

Urban Public Transport Systems: Are the Taxation Policies Congenial for Their Survival and Growth?

P S KHAROLA, G TIWARI

Public transport systems in cities in India are largely bus-based and operated by public agencies. The performance of these organisations on the financial front has been rather wanting. Several reasons – both internal and external – have often been cited for their unsatisfactory performance. One of the less researched areas has been the various taxes these organisations have to bear. This paper analyses the different levies on the operation of buses in a city and also attempts to compare these in different states in the country. It also compares the taxes levied on other modes of transport. The impact of these taxes on the total operating costs is brought out. It is concluded that the high rate of various taxes are one of the important reasons for the financial unviability of public transport systems in India. Besides, as compared to other modes of transport, the levies on the public transport system are quite inequitable. The paper concludes by highlighting that the taxation regime for vehicles needs a total overhaul.

Taxes are imposed by governments to achieve various objectives. Oliver Wendell Holmes¹ once said: “I like to pay taxes. With them I buy civilisation”. However, from an economist’s viewpoint, taxes can be used to achieve several objectives. Mobilising resources for the government is the primary objective of levying taxes. Giving a proper macroeconomic direction to an economy is a major objective of taxes. Taxes lead to redistribution of income (direct taxes), taxes also alter the price of goods (indirect taxes). On the contrary, neoclassical economists argue that taxes lead to distortions in the market and hence adversely affect allocation of resources. The immediate effect of any tax on a good or service is that the cost or price of that good or service increases as the tax is ultimately passed on to the consumer.

1 Theory of Taxation

According to classical economists, if market forces are allowed to operate freely, they would bring about equilibrium between demand and supply at an optimal level. However, this does not happen in case of activities which produce externalities. Transportation leads to externalities – both positive and negative. The negative ones being environmental pollution, accident hazards, road damage and congestion – in all these cases the party responsible for these outcomes, the vehicle user, does not bear the full consequences of these outcomes. In other words, the cost which the vehicle user bears does not include the costs which many external parties bear. If it could be ensured that full cost is passed on to the vehicle users, they would be compelled to make the economically right decision on the extent to which they should use the vehicles. Economic theory states that for a vehicle user, equilibrium will be achieved at the intersection of the marginal benefit and the marginal private cost curves, whereas the optimum would be at the intersection of marginal benefit and marginal social cost curves. A tax equal to the marginal external costs (Pigouvian tax) on the activity would increase the marginal costs to the vehicle users – the external costs would be internalised and the actual equilibrium would shift to the optimum equilibrium.

Taxes on passenger transport – public and private modes – have primarily been viewed as resource mobilisation measures by the taxation authorities. Using taxes as an economic tool to achieve objectives like optimum utilisation of resources and internalising the externalities has not received the due attention. In India taxes on passenger transport vehicles and related aspects have two characteristic features – multiplicity

P S Kharola and G Tiwari (geetamt@gmail.com) are with the Transportation Research and Injury Prevention Programme, Indian Institute of Technology, New Delhi.

of levies and different taxation structures for different modes of transport.

2 Urban Travel Demand

Demand for transport is a derived demand, and with the rapid economic growth cities in India are experiencing, this demand is also increasing at a rapid rate. If the public transport services fail to improve in quality and quantity commensurate with this demand, travellers take recourse to other modes of transport, which often are personal motorised vehicles. This is reflected in the high growth rate in procurement of two-wheelers and four-wheelers by individuals. The importance of the public transport systems lies in the fact that they can transport people using much less resources in terms of fuel per person or the road space occupied per person, or the pollutants emitted per person.

There are 4,000 cities and towns in India, including cities having population less than 1 million to more than 9 million. As shown in Table 1, 147 cities have a population of less than 1 lakh, and 177 cities have a population between 1 and 5 lakhs. Twenty-eight cities have a population of 5 to 10 lakhs, six cities have a population of 10 to 20 lakhs, three cities have a population of 50 to 100 lakhs, and three cities have a population of more than 100 lakhs.

There is a large variation in the travel demand met by the public transport system, intermediate public transport system or private modes in these cities. The existing intra-city trips by bus in various cities of India are as shown in Table 2.

Table 2 shows a large variation in the share of bus trips even amongst cities of similar size. Clearly there are factors other than the population size of the city that are responsible for this large variation. Spatial and temporal availability, reliability, comfort and affordability are some of the important parameters that influence the usage pattern of bus services. If an extensive bus network, having high frequency, is available to commuters at affordable prices (often less than marginal cost of using a two-wheeler), it is likely to attract large number of commuters. However, this may result in over supply

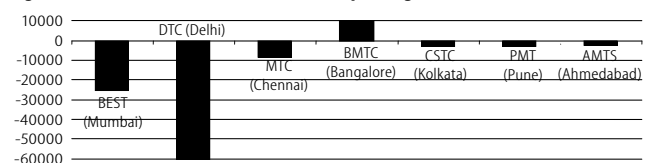
and poor utilisation factor leading to large gaps between cost of providing the system and revenue generation. Therefore planning strategies that can meet the varying demand efficiently are required.

3 Public Transport Services in Indian Cities

Public transport services are provided by either state-owned undertakings, state departmental undertakings or municipal bodies. Private sector participation in public transport has been in the form of private operators providing stage carriages, minibus, and tempo services. In some small cities, bus service is only a single route across the city. Often intercity buses run by state transport undertakings are used for city operations. Scheduling of these services is not based on demand analysis. The second level of bus services includes more than one route; however, scheduling is based on the observation that the morning and evening peak requirements are more than those during the rest of the day. Many metropolitan cities have public-owned transport companies, for example, Bangalore, Delhi, Mumbai, and Pune. The services provided by these companies are based on demand analysis. However improvements in reliability, speed, availability, cost reduction that can be brought out by improved scheduling, feeder system, changes in road design, bus stop location, and signal system have not been explored.

The financial performance of the state-owned undertakings has by and large been a matter of concern.² This unviability is ascribed to various factors like unreasonable fares over which these organisations have no control, internal inefficiencies, social responsibility which these organisations are mandated to shoulder, labour problems, etc. Besides, the high rates of taxes levied by different authorities are often cited as one of the major reasons for their weak financial position.

Figure 1: Profit/Loss of Bus-Based Urban Transport Organisations (Rs in lakh)



4 Determination of Fares for Buses in Indian Cities

In an urban public transport system, the demand for transport can be met by different modes, each having different cost to the user and even different amount of externalities. The mode a person may choose would depend on the utility as well as price of that mode for that person (price would have the element of taxes built in) and the price elasticity of that mode as well as the cross elasticities with the other modes. The price of using a public transport would approximately be equal to the fare a person has to pay (there may be some additional costs such as cost of reaching a bus stop, value of waiting time, etc). Therefore, the fares of the public transport system become a major determinant of the mode choice.

Fares-price for transport service – can be allowed to be fixed by market forces. But transport being an important economic activity on which several other economic activities depend,

Table 1: Indian Cities and Population

Population	Number of Cities
< 1 lakhs	147
1-5 lakhs	177
5-10 lakhs	28
10-20 lakhs	20
20-50 lakhs	6
50-100 lakhs	3
>1 crore	3

Source: Census of India, 2001.

Table 2: Existing Intra-city Trips Made by Bus and City Population

City Name	Percentage of Trips by Bus	Bus-Travelling Population in Millions ^a	Population in Millions ^{a,b}
Panipat	1	0.19	0.21
Ludhiana	1	1.04	1.39
Nagpur	5	1.66	2.05
Udaipur	6	0.31	0.6
Varanasi	9	1.0	1.1
Agartala	15	0.1	0.12
Vadodara	15	1.13	1.3
Kanpur	18	2.03	2.53
Dhanbad	27	0.82	1.06
Ahmedabad	27	3.31	3.45
Tirupur	28	0.31	0.6
Pune	29	2.49	2.54
Bhopal	30	1.06	1.43
Vijaywada	34	0.85	1.01
Rourkela	36	0.40	1.57
Guwahati	47	0.58	0.8
Visakhapatnam	47	1.06	1.32
Chennai	49	–	6.40
Hubli-Dharwad	50	0.65	0.6
Cochin	54.4	–	1.66
Delhi	62.4	–	13.78
Guruvayur	64	0.12	0.27
Shimla	86	0.11	0.62
Kolkata	89	11.0	14.0

Source: ^aRITES, 1998, ^bCensus of India 2001.

the state therefore does not allow the fares to float freely but regulates them. The Motor Vehicles Act provides that the fares (upper ceilings) would have to be fixed by the concerned state government. The bus operator adopts these fares. Fares are fixed by following an “incremental approach” – the existing fares are revised whenever there is a substantial change in the costs of inputs. Sometimes a cost plus approach is also adopted so as to ensure that the bus transport companies (largely in the public sector) become financially viable. A thorough economic analysis is not carried out to arrive at the fares. Some of the typical features of the fare structure in Indian cities are: (a) The fares are fixed stage wise (a step function). (b) The fare rates are telescopic. (c) Each entry in a bus is treated as a new journey.

The fare structure in three cities is given in Figure 2.

5 The Taxation Structure for Public Transport Systems

Governments have several areas of taxation through which they generate resources for discharging their functions. This demarcation of domains between the union and the states has been listed in the Seventh Schedule of the Constitution. While taxes on income, excise duty on production and customs duty on imports are the main levies imposed by the union government, sales tax, excise (on alcoholic beverages), stamp duty and tax on motor vehicles are the major taxes levied by the state governments. The primary objective of levy of taxes has been resource mobilisation for the government. The potential of taxes as a tool to internalise the different externalities caused by the vehicles has not been exploited fully.

Public transport organisations have to undertake several activities in order to provide transport services to the people. Several of these activities fall within the tax ambit of the taxation authorities – union, state, and city governments. The taxes which the public transport organisations are subjected to can be broadly classified as follows:

- (1) Taxes on acquisition of immovable property: (a) tax on acquisition of land (stamp duty-levied by the state government), and (b) property tax (levied by the municipal body).
- (2) Tax on acquisition of movable property, i.e., the buses: (i) value added tax (levied by the state government), (ii) central excise (levied by the union government), (iii) customs duty in case of imports (levied by the union government), and (iv) entry tax/octroi

(octroi levied by the municipal authority, and entry tax levied by the state government).

- (3) Taxes related to operations, i.e., on use of various inputs: (a) excise duty on consumables (levied by the union government), (b) value added tax on consumables (levied by the state government), and (c) excise duty and VAT on spare parts.
- (4) Tax on use of vehicles for transporting passengers: (a) motor vehicles tax (levied by the state government).
- (5) Other levies: (a) advertisement tax (levied by the city government).

5.1 Taxes on Acquisition of Immovable Properties

The public transport organisations have to acquire and develop immovable property. These properties primarily serve as the base for the operations of the buses. The acquisition of land/properties and the development thereon is subject to tax by the state and the city government.

The tax on acquisition of land/immovable property is in the form of stamp duty, levied by the state government. The public transport utilities have to acquire land to set up support facilities for buses. This generally includes land for setting up of bus depots, bus stations, workshops, etc. This tax is normally levied on the value of land/property and is in the range of 10-15 per cent of the value of land. However, as acquisitions of lands are not quite frequent and as it is a one time levy, it does not create a substantial burden on the transport utility in the long run.

The property tax is levied by the municipal bodies on the immovable properties. The basis of levy as well as rates varies from state to state. It is linked to the capitals value of the property or the notional rental value of the property. As most of properties of public transport utilities are in the nature of open spaces with little built-up area, the impact of this tax is not significant. However, with emphasis on generation of non-traffic revenue, these utilities would have to develop these “open spaces” and put them to multiple uses. This may increase the quantum of property tax. However, as things stand today, this levy is not a major concern for the public transport utilities.

5.2 Tax on Acquisition of Movable Assets

The vital movable assets of public transport organisations are vehicles – buses. These buses have to be procured. The process of manufacture of buses is subject to central excise and the sale is taxable by the state governments. The sales tax, of late has been replaced by the value added tax (VAT).

Public transport vehicles are subject to excise duty at the rate of 16 per cent on their value.³ This is prescribed in Chapter 87 of the Central Excise Tariff Act. Procurement of vehicles is a regular activity of public transport organisations as they have to induct

Figure 2: Comparative Analysis of Fares in Indian Cities (in Rs)

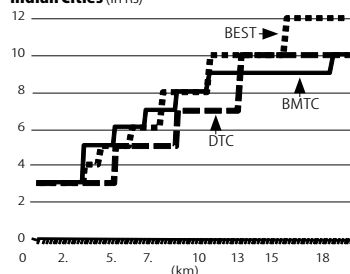


Table 3: Rate of Central Excise on Diesel

Basic duty	6%+Rs 1.5 per litre	
Additional duty	Rs 2 per litre	
Education cess	2% (on 6%)	0.12%
Secondary and higher education cess	1% (on 6%)	0.06%
Natural calamity contingent duty	Rs 50 per ton	
Effective total	6%+Rs 1.5/lit+Rs2 lit+0.18%	
Total tax (excise duty)	6.18%+Rs 3.5/lit	

Table 4: Fuel Cost as a Percentage of Total Cost

Organisation	Fuel Cost-Paise Per Km	Total Operating Cost-Paise Per Km	Fuel Cost as a % of Total Operating Cost
MTC(CNI) Chennai	836	2,648	31.57
BMTCL Bangalore	722	1,879	38.40
CSTC Kolkata	902	4,065	22.18
DTC Delhi	592	5,315	11.13
BEST Mumbai	1,017	4,573	22.23

Source: CIRT: STUs Profile and Performance 2005-06.

new buses for replacement of old fleet as well as for augmentation of capacity. This levy creates a significant impact on the finances of these organisations.

VAT has replaced the erstwhile state sales tax in most states. This is levied by the states on every sale of a commodity. Public transport utilities have to acquire buses in order to meet increasing demand on the one hand and to replace the aging fleet on the other. Generally on public transport vehicles it is levied at 12 per cent of the value of the commodity involved. Major procurements by public transport utilities are in form of vehicles. All such procurements are liable to VAT.

Here are some examples of VAT.

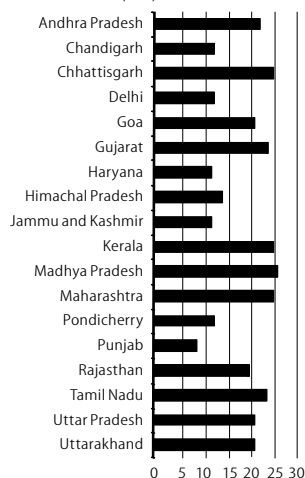
In Karnataka, "Section 4: Liability to tax and rates thereof.⁴ (1) Every dealer who is or is required to be registered as specified in Sections 22 and 24, shall be liable to pay tax, on his taxable turnover, (a) in respect of goods mentioned in, (i) Second Schedule, at the rate of 1 per cent, (ii) Third Schedule, at the rate of 4 per cent, and (iii) Fourth Schedule, at the rate of 20 per cent. (b) in respect of other goods, at the rate of 12 and one half per cent".⁵

In Maharashtra, "Section 6: Levy of sales tax on the goods specified in the schedules – there shall be levied a sales tax on the turnover of sales of goods specified in column (2) in the schedules B, C, D or, as the case may be, E at the rates set out against each of them in column (3) of the respective Schedule".⁶

Customs duty is levied only on import of buses or other equipments. This levy is not very relevant in the present analysis as all types of public transport vehicles are manufactured in India, and very few buses are imported. However, some utilities are using imported vehicles. This levy may assume significant proportions if modern urban buses are to be imported extensively.

Octroi/entry tax is the tax levied by municipal bodies on the "entry" of goods in municipal areas. Octroi has been abolished in

Figure 3: VAT/Sales Tax Rate on HSD in Some States (in %)



Source: Petroleum Planning and Analysis Cell; data retrieved from <http://ppac.org.in> on January 1, 2008.

most of the states⁷ and is not of much relevance in the present analysis.

5.3 Taxes Related to Operations

The production of fuel is taxed by the union government in the form of central excise. The rate of central excise on diesel is indicated in Table 3 (p 43). Fuel is the most important consumables in bus operations (Table 4, p 43). Sale of fuel is taxed by the state governments and therefore the rate varies from state to state. The rates of VAT on diesel in different states are shown in Figure 3.⁸ The high level of state taxes on petroleum products is quite evident from Figure 3. The Committee on Pricing and Taxation of Petroleum Products (2006) observed as follows.

...state level taxes too have been responsible for the pressure on prices of petroleum products. Sales tax collection from oil sector have consistently been contributing to a third or more of the total sales tax collections of the states thereby burdening the consumers as well as building an undesirable dependency at the state level too for revenues on a single sector. Moreover the rates of taxation vary widely – from a minimum of 20 per cent to a maximum of 34 per cent in the case of petrol, and from a minimum of 9 per cent and a maximum of 38 per cent in the case of diesel. Coming on top of what is considered a large incidence of excise duties, heavy sales tax levies lead to a high degree of cascading.

Apart from VAT/sales tax there are other levies like the central sales tax, entry tax, purchase tax, etc, which are treated as irrecoverable levies.⁹ An important aspect of VAT and sales tax is that it also is chargeable on the excise duty component of the value of good. Thus, in a sense, it is tax on tax and leads to a cascading effect.

Next to fuel, several other consumables are required in operation of buses. These are lubricants, tyres, spare parts, etc. The production and sale of these are subject to union excise and VAT.

Table 5: Comparative Rate of Motor Vehicle Tax Levied by the State Governments on Passenger Bus Services-Stage Carriages (2007-08)

State	Tax Rate	Sections of the Act	Approximate Quantum Per Year (Rs)
Kerala	Rs 600 per seat per quarter	Section 3(1) of the Kerala Motor Vehicles Taxation Act, 1976 r/w Schedule	1,20,000
Tamil Nadu	Rs 100 per seat per quarter (Rs 80 plus 25% surcharge)		20,000
Karnataka	5% of the traffic revenue plus 10% cess plus 10% surcharge	Section 10 of the Karnataka Motor Vehicles Act, 1957. Section 10 stipulates that the tax on fleet owners shall be levied at a rate of 5% of the gross revenue. Section 10 levies a cess @ 10% on Motor Vehicle Tax, for equity investment in BMRTL and other purposes.	90,000
Maharashtra	Rs 71/100 per seat per annum plus Rs 18 per standee per annum (Approx Rs 4,000 per year)	Entry (2), First Schedule of the Bombay Motor Vehicle Tax Act, 1958	20,000
Andhra Pradesh	5% of the traffic revenue	Andhra Pradesh Motor Vehicles Taxation Act. 1963 stipulates: 6-A. Levy of tax on certain motor vehicles based on gross traffic earnings: - Notwithstanding anything in Sections 3, 4, 5 and 6, - (1) Every registered owner, who owns or keeps in his possession or control more than 2,000 motor vehicles for plying on hire or reward, shall pay in respect of all such motor vehicles a tax at such rate, not exceeding 15 per centum of the gross traffic earnings, as may be specified by the government, by notification from time to time. { In exercise of the powers conferred by sub-section (1) of Section 6 - A of the Andhra Pradesh Motor Vehicles Taxation Act, 1963 (Act No 5 of 1963) and in supersession of Notification issued in GOMs No 153, TR&B(Tr II) Dept, dated December 1, 2001, the governor of Andhra Pradesh hereby specify 5 (Five) per centum of gross traffic earnings in respect of Town (Urban) services and 7 (Seven) per centum of gross traffic earnings in respect of other services as Motor Vehicle Tax (7-6-2005)}	90,000
West Bengal	Zero tax on CSTC buses		Nil

These are levied at the rate of 16 per cent and 12 per cent ad valorem respectively. The cost on spare parts rarely exceeds 10 per cent of the total cost for running a vehicle and therefore this once again is not a very significant component of the total cost burden.

5.4 Tax on Transport Revenue and Advertisement Tax

Motor vehicles tax is levied by the state government. Not only do the rates vary from state to state but also the mode of levy as indicated in Table 5 (p 44).

Advertisement tax is levied on the display of advertisements on the properties of the public transport organisations. Advertisements on buses can be major source of non-traffic revenue, particularly in big cities. This however is subject to the regulations and the taxes levied by the city governments. In terms of impact on the overall revenues of these organisations, it is still not significant.

6 Impact of These Taxes on Public Transport Systems

The cumulative effect of the various taxes is an increase in the cost of operations of the transport services. As the base for levy of these taxes is different – some are on capital costs, some are on revenue and some are on cost of inputs – the aggregate effect of all these cannot be estimated in a straightforward manner. One method could be to estimate the annualised cost of operating a bus and breaking this annualised cost into different components. In a typical transport corporation the various major components of costs are: staff costs, fuel costs, consumable costs, depreciation and motor vehicle tax.¹⁰ Fuel costs and staff costs are the two biggest components of costs. The contribution of each component to the total operating costs is given in Figure 4. (This has been worked as a sample based on the per km cost of the Bangalore Metropolitan Transport Corporation for the year 2004-05. There may be slight variation in these costs from city to city, but the pattern would be roughly similar). The taxes on fuel would be a component of the fuel cost, the taxes on other inputs would be a part of the consumables cost and the levies on capital goods would be a constituent of the depreciation.

The price build up on diesel because of various levies is given in Table 6. Thus out of a total price of Rs 35.19, Rs 10.10 is the burden of tax. Thus the burden of taxes on fuel in a city-based public transport organisation is about 28 per cent of the total fuel bill.

Let us then estimate the impact of central excise and VAT on the depreciation charge on buses.¹¹ As stated above, the vehicles, more precisely buses are subject to both central excise as well as VAT/sales tax. The rate of central excise is 16 per cent and that of VAT is generally 12 per cent. Therefore, if 'x' is the

basic manufacturing cost of bus, the central excise would be '0.16x'. Assuming no further value addition, the VAT levy on this would be '(x+0.16x) X 0.12' (=0.14x'). Assuming no profit to dealers, the gross price of bus would be 'x+0.16x+0.14x' (=1.3x'). Thus in the total price of the bus, the contribution of taxes would be about 23 per cent. The depreciation charged each year is directly proportional to the cost of the bus. Thus it can

be assumed that of the total depreciation charged, 23 per cent would be dues to taxes.

What would be the impact of taxes on spare parts and other consumables? The reasoning in 5.1 applies to spare parts also as the rate of both central excise and the VAT are similar to that on vehicles. Therefore, in the total price of spare parts and other consumables, the component of taxes would be about 23 per cent.

What would then be the total impact of taxation on operating cost? The total impact of all taxes for running a bus for a year is built up in Table 7. Thus, of the total annual operating cost of a public transport system, about 19.02 per cent goes as taxes to the union and state governments (Figure 5, p 46).

7 Comparison of Taxes Levied on Different Modes of Transport

As with the public transport system, the individual owners of vehicle are also subject to various taxes. The rates of excise duty (2007-08) on vehicles is 16 per cent on the value of the vehicle, the VAT rate is comparable to what is levied for buses, the tax on fuel is same if the fuel happens to be HSD but for petrol, the tax is different. Motor vehicle tax is substantially different for different types of vehicles. As the rates are different in different states – motor vehicle tax is a state tax – an analysis for the state of Karnataka has been done.

As was the case with buses, the component of central excise and sales tax on vehicles, put together is about 23 per cent of the total price of the vehicle. The component of these two levies on petrol works out to about 30 per cent of the price of petrol.

Figure 4: Components of Total Cost in a Typical Public Transport Organisation

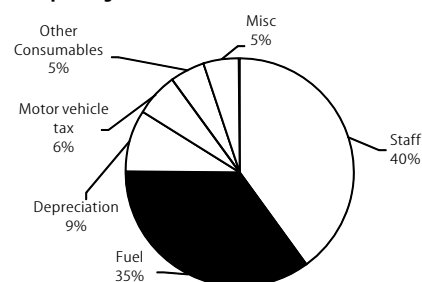


Table 6: Statement Showing the Price Build-up of HSD (in Bangalore) (2007-08)

Component of Price	Rs
Basic price	21.09
Excise duty (6% + Rs 1.5/litre)	2.76
Additional excise duty (Rs 2/litre)	2.00
Education cess (2% + 1%)	0.14
Sub-total	25.99
VAT/sales tax (20%)	5.20
Others – delivery charges, commission, etc	4.00
Total	35.19
Total tax levies per litre	10.10

individual owners of vehicle are also subject to various taxes. The rates of excise duty (2007-08) on vehicles is 16 per cent on the value of the vehicle, the VAT rate is comparable to what is levied for buses, the tax on fuel is same if the fuel happens to be HSD but for petrol, the tax is different. Motor vehicle tax is substantially different for different types of vehicles. As the rates are different in different states – motor vehicle tax is a state tax – an analysis for the state of Karnataka has been done.

As was the case with buses, the component of central excise and sales tax on vehicles, put together is about 23 per cent of the total price of the vehicle. The component of these two levies on petrol works out to about 30 per cent of the price of petrol.

Table 7: Contribution of Different Tax Components to Total Annual Operating Cost

Item of Cost	Contribution to Total Cost (%)	Split into Tax and Non-tax Component	Share of Tax Component (%)	Contribution of Tax Component to Total Cost (%)
Staff cost	40	Tax component Basic cost	0 100	0.00
Fuel cost	35	Tax component Basic cost	28 72	9.80
Capital cost (depreciation)	9	Tax component Basic cost	23 77	2.07
Motor vehicle tax (Assuming cost=revenue)	6	Tax component Basic cost	100 0	6.00
Consumables/spare parts	5	Tax component Basic cost	23 77	1.15
Miscellaneous	5	Tax component Basic cost	0 100	0
Total	100			19.02

The rate at which sales tax/VAT is levied on petrol ranges from 8 per cent to 33 per cent of the sales values, but generally it is about 25 per cent. In the state of Karnataka it is 28 per cent. The motor vehicle tax, though a periodic levy, has been substituted by a lifetime tax for two-wheelers and cars. The tax for a two-wheeler is 8 per cent of the cost of vehicle (provided the cost is less than Rs 50,000), and for a small car it is 10 per cent of the cost of the vehicle.

As explained earlier, the central excise, the sales tax on vehicles and the lifetime motor vehicle tax are one time levies and could be clubbed as tax on ownership of vehicles, whereas the fuel taxes depend upon the usage of the vehicle and very closely approximate to usage levy. In order to study the combined effect of all these taxes, it would be desirable to annualise them. This could be done by presuming the life of a vehicle to be 15 years and the total capital costs could be evenly spread over this period (Table 9).

Thus if capital costs are annualised, the tax burden for two-wheelers accounts for 23 per cent of the total annual cost.

For cars, it is 17 per cent. As expected, the tax burden in case of personalised vehicles is comparable to the tax burden in case of public transport – viewed as a percentage of the total cost per year. Another way of looking at the total annual costs is to treat the capital cost as well as the motor vehicle tax as a sunk cost. Such an approach is justified as these are one-time costs and could be bracketed as vehicle ownership costs rather than vehicle usage costs. Since, once a vehicle is procured by an individual its usage is not a function of the ownership cost but depends only on the usage costs. By this argument – taking maintenance costs as insignificant – usage cost is mainly fuel cost and then the tax burden works out to 30 per cent of the operating cost per year.

8 A Comparative Analysis of the Externalities Caused

As mentioned earlier, the major externalities caused by vehicles in city are pollution and congestion. Quantifying the total value of externalities is a challenging task. However, the relative impact of the externalities has been examined by several researchers in the past. The figures shown in Table 10 (p 47) were arrived at by a study conducted in Delhi.¹² A similar study was carried out by the Karnataka Tax Reforms Commission. The findings are summarised in Table 11 (p 47).

9 Analysis and Findings

The immediate effect of taxes on public transport is that these have to be absorbed in the fares. Thus they are passed on to the passengers. The passengers have to bear the burden of these taxes. As Table 9 shows, these taxes account for nearly 20 per cent of the gross operating cost. If one looks at a macro-picture of urban public transport in India, the extent of losses in

these organisations is in the range of 20-25 per cent of their gross operations.

Another revealing aspect of this analysis is that the levies which have major impact on the cost of operations are the taxes on fuel and the motor vehicles tax. Out of the 20 per cent points contribution of taxes, 10 per cent points and 6 per cent points are contributed by taxes on fuel and motor vehicle tax respectively. Surprisingly, levies on the production and sale of vehicles contributes only 1 per cent point of the total tax burden, i.e., even if the central excise as well as VAT on manufacture and sale of buses is totally waived, the cost of operations would drop only by 1 per cent. (This is for ordinary buses which cost about Rs 10-12 lakh; but for modern buses with commuter friendly features, which are more expensive, the contribution of excise and VAT on the total operating cost would be slightly higher.)

If a commuter travels about 24 km per day, he/she would spend about Rs 15 per day or Rs 5,500 per year. It is noteworthy that out of this amount 20 per cent, i.e., Rs 1,100 go as various taxes to government. This is quite inequitable, as a large majority of bus users are not even income taxpayers and a substantial numbers are even below the poverty line.

The above analysis indicates that a tax relief to these organisations could be a major contribution in pulling them out from the red. This is not to take away the emphasis from improving the internal efficiencies in these organisations, which can contribute even more. However, the high rates of taxes need to be reduced for the following reasons:

- (a) The public transport systems are patronised largely by the poor and the lower middle class sections of the society. The poor often find it difficult to meet the expenses for their travel. Taxes on public transport are borne by these “not so affluent” sections. Therefore, in the interest of equity, these taxes need to be reduced substantially or waived.
- (b) Economic analysis for any activity is based on the costs and benefits to the society at large, whereas financial analysis is based on actual cash flows. Taxes are merely “transfer payments” in which funds from individuals are transferred to the government or society at large.

Figure 5: Contribution of Different Taxes to the Total Operating Cost of a Bus

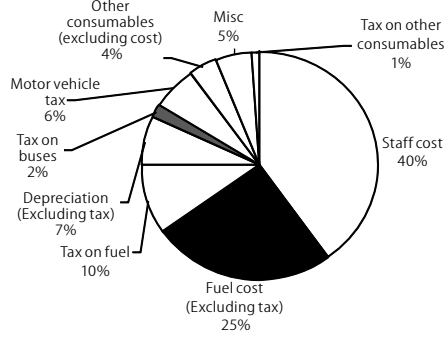


Table 8: Rate of Central Excise on Petrol (2007-08)

Basic duty	6% + Rs 5.0 per litre
Special additional excise duty	Rs 6 per litre
Additional excise duty	Rs 2 per litre
Education cess	2% on duty
Secondary and higher education cess	1% on duty
Natural calamity contingent duty	Rs 50 per tonne

Table 9: Working Out the Annualised Costs and the Tax Burden for Small Vehicles

	Capital Cost		Total Fuel Cost		Gross Annual Cost	
	Total Capital Cost, Inclusive of All Taxes	Out of Which, Tax Burden	Fuel Cost	Out of Which, Tax Burden	Gross Annual Cost	Out of Which, Tax Burden
Two-wheeler	3,333 ^a	957 ^b	11,077 ^c	3,323 ^d	14,410	4,280
Car	26,666 ^e	8,005	38,477 ^f	11,543	65,143	19,548

(a) Assuming price of a two-wheeler to be Rs 50,000 and life of vehicle as 15 years.
 (b) $\{(x+.16x)1.12\}^{15}-50,000=50,000$; Therefore, basic price $x=35,635$ (assuming that the total price of the vehicle inclusive of all taxes is Rs 50,000); Life of vehicle is assumed as 15 years.
 (c) Assuming an average daily travel of 24 km, fuel efficiency = 40 kmpl, price of petrol = Rs 50.50/litre.
 (d) Tax component in fuel is 30% of the total price.
 (e) Assuming the price of car, inclusive of all taxes as Rs 4,00,000.
 (f) Assuming fuel efficiency = 12 kmpl.

Though taxes affect the financial viability of a project, they are not reckoned in the economic analysis. Therefore, public transport organisations should also be evaluated based on their economic contributions. Going by these arguments, public transport organisations, though financially unviable, may not be economically unviable.

Let us compare the taxes levied on buses with two-wheelers and cars. The total cost of operating a two-wheeler is Rs 14,410 per year, of which tax accounts for Rs 4,280. Similarly the cost of operating a car is Rs 65,143 per annum of which tax accounts for Rs 19,548. Prima facie it would appear that the two-wheeler and the car owner is paying much more tax than a bus passenger, but a deeper analysis reveals quite otherwise. If we assume that the scooter is shared by two persons, then the annual tax burden on each passenger is Rs 2,400, which is just about double the tax what a bus user pays per annum. Table 8 (p 46) reveals that the congestion and pollution caused by the two-wheeler is about 7 and 13 times more per person respectively than that caused by a person travelling in a bus. The situation with the car is also similar.

Another interesting finding is that the tax on fuel accounts for about 10 per cent of the total cost of operation for a bus whereas for a two-wheeler it is about 23 per cent of the total cost of operation and for a car it is about 17 per cent of the cost of operation. If the cost of vehicle and the lifetime tax is taken as a sunk cost, then the only cost the vehicle user pays is the fuel cost. In such a case, the tax on fuel would account for about 29 per cent of the cost of operation. Thus the fuel taxes have a built in element of equity in the sense that for a given increase in the fuel tax, the increase in the cost of operations of a car and a two-wheeler would be proportionately higher than the increase in the cost of operation of a bus.

10 Conclusions

We have analysed the complex taxation regime that envelops the passenger transport sector and have quantified the impact of each of the different levies that are imposed. We have also compared the taxes on public transport with other modes of personalised transport and come to a conclusion that the existing taxation structure is inequitable and not congenial for growth of bus-based public transport systems. A public transport system creates much lower externality than a personalised mode of transport – say a car. Economic theory would suggest that the taxation on personalised modes of transport should be commensurately higher than what exists for the public transport.

The present approach of using taxation on the transport sector primarily for resource mobilisation for government needs to be modified so that taxes are also effectively used to bring in equity and ensure optimal utilisation of resources. Therefore there is an urgent need to reform the taxation structure of the transport sector.

The paper has highlighted the need for reforms in the taxation system for the public transport sector. But, the transport sector undoubtedly would remain a major revenue generator for the union and the state governments. The challenge is to design a comprehensive taxation structure for all modes of transport which while ensuring the required revenue flow to government also seeks to internalise the externalities and encourages those modes of transport which have relatively less externalities. An optimum taxation structure for different modes of transport would emerge from a complex interplay of the cost of each mode, the externalities and the elasticities.

Table 10: Comparison of Externalities Caused by Different Vehicles

Externality Parameter	Two-Wheeler	Car	Bus
CO emission-gm/passenger km	4.50	14.30	0.26
HC emission-gm/passenger km	3.60	3.00	0.10
NOx – gm/passenger km	3.60	3.00	0.12
SO ₂ /passenger km	104.0	243.00	122.00

Table 11: Comparison of Externalities Caused by Different Vehicles (Ratios)

Externality Parameter	Two-Wheeler	Car	Bus
Congestion per passenger	7.02	15.93	1.00
Pollution per passenger	13.35	15.99	1.00
Road damage per passenger	0.90	16.00	1.00

NOTES

- Associate Justice of the United States Supreme Court.
- However exceptions do exist, like the Bangalore Metropolitan Transport Corporation which has been running in profit for several successive years. Data in Figure 1 (p 42) is for the year 2005-06, based on data from CIRT.
- The excise duty has since been reduced to 12 per cent.
- Karnataka Value Added Tax Act, 2003.
- All automobiles come under this category.
- The Maharashtra Value Added Tax Act, 2005 – Motor vehicles are covered by Schedule E, and are liable for tax @ 12.5 per cent on their value.
- Bombay Municipal Corporation Act 1888 -192-(1) Except as hereinafter provided, a tax, at rates not exceeding those respectively specified in Schedule H, shall be levied in respect of the several articles mentioned in the said Schedule, or so many of them or such of them as the Corporation shall from year to year in accordance with Section 128 determine, on the entry of the said articles into Greater Bombay for consumption, use or sale therein. The said tax shall be called an "Octroi". Bombay Municipal Corporation Act 1888.
- Source: <http://ppac.org.in>; retrieved on January 1, 2008.

- Levies like sales tax/VAT are classified as recoverable levies as they can be passed on to the buyer as such. But certain levies like entry tax are often not passed on to the buyer and the manufacturer/dealer has to bear the taxation burden.
- Motor vehicle tax is shown as a separate component

unlike other taxes which are built into other cost components.

- Tax rates are for the year 2007-08. The excise duty on vehicles has been reduced to 12 per cent for buses and 14 per cent for other vehicles with effect from April 1, 2008.



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