quantity and price. Another significant role of the public sector is in providing merit goods, that is, goods that are private in nature (i.e., rival and excludable) but that have large positive externalities. The prices charged for such goods by a private producer would not be able to capture the wider social benefits and hence may not be supplied in adequate quantities, thus reducing total welfare of the society (Bator 1958: 351-379).
According to Corry, public action is also required because of asymmetric information, that is, where the user of a service has less information than the provider and so can be exploited. Another instance of market failure is when more of the society’s resources get allocated to the production of luxury goods in response to the demand expressed by a few rich individuals and inadequate resources remain for the production of necessities.

Goods like transport and power are subject to decreasing costs as their output increases. Private producers may find it profitable to produce less and charge a higher price. The output of such goods, which are essential goods, will be less than optimum and social welfare will be reduced. Since the marginal cost of producing public goods is nearly zero, additional users can be added at almost no extra cost (e.g., bridge, defence, etc.). Provision of such goods should be undertaken on a large scale to minimise costs. In that case, if provided privately, it may lead to the formation of monopolies.

The profit system emphasises short-term profits at the expense of long run survival. For example, while trying to earn profits in the short run, no attention is paid to the conservation of resources, which is required for long run survival.

These and several other instances of market failure provide a strong case for government provision of goods and services and hence for incurring public expenditure (Corry 1997: 22-24).

7.6 Public Choice Theory

Public Choice theory applies the theories and methods of economics to the analysis of political behaviour. Public choice originated as a distinctive field a little over 60 years ago in the works of its pioneers, Duncan Black, Kenneth Arrow, James Buchanan, Gordon Tullock, Anthony Downs, William Niskanen, Mancur Olson, William Riker and others. Public choice literature continues to grow, with recent contributions from several economists, including William Shughart and Amartya Sen (Shughart 2008).

Public Choice theory focuses on how collective decisions are made about which goods are to be provided through the public budget and what taxes should be levied in order to finance such expenditure.

In a democracy, there are three major groups that decide the allocation of resources in the public budget – the voters, politicians and bureaucrats. Public choice
theory studies the behaviour of these three groups. Each of these groups is taken to be
acting rationally and trying to maximise its own self-interest in their interactions with
each other. The way the government works is the outcome of such interactions (Bowers

In a democracy, the voters signal their preferences for candidates or policies
through the mechanism of voting. Voters usually do not vote directly for government
policies. Decision making in a democracy is done indirectly by the voters through
their elected representatives. These elected representatives (politicians) maximise
their own self-interest, but also have to keep in mind voter preferences in order to be
re-elected. Although politicians make broad policy decisions, the actual budget of the
government is made by bureaucrats who, in turn, try to satisfy their own objectives.
Each of these mechanisms is discussed below.

7.6.1 Voters

Two of the most important theories about voter behaviour are:

1. The Median Voter Model – Studying collective decision making by committees,
Duncan Black deduced what later came to be known as the median voter theorem. If
voters are fully informed, if their preferred outcomes can be arranged in one line and
if each voter has a single most preferred outcome (‘single peaked preference’) and if
decisions are made by simple majority rule, then the median voter will be decisive.
Any proposal to the left or right of that point will be defeated by one that is closer to
the median voter’s preferred outcome. Anticipating that immoderate proposals are
likely to lose to centrist ones, politicians move policies closer to the median voter’s
ideal point than might be expected if decisions are made by self-interested elected
representatives (Black 1948: 23-34).

2. Arrow’s Impossibility Theorem - What would happen if each voter had a
different preference and yet a collective choice was required to be made? Kenneth
Arrow showed that it may be impossible to arrive at a common choice (Arrow,
1950:329). He pointed out that the choice would be that of the majority, if there were
only two choices and most people preferred one alternative to another. But a choice
between more alternatives would be inconclusive. Arrow took an example where
there are three individuals 1, 2 and 3 and three alternatives A, B and C. (ibid: 329).
Their choice pattern could be as follows:
Table 7.2

Intransitive Choice Pattern in Majority Voting

<table>
<thead>
<tr>
<th>Preference Ordering</th>
<th>Individuals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>First choice</td>
<td>A</td>
</tr>
<tr>
<td>Second choice</td>
<td>B</td>
</tr>
<tr>
<td>Third choice</td>
<td>C</td>
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</tbody>
</table>

Arrow analysed these choices as follows: ‘Suppose individual 1 prefers A to B and B to C (and therefore A to C), individual 2 prefers B to C and C to A (and therefore B to A) and individual 3 prefers C to A and A to B (and therefore C to B). Then a majority prefers A to B and a majority prefers B to C. If the community is to be regarded as behaving rationally, we are forced to say that A is preferred to C. But in fact, a majority of the community prefers C to A. So the method just outlined for passing from individual to collective tastes fails to satisfy the condition of rationality as we ordinarily understand it’ (ibid: 329).

This kind of intransitivity in social rankings, which makes it impossible to reach a social choice, was the base of Arrow’s celebrated Impossibility Theorem in which he showed that any social rule which satisfied a minimal set of ‘fairness conditions’ could produce an intransitive ranking when two or more persons had to choose from three or more projects.

These conditions were the axioms of unrestricted domain (individuals had transitive preferences over all the policy alternatives), Pareto choice (if one project made someone better off than another project without making anyone worse off, it would be the socially preferred choice), independence of irrelevant alternatives (the ranking of two choices should not depend on what the other choices were) and non-dictatorship (the social ordering should not be imposed). Thus this theory concluded that it would not be possible for the state to achieve social welfare by aggregating individual preferences (Arrow 1950: 336-339).

3. **Anthony Downs’ view:** Downs’ view of voters is based on the assumption that they act in a rational manner. Each voter would vote for the party that would provide them with more benefits than another. The benefits voters consider in making their
decisions are the streams of utility derived from government activity such as police, water supply, roads, defence, etc. Voters would vote for that party that would enable them to maximise their benefits. In a two party system, they would vote for the party they prefer. In a multi-party system, they would eliminate what they believe is the party preferred by other voters in the following way: a) if their favourite party has a reasonable chance of winning, they vote for it. b) If their favourite party has almost no chance of winning they vote for some other party that has a reasonable chance of winning in order to keep the party they favour least from winning (Downs 1957: 36-39).

7.6.2 Politicians

1. One of the first attempts to study the behaviour of political parties was in Anthony Downs’ *An Economic Theory of Democracy*. Downs defined a political party as ‘a coalition of men seeking to control the governing apparatus by legal means’. (Downs 1957: 24). Downs’ model assumed that politicians ‘act solely in order to attain the income, prestige and power which comes from being in office’. (ibid: 28). The fundamental hypothesis of this model was that ‘parties formulate policies to win elections, rather than win elections to formulate policies’ (ibid: 28). The primary objective of political parties is to get elected or if already in government, to get re-elected. Therefore, politicians manipulate policies and actions in whatever way they believe will gain them most votes without actually violating constitutional rules. Because the government wishes to maximise political support, it carries out those acts of spending which gain the most votes by means of those acts of financing that lose fewest votes (ibid: 52).

A government’s best strategy is to adopt choices that are favoured by a majority of voters. But because voters do not have a consensus (as shown by Arrow), newly elected governments do not make plans from scratch but only make alterations in the schemes inherited from previous governments. When government is following the majority principle, it plans its budget by taking a hypothetical poll on each decision. When it is using some other strategy, it judges every action as a part of its whole spending plan for the election period. Since governments plan their actions to please voters and voters decide how to vote on the basis of government actions, Downs concluded that a circular relation of mutual interdependence underlies the functioning of government in a democracy. (ibid: 74). Downs felt that his model was applicable at all levels of government because ‘every government’s goal is to be re-
elected, whether the government be that of a nation, a province or a municipality’.
(ibid: 13).

2. Buchanan and Tullock (1962) showed that most political decisions are made not by citizens but by politicians elected to represent them in legislative assemblies. Because the constituencies of these politicians have a geographical base, they strongly support programmes and policies that benefit voters in their home states or districts, no matter how irresponsible these programmes are from a national perspective, particularly when they are financed by taxpayers in general, that is, from all parts of the country (Buchanan and Tullock 1962).

3. Catering to the needs of the minority at the expense of the majority by legislators is reinforced by the logic of collective action. Mancur Olson (1965) showed that small homogeneous groups with strong interests are more effective than large diffused groups in applying political pressure because of the higher stakes they have in the programme and because free riding is more difficult. Because re-election seeking politicians tend to respond to the demands of such small, well organised groups, representative democracy frequently leads to a tyranny of the minority (Olson 1965).

7.6.3 Bureaucracy

Politicians delegate the responsibility of implementing policies to bureaucrats, who secure their positions through civil service appointments. The early public choice literature on bureaucracy was developed by William Niskanen in his book *Bureaucracy and Representative Government* (1971). Niskanen developed a theory of bureaucracy in which bureaucrats are assumed to be maximising their own benefits in taking decisions regarding the size of the public sector. The bureau is modelled as a monopoly seller of its services to government. Bureaucrats use the information and expertise gained by them in administration of various programmes to extract the largest budget possible from relatively less informed, inexpert legislators. Budget maximisation was assumed to be the bureaucracy’s goal because more government funding translates into more administrative discretion, more opportunities for promotion and greater prestige for bureaucrats. The result is a larger public sector than desired by politicians.

Niskanen formulated a utility function containing factors like power, prestige, pay and promotion. All these, he argued, are a function of the size of the bureau. He also showed that the bigger the bureaucracy, the more difficult it was for outsiders
(committees and legislators) to monitor its activity and the more insiders there are who are working to increase the size of the bureaucracy. Thus the growth of the bureaucracy is likely to depend on its absolute size. The larger the bureau, the greater the benefit enjoyed by the bureaucrats (Oakland 1987: 530-533).

7.7 Theoretical Analysis

This section makes an attempt to relate the theories given in the earlier sections to the subject of the study. It was seen that several findings from the study support some of the theories mentioned above.

1. Provision of infrastructure by public sector: The subject of the study is the expenditure on roads by an urban local government. The theory given above can be used to show that roads are a type of impure public good, hence need to be provided by the government.

When goods and services are classified into pure private goods, pure public goods, club goods and common pool resources, it becomes clear whether they can be most effectively provided by the public sector or the private sector. There are a large number of products that can be provided equally efficiently either by private or public sector. Generally, however, private goods are provided by the private sector and public goods by the government. However, there are impure or mixed goods that can be provided either by the public sector or by the private sector. Moreover, with changes in technology and policy changes (e.g., privatisation) it is possible for private organisations to produce or distribute public goods or for public sector organisations to enter the production or distribution of private goods.

Where does infrastructure fall among these various categories? By and large, infrastructure services are almost, but not perfect, private goods, in the sense that exclusion in consumption is possible, either by charging a price or by making access to a service restricted, as at ports or airports. Once a user is allowed to use a service, the consumption is non-rival, at least up to the level of congestion or until the costs of providing the service to the additional users is too high for the supplier (The World Bank 1994: 22-23). The various infrastructure services have been classified into the four categories described above on the basis of their rivalry and excludability characteristics.
### Excludable vs. Non-excludable Goods

<table>
<thead>
<tr>
<th>Excludable</th>
<th>Non-excludable</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Private Goods</strong></td>
<td><strong>Common Property</strong></td>
</tr>
<tr>
<td>Telecommunications</td>
<td>Ground</td>
</tr>
<tr>
<td>Urban Bus</td>
<td>Water</td>
</tr>
<tr>
<td>Fossil Fuel</td>
<td>Urban</td>
</tr>
<tr>
<td>Power Generation</td>
<td>Roads</td>
</tr>
<tr>
<td>Local power distribution</td>
<td>Piped water supply</td>
</tr>
<tr>
<td>Rural</td>
<td>Surface</td>
</tr>
<tr>
<td>Sanitation</td>
<td>Water</td>
</tr>
<tr>
<td>Rail, airport and port services</td>
<td>Irrigation</td>
</tr>
<tr>
<td>High voltage Transmission</td>
<td>Urban</td>
</tr>
<tr>
<td></td>
<td>Sewerage</td>
</tr>
<tr>
<td></td>
<td>Rural Roads</td>
</tr>
<tr>
<td>Interurban Highways</td>
<td>Street</td>
</tr>
<tr>
<td>Rail, port and airport facilities</td>
<td>Sweeping</td>
</tr>
<tr>
<td></td>
<td>Traffic</td>
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<tr>
<td></td>
<td>Signalling</td>
</tr>
<tr>
<td><strong>Club Goods</strong></td>
<td><strong>Public Goods</strong></td>
</tr>
<tr>
<td>Lower</td>
<td>Externalities</td>
</tr>
</tbody>
</table>

Source: The World Bank, World Development Report, 1994, Fig. 1.3, p.25.

Roads being a part of infrastructure have usually been provided by the government in most countries, due to the fact that their use is non-excludable (except for toll roads) and non-rival up to a certain level. However, as seen in Fig. 7.1, roads can be further classified according to their excludability and rivalry characteristics. Thus, on inter-urban highways, on which a toll can be charged fairly easily, exclusion is possible, but for those users who pay the toll, consumption is non-rival. Hence such roads can be classified as club goods. On the other hand, urban roads that are heavily crowded (as in all large cities), cannot accommodate traffic above a certain capacity and hence their use is rival to a much greater degree than highways. However, since these roads are used by such a large number of individuals it is not possible to stop each vehicle and charge a toll. Hence the non-excludability of these
roads is very high. They can, therefore, be classified as common property resources. Lastly, rural roads where congestion is low and charging a toll is not feasible (setting up of so many toll booths for a relatively small population of vehicles would be uneconomical) are both non-rival and non-excludable and hence come fairly close to the concept of a pure public good.

Based on this classification, it is easy to see that interurban highways can be privately provided since a price can be charged for their use. Their ownership may be with the government, or with the private provider. In several countries, highways are built by private organisations in partnership with the government. This partnership may take various forms, such as Build-Own-Operate-Transfer (BOOT), in which a private firm builds the highway, owns it for some time until it can recover its costs by charging a toll and then transfers the ownership of the highway to the government. The private firm may, however, continue to operate the road, charging a toll which would cover operation and maintenance costs. Other variants are Build-Own-Operate (i.e., the road is not transferred to government ownership) or Build-Own-Transfer (in which operation is throughout with the government), etc.

Rural roads, being public goods, must clearly be provided by the government. Urban roads, although not pure public goods, have the characteristics of common property and hence are provided by government since no price can be charged for their use.

2. Decentralisation Theorem: Since urban roads are local public goods, they are being provided by the local government, that is, the Municipal Corporation of Pune city. This supports the decentralisation theorem in the case of urban roads.

3. Wagner’s Law of Increasing Public Expenditure: As can be seen from Table No. 5.26, total expenditure on roads by the PMC has increased almost continuously throughout the period 1985-86 to 2008-09. Wagner’s contention that public expenditure increases as a result of economic development can be proved by the findings of this study.

Wagner identified complexities of modern life as one of the reasons for growing public expenditure. In the case of public expenditure on roads by the Pune Municipal Corporation, the growing complexities like the increase in the number of accidents, traffic jams and high levels of pollution caused by the rapidly increasing
vehicles have necessitated larger expenditure. In order to reduce the intensity of these problems, the PMC has had to raise the expenditure on building new roads, widening narrow roads, building alternative/additional routes in the form of subways and flyovers and most importantly, providing traffic regulation systems like traffic signals, traffic signs, dividers, parking facilities and safety measures like street lights, footpaths, railings, etc.

Secondly, Wagner mentioned activities that need large investments and are in the nature of a monopoly should be provided by the public sector. Roads and related services need very high investments but private provision is technically possible, as seen on several highways. But these highways are not free and a toll needs to be paid by users. If such a system were used on city roads, vehicles would need to make frequent stops which would only result in congestion and slow movement of traffic. Therefore, urban roads need to be necessarily free, provided by the local authority out of its tax revenues. As the city of Pune has grown, more and more roads had to be built and the expenditure on roads has correspondingly increased.

4. Wiseman-Peacock Hypothesis: Wiseman and Peacock’s two main contentions were -
   a) Public expenditure grows in a step-like fashion and
   b) Public expenditure grows due to some external disturbance and then stabilises at the new, higher level (displacement effect).

   The expenditure on roads by the PMC during the period 1985-86 to 2008-09 shows both these patterns and hence proves the Wiseman-Peacock Hypothesis. Table No. 5.26 shows the total expenditure on roads for each of the years of the above period. It may be observed that the actual expenditure amounts show four clear steps. The first step from a level below Rs. 10 cr. to over Rs. 10 cr. occurred in 1991-92 and the second step when expenditure reached Rs. 50 cr. came in 1999-2000. Expenditure stayed between Rs. 50 cr. and Rs. 100 cr. till 2002-03 and the third step to over Rs. 100 cr. of expenditure came in 2003-04. The fourth step when expenditure crossed Rs. 200 cr. took place in 2006-07. Similar steps to successively higher levels of expenditure were seen in the expenditure on individual items as well.

   Secondly, expenditure on roads was seen to grow in response to external disturbances. The increase in actual expenditure in 1992-93 was due to higher outlay on road repair and resurfacing because of heavy rain in the previous year. The second step in 1999-2000 was due to the expansion in the area of the Corporation in 1997.
The third step in 2003-04 can be explained by two factors, firstly the expansion of industry in and around the city from 2002 onwards and the commencement of the IRDP scheme from 2001-02 onwards. The last step, in 2006-07 was the result of heavy rain in 2005 and 2006 which necessitated high expenditure on repair and resurfacing of roads and the continued growth of industry and population that caused the city to expand.

5. Niskanen’s model of the monopoly bureau: Niskanen’s observation was that a government bureau (office) which is the sole provider of a public good seeks to maximise its output, thereby giving its managers greater economic power and prestige. The members of the bureau make its budget as large as possible in order to maximise expenditure on public goods. This tendency can be seen in the budget for expenditure on roads by the PMC where it was observed that a very large number of projects were proposed in the budget and the budget amount was increased almost every year. But the work could not be done on such a large scale, as shown by the fact that the entire budget could not be spent in any year. Overall budget utilisation was just 71% over the entire period. This shows that the budget was made unrealistically large by the officers in the Road Department and could not be actually implemented.

6. Role of elected representatives: Public choice theorists, especially Anthony Downs (1957) and Mancur Olson (1965) have shown that most expenditure decisions are not made by citizens, but by the politicians elected to represent them in legislative assemblies. These representatives have strong incentives to support programmes that provide benefits to voters in their constituencies. Elected representatives will propose and vote for such populist proposals, especially when financed by taxpayers. Buchanan and Tullock (1962) who studied the political decision process showed how vote trading or log rolling usually takes place and several proposals are voted for and become part of the government’s budget, particularly at the local level. Politicians vote for such projects because they get an opportunity to increase their own power or popularity or simply an opportunity for financial gain.

Several such projects were seen in the budget for expenditure on roads by the PMC. For example, several new bridges, flyovers, and some projects like the sky bus which are very high technology and to which some prestige is attached have been
included in the budget and approved by the Corporators many times, but not all of these have been implemented due to shortage of resources. It can be observed from the budget documents that every year, the planned expenditure (budget) and the expected income to cover this expenditure finalised by the members of the standing committee and approved by the General Body of the Corporation were higher than the original budget proposed by the Commissioner.

7.8 Conclusion

The Public Economics literature is rich and extensive, covering all aspects of public expenditure. A very small selection of relevant theories has been presented in this chapter and it was seen that several findings of this study support these theories. The next and concluding chapter of this research gives the conclusions of this study, examines the hypotheses and makes a few suggestions.
References


