Quantitative Analysis of Municipal Expenditures: A Case Study of Gujarat State

T K Jayaraman

The municipal expenditures in India are, by and large, need oriented rather than resource based. Resources of municipal governments have not been clearly spelt out as it has been done in the case of state governments by the Constitution of India which recognises only two units, the centre and the states.¹ The municipal governments which are creatures of the statutes of the state legislatures can exercise whatever revenue raising power that has been separately listed for the states.² But most of these powers are already exercised by the states. Thus, in practice the resources of the municipal governments have come to be limited.

But, the municipal government functions involving substantial expenditures have been clearly enumerated in the statutes governing them. Some of them are declared mandatory and some of them are optional. Mandatory functions include public health maintenance, water supply and drainage, primary education and street lighting and such other essential expenditures of local character. The optional functions include maintenance of public parks, recreation facilities and the like, which are of discretionary nature.

Rapid industrialisation and consequent urbanisation have been making heavy demands upon the local bodies not only in maintaining the existing levels of services but also stepping up the quantum of services. The inadequacy of their own resources coupled with insufficient support from higher levels of the executive wing, especially the state governments, has compounded the problem of efficient discharge of the obligatory functions.

¹ The author wishes to express his grateful thanks to Comprer Centre of the Bureau of Economics and Statistics, Gandhinagar.

² Seventh Schedule to the Constitution of India with reference to Article 246 enumerates the powers of the central and state governments in three separate lists: Union List, State List and Concurrent List.

² This is the constitutional position but in essence the municipal bodies' revenue raising powers are severely restricted by provisions that they are subject to general orders or special orders of the state governments.
The objective of this paper is to undertake a quantitative analysis of municipal expenditures in Gujarat State in India as a case study with a view to arrive at their determinants. The cross sectional study is divided into three sections. The first section outlines the financial profile of municipal governments with emphasis on functions and resources. The second section describes the methodology employed to find out the determinants of expenditure. The third section presents empirical results and lists out certain conclusions emerging from the study.

Municipal Governments in India: Functions and Resources

Municipal Governments which were constituted in India in 1870 on the lines of the English Boroughs were originally entrusted with the minimum functions of maintenance of roads, scavenging and public health. Though a levy of house tax at 5 per cent of the annual rental value was introduced, the inhabitants were unwilling to bear it. Hence, a system of indirect taxes and grants from provincial governments was designed in 1870.

But, it was in 1882 that the local government institutions were given full recognition by a resolution of the Government of India. Their functions were enlarged and they were given increased powers, financial resources and responsibilities. The Government of India Act, 1919 gave statutory recognition to these powers by including a separate schedule of taxes which could be levied only by the municipal governments. Further, the subject of local government was transferred to provincial governments. The following were the taxes reserved for the local bodies:

(a) Toll
(b) Tax on land
(c) Tax on buildings
(d) Tax on vehicles and boats
(e) Tax on menial and domestic servants
(f) Octroi
(g) Terminal tax
(h) Tax on trades, professions and ceilings
(i) Tax on private markets

3 For brief historical study, see Bhatt M D, "Municipal Finance" in Fischer H J, (Ed.) Problems of Urbanisation, Bombay: Leslie Sawhney Programme of Training For Democracy, 1971 pp. 31-36.

(j) Tax imposed in return of services rendered such as water rate, fees for the use of markets and other public conveniences.

But the Government of India Act 1935 while introducing provincial autonomy, repealed the scheme of taxes mentioned above. It provided only three lists, enumerating functions and powers for federal government and provincial governments, and powers for joint exercise by federal and provincial governments, known as concurrent powers in three lists: Federal List, Provincial List and Concurrent List. Further, the terminal tax which was earmarked for local bodies was transferred to the Federal List. Other taxes came to be mentioned in the Provincial List. Thus, the separate list for local bodies was done away with.

The Constitution of India which came into force in January 1950 following Independence, adopted the same pattern of Lists without reserving any taxes for local bodies. It means that local bodies governed by the Acts of the states’ legislatures can levy taxes mentioned in the State List subject to the general or special orders issued by the state government. But in practice conventional taxes such as tax on property, and indirect taxes such as octroi and non-tax revenue resources such as market fees alone have been the mainstay of the municipal governments.

Though the revenue resources of the municipal governments have been steady reduced over time, their functions have not decreased at all; rather, they have assumed greater importance. The functions have been divided into two categories: obligatory and discretionary.

The principal obligatory duties are construction and maintenance of roads, their cleaning, watering, lighting, abatement of public nuisance, regulations of dangerous and offensive trades, water supply, drainage, sewage, establishing and maintaining public dispensaries and providing public medical relief, public vaccination, construction and maintenance of public markets, slaughter houses and sanitary conveniences, primary education, providing medical relief in time of dangerous or communicable diseases and preventing an outbreak of such diseases and fire protection.


5 Bhatt M D, op cit., pp. 36-38.
The principal discretionary duties are to lay out and maintain public parks and gardens and to plant roadside trees, to establish or maintain public hospitals, institutions for pre-primary and secondary education, libraries, museums, to provide accommodation for municipal servants, to construct sanitary dwellings for poorer classes, to set up dairies for supply of milk and to provide any other measure not included in obligatory duties which is likely to promote public safety, health and convenience.

Thus, the responsibilities have proved to be very extensive and exacting. The developmental efforts under the Five Year Plans have speeded up industrialisation in these municipal towns and the process of industrialisation has led to growth of urban population. The influx of people from the rural areas into towns in search of employment has led to serious problems in regard to housing, water supply, sanitation, transport, education, health and other such community facilities. Municipal governments are unable to face these mounting problems with their own inadequate revenue resources and insufficient grants from the state governments.

An appreciation of these revenue-expenditure gaps in the municipal finance is possible only through a case study. Towards this purpose, municipal finances in the State of Gujarat in India are analysed below:

There are two types of municipal governments in the State. Towns normally having population exceeding one hundred thousand are governed by the bodies known as Municipalities. The other type of government is known as Municipal Corporation governing a population in a given town exceeding three hundred thousands. Such Corporations are usually the big metropolitan towns with concentrated industrial and commercial activities. Though they are differently called, their functions are almost identical and are categorised into obligatory and discretionary functions, as described above.6

There are 51 Municipalities and 4 Municipal Corporations in Gujarat. Since the areas under the Corporations have a large industrial base, the paying capacity of the citizens is fairly higher than that of their counterparts in the areas under the Municipalities. But for this difference, the problems are identical. For the case study purpose, only the finances of the municipalities are studied here leaving aside those of the Corporations.

The main source of revenue available to municipalities are of two kinds: (a) tax revenue and (b) non-tax revenue. Taxes imposed under the municipal law are again of two sorts: direct and indirect. Direct taxes are those whose incidence falls on the payer himself on whom tax is originally levied without any possibility of being shifted to somebody else. They are (i) house tax (ii) special sanitary cess (iii) general sanitary cess (iv) special and general water rate (iv) tax on animals and vehicles (vi) theatre tax in the form of tax on shows.

The indirect tax is mostly octroi duty levied on the entry of goods into a local area for consumption or sale therein.

Non-tax revenues comprise of income from municipal property, investment and remunerative undertakings, contribution and grants from the government. Items such as loans, advances and deposits, receipts on capital account, non-recurring grants for capital works also feature in municipal finances but they are not the ordinary items of income.

<table>
<thead>
<tr>
<th>Table 1</th>
</tr>
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<tbody>
<tr>
<td>Aggregate revenue of all municipalities in Gujarat</td>
</tr>
<tr>
<td>(Rs in lakhs)</td>
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<tr>
<td></td>
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<tr>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>(I) Direct Taxes</td>
</tr>
<tr>
<td>(i) House tax</td>
</tr>
<tr>
<td>(ii) Special Sanitary Cess</td>
</tr>
<tr>
<td>(iii) General Sanitary Cess</td>
</tr>
<tr>
<td>(iv) Special &amp; General Water Rate</td>
</tr>
<tr>
<td>(v) Tax on Animals</td>
</tr>
<tr>
<td>(vi) Theatre Tax</td>
</tr>
<tr>
<td>(vii) Other Direct Taxes</td>
</tr>
<tr>
<td>(II) Indirect taxes</td>
</tr>
<tr>
<td>Octroi</td>
</tr>
<tr>
<td>(III) Government Grants</td>
</tr>
<tr>
<td>(IV) Miscellaneous Income</td>
</tr>
<tr>
<td>Aggregate</td>
</tr>
</tbody>
</table>


Table 1 shows the aggregate revenue of all 51 municipalities of the State of Gujarat. The revenues in current prices have shown an overall increase of 77 per cent over the seven years period covering 1968–69 to 1975–76. The annual average rate comes to 11 per cent. Direct taxes were 19 per cent of total revenue in 1968–69 and continued to assume same level, namely 18 per cent in 1975–76. Indirect taxes namely octroi and grants from government registered an upward trend with miscellaneous income declining slightly from the overall income composition point of view.

The average per capita incidence of direct taxation has been worked out to Rs 8.01 whereas the per capita incidence of indirect taxation is Rs 17.26. It may be pointed out here that in a local area the chief beneficiaries being residents should bear the brunt of tax burden and should not indulge in shifting tax incidence to someone. Taking advantage of this situation critics may level valid criticism against the archaic levy of octroi as part of indirect taxation. The criticism rests on the sure ground that it impedes fast movement of goods-traffic across the country and thus affects intra-state as well as inter-state trade and commerce to the detriment of national economy. It is not proposed to defend this levy here but any replacement of octroi duty will have to be thought out carefully on a national plane as part of overall rationalisation of the indirect tax system in the country.

In regard to direct taxation, all municipalities do not exploit the consolidated property tax (consisting of general tax, lighting tax and general sanitary tax) to the same degree. There is some half hearted approach and there is no scientific valuation of properties and assessment of tax rates. Added to these, tax recovery machinery also displays slackness in most of the urban areas.

As regards non-tax revenues, the municipalities have good scope for realising income from their own property in the form of rent in keeping with rise in prices, permit and licence fees, market and slaughter houses. This source has contributed only a very small per cent of total revenue.

Before we take up the other important source of income, namely grants from the State Government, we may examine the expenditure position of the municipalities. As comparable figures are not available for previous years, the latest available figures for 1975–76 are presented in Table 2. While general administration occupied an important place, public safety (lighting and fire protection) expenditure amounts to only 4 per cent of total expenditure. Substantial part of the expenditure goes towards debt payment and interest payments. Next to this item, general sanitation (38 per cent) education (13 per cent) and miscellaneous expenditures such as maintenance of parks, slaughter house, etc. (12 per cent) rank in importance.

<table>
<thead>
<tr>
<th>Items of Expenditure</th>
<th>Percentage of Total Aggregate</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Administration</td>
<td>261.22</td>
</tr>
<tr>
<td>Public Safety</td>
<td>100.22</td>
</tr>
<tr>
<td>General Sanitation</td>
<td>932.60</td>
</tr>
<tr>
<td>Education</td>
<td>313.66</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>310.93</td>
</tr>
<tr>
<td>Extraordinary Debt and Miscellaneous Contribution</td>
<td>859.85</td>
</tr>
<tr>
<td></td>
<td>2467.82</td>
</tr>
</tbody>
</table>


An analysis of the expenditure pattern of the municipalities in the State shows that on an average per capita expenditure on public safety is Rs 2.20, on general sanitation Rs 20.82, on water supply Rs 4.40, medical relief Rs 1.59, public works Rs 6.22 and street cleaning Rs 7.25. Total per capita expenditure on all items works out to Rs 40.09. Out of 51 municipalities more than 50 per cent spend only Rs 35 per capita.

It is obvious that the municipalities cannot maintain the present level of expenditure from their own sources of income but for flow of grants in aid from the state government.

Support to the municipalities comes in the form of grants which are divided into general purpose grants, and specific purpose grants. The general purpose grants are:

(i) basic per capita general purpose grants.

(ii) grant in aid from the proceeds of non-agricultural assessment and land revenue.
There are no strings attached to these and hence can be spent by the municipal government on purposes desired by them.

The specific purpose grants are many and they can be spent only on such purposes as directed by the government. They are for:

(i) water supply and drainage schemes,
(ii) primary education,
(iii) maintenance and repairs of roads,
(iv) expenditure on dearness allowance to employees,
(v) dispensaries,
(vi) hospitals,
(vii) maintenance of maternity and child welfare centres,
(viii) anti-epidemic measures,
(ix) secondary education.

An examination of the distribution of grants paid to municipalities over the last five years period shows that on an average grants-in-aid for primary education topped the list with 36 per cent of total grants paid, followed by dearness allowance grant (23 per cent), water supply and drainage grant (13 per cent) grant in aid for secondary education (6 per cent), basic per capita general purpose grant (6 per cent), public health grant (3 per cent) and grant for maintenance of roads (2 per cent).

Thus, it is clear that municipal finances are strengthened by the grant in aid system. But the support from the state government itself is inadequate in view of the rising municipal expenditures and limited municipal tax and non-tax revenue resources. The flexibility and manoeuvrability associated with the central and the state revenue resources, specially taxes are absent in the area of municipal finances. The inter-municipal differences in the per capita expenditures on the other hand are influenced by certain factors in urban economics. The next section seeks to examine the impact of some of these determinants.

Inter-Municipal Differences in Urban Expenditures

In this section, expenditures are treated at per capita level rather than at aggregate level in order to eliminate the influence of numbers. Differences in the municipal per capita expenditures are the result of various forces such as density of population, urban characteristics and the paying capacity of the citizens themselves. It is, therefore, possible to formulate certain relationships. These relationships can then be incorporated in a simple stochastic model for quantitative analysis.²

It is postulated that per capita expenditures are directly affected by the density of population. Higher the number of people living per square kilometer, higher is the expenditure incurred per person.

It is not the mere density of the population that matters in regard to urban services. It is the occupational character of the population that decides the nature of services to be rendered by the urban governments. If the population is more of an industrially oriented one as opposed to being rural in nature, services such as water supply or electricity or maintenance of roads and the like, would need substantial care and maintenance, expenditures on these services would, therefore, be of a higher magnitude. The appropriate variable that would capture the influence of occupational character is the proportion of number of non-agricultural workers to total number of people employed in urban areas.

We saw earlier that expenditures on services are met with by tax revenue raised, though not fully but only partially. But, the fact remains that higher the paying capacity of the urban citizen, the higher is the level of per capita expenditures on services. Therefore, it is hypothesised that per capita expenditures are positively associated with per capita tax revenue raised.

While major part of the tax revenue is utilised to meet current expenditures, the investment expenditures such as new water supply schemes, drainage facilities and other capital intensive projects are financed by loans obtained

² Studies of federal state and local expenditures in the USA undertaken with a view to find out their determinants are available. Notable among them are:


(c) Sharansky Ira, "Some Thoughts About the Determinants of Government Expenditures" National Tax Journal Vol XX, No 2, June, 1967, pp 171-180. But they normally ignore local finances. Well-known studies in this regard are:


(b) Reddy K N. The Trend of Government Activity in India Since Independence, Baroda: Department of Economics, M S University, 1976, Chapter V.

The last study mentioned above deals specifically with determinants of inter-state differences in State Government expenditures. But there is no comparable study so far undertaken in regard to local expenditures.
from financial institutions such as Life Insurance Corporation of India and Housing and Urban Development Corporation, and from open markets. These loan liabilities themselves lead to additional current expenditures in the form of interest payment on loans obtained. Repayments of loan in terms of instalments in case of such loans being obtained from the financial institutions or sinking fund contributions in case of market borrowings. These debt servicing expenditures are to be met from current revenue resources and, therefore, less of current revenues would be available for the maintenance of services. Thus, it can be postulated that the higher the per capita expenditures on debt servicing, the less would be the per capita expenditure on municipal services. Thus there is an inverse relationship between the per capita expenditures and per capita debt services.

The widening gap between rising current expenditures on account of increased urbanisation and the stagnant revenue resources is sought to be bridged by the grant-in-aid code system developed by the state government. It is, therefore, hypothesised that there is a direct relationship between per capita expenditures incurred and per capita grants received by the municipal bodies.

Thus, a functional relationship can be formulated in terms of per capita expenditures, the dependent variable and these explanatory variables. Where density of population and proportion of non-agricultural workers, to total workers reflect the demand side of expenditures, the variables, namely, per capita tax revenue realised, per capita grants, and per capita debt service charges represent their supply side.

\[ Y = f(X_1, X_2, X_3, X_4, X_5) \]

where,

- \( Y \) = per capita expenditure,
- \( X_1 \) = density of population per square kilometer,
- \( X_2 \) = proportion of non-agricultural workers to total workers,
- \( X_3 \) = per capita tax revenue raised,
- \( X_4 \) = per capita grants received from state government, and
- \( X_5 \) = per capita debt service charges.

The specific form of functional relationship chosen is the linear regression equation given below:

\[ Y = a + b_1 x_1 + b_2 x_2 + b_3 x_3 + b_4 x_4 + b_5 x_5 \]

where, in addition to the symbols explained above, \( 'a' \) represents the intercept and \( 'b'_i \)'s represent parametric coefficients of \( x_i \)'s with \( i = 1, 2, \ldots, 5 \).

In estimating the above linear relationship between variations in per capita expenditures and in the explanatory variables. Our aim is to test the following hypotheses:

(a) per capita expenditure is positively associated with density of population \( \frac{\partial y}{\partial x_1} > 0 \)

(b) per capita expenditure is directly influenced by proportion of non-agricultural workers to total workers \( \frac{\partial y}{\partial x_2} > 0 \)

(c) there is a positive relationship between per capita expenditure and per capita tax revenue raised \( \frac{\partial y}{\partial x_3} > 0 \)

(d) association between per capita expenditure and per capita grants is direct \( \frac{\partial y}{\partial x_4} > 0 \)

(e) per capita expenditure and per capita debt service charges are inversely related \( \frac{\partial y}{\partial x_5} < 0 \)

For fitting the above equation, a stochastic error term was added and the ordinary least squares estimation procedure was applied. The next section reports the results of the empirical analysis.

**Results of Empirical Analysis**

The model developed in the last section was applied to a cross sectional analysis of per capita current expenditures of municipal governments in Gujarat. Per capita current expenditures of 51 municipalities for the years 1973–74 were categorised into the following: (a) total per capita expenditure, (b) per capita expenditure on lighting (c) per capita expenditure on water
supply (d) per capita expenditure on drainage and (e) per capita expenditure on public health.

It would have been more appropriate if we had access to information on specific grants such as grants for public health, maintenance and water supply. But unfortunately the data were available only at aggregate level and hence, in the absence of detailed data, per capita grants at aggregate level had to be used as an explanatory variable invariably for regression analysis of all categories of per capita expenditures.

Each type of per capita expenditure was regressed on the explanatory variables. The results of multiple regression analysis are reported in Table 3.

Of all the five fitted equations, only the one in respect of per capita aggregate expenditure turns out to be a good fit in terms of a fairly high coefficient of determination. Though all the explanatory variables do have the expected signs, only density of population (0.001), per capita grants (1.541) and per capita debt service charges (0.248) are significant, the level of significance chosen being at 5 per cent. The magnitude of the density coefficient is negligible. But the value of the coefficient of per capita coefficient is greater than one. A rise in the per capita grant by one rupee leads to a rise in per capita aggregate expenditure by Rs 1.54. In the case of per capita debt service charges, an increase by one rupee leads to a reduction in per capita aggregate expenditure by twenty five paise.

The other estimated equations for the per capita expenditure on lighting, water supply, drainage and public health emerge as relatively poor fits. The estimated coefficients of all explanatory variables are not significant in all the equations except in the case of the last equation. However, only the coefficient of per capita grants (0.229) is significant among the five explanatory variables in the equation for per capita expenditure on public health. An increase in per capita grants by one rupee leads to a rise in per capita expenditure on public health by 23 paise.

In order to test the stability of coefficients of density of population (0.001) of per capita grants (1.541) and of per capita debt service charges (0.248) in the regression equation in respect of per capita aggregate expenditure, data of the same municipal bodies five years ago, that is, for the year 1968–69, were employed to carry out the regression analysis. The results are presented in Table 4.

Again among the estimated equations only the per capita aggregate expenditure equation emerges as the best fit. However, coefficients of only two variables were significant. They are per capita tax revenue (1.813) and per capita debt charges (1.044). An increase in per capita tax revenue by one rupee and an increase in per capita debt charges by the same amount would lead to an increase in per capita aggregate expenditure by 1.81 and to a decrease in per capita aggregate expenditure by Rs 1.04 respectively.

In the estimated equation in respect of per capita expenditure on lighting, none of the variables was significant while in the equation in regard to per capita expenditure on water supply, density of population (0.003) and per capita taxation (0.145) were significant.

The estimated equation with per capita expenditure on drainage shows only per capita taxation (0.142) as a significant variable. The fitted regression equation for per capita expenditure on public health has two significant variables namely, density of population (0.001) and per capita debt service charges (0.371).

A scrutiny of the values of the coefficients of the significant variables over the five-year period would give some insights as to their stability over time.

In the equation for per capita aggregate expenditure, density of population was not statistically significant in 1968–69, but it was significant in 1973–74. Per capita tax revenue exercised a significant influence on per capita expenditure in 1968–69 but no such influence in 1973–74. Per capita grants did not have any impact on the dependent variable in 1968–69 but it emerged as a significant variable in 1973–74. Though per capita debt service charges as a variable was significant in both the years under consideration, its magnitude had declined substantially.

In the case of regression equation for per capita expenditure on lighting, none of the explanatory variables could explain the inter-municipal differences in expenditure, as they were not significant.

In regard to the estimated equation for per capita expenditure on water supply, only two variables, namely density of population and per capita tax revenue were significantly responsible for variation in expenditure in 1968–69. But they ceased to become significant in 1973–74.

8 The explanatory variables used in the study were tested to find out whether there was any multi-collinearity between them. An inter-correlation matrix confirms that the explanatory variables are not related to each other as the order of correlation is of a very low magnitude.

9 Due to lack of space, data for 1968–69 are not presented here.
In the regression equation for per capita expenditure on drainage, only per capita tax revenue as a variable was significant in 1968–69 but in 1973–74 none of the variables could significantly explain the differences.

Finally, in explaining the inter-municipal variations expenditures on public health, though three explanatory variables, namely, density of population, per capita tax revenue and per capita debt service charges were significant in 1968–69, none of these were significant for the year 1973–74 but per capita grants emerged as a significant variable.

**Summary and Conclusions**

This paper generally focussed attention on the financial position of municipal grants in India and in particular analysed the finances of 51 municipal bodies in Gujarat State. It was brought out that the municipal bodies' own resources were not sufficient to meet the expenditures of obligatory nature.

The expenditures at per capita level were subject to a cross sectional regression analysis. It was found that analysis of specific categories of per capita expenditures did not yield meaningful estimates of determinants. But the regression analysis of per capita aggregate expenditures for 1973-74 showed that density of population, per capita grants and per capita debt service charges were significant determinants. Variations in these explanatory variables gave rise to significant variations in the municipal expenditures for the year 1973–74. But the stability of these determinants was in doubt since a similar cross sectional analysis for 1968–69 showed only per capita debt service charges were a consistent determinant over time.

If the results of the more recent year are to be relied upon, it is clear that density of population, per capita grants and per capita debt service charges significantly influence inter-municipal differences in per capita aggregate expenditures.

Policy implications are obvious. Urban density concentration leads to higher per capita expenditure. Though per capita grants are a significant factor in urban spending capability, the same should not be relied upon indefinitely. Instead, municipal bodies should step up their own revenue potential and exploit the current avenues more effectively by tightening the collection machinery. Such vigorous efforts to augment current resources are necessary since debt service charges have come to stay due to the fact that investment expenditures are to be undertaken with substantial loan finance either from financial institutions such as LIC and commercial banks or from open market borrowings. Hence, there is no possibility in the near future of any reduction in debt service charges. Increase in the current revenues would, therefore, require renewed emphasis.

Added to this, adequate support from the state governments is needed. Urban problems cannot be left alone to urban governments for management. A well developed grant-in-aid code system subject to periodical review is necessary to ensure that the flow of funds to municipal bodies is fair and substantial to supplement their efforts.
### Table 3
Determinants of municipal per capita expenditure in Gujarat state, India: 1973-74
Results of multiple regression analysis
*(Figures in parentheses denote ‘t’ values)*

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Intercept</th>
<th>Independent Explanatory Variable</th>
<th>Degrees of Freedom</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Per Capita Aggregate Expenditure</strong></td>
<td>1.353</td>
<td>0.001*</td>
<td>0.753</td>
</tr>
<tr>
<td></td>
<td>(0.10)</td>
<td>14.534</td>
<td>45</td>
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<tr>
<td></td>
<td></td>
<td>0.281</td>
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<tr>
<td></td>
<td></td>
<td>1.541*</td>
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<td></td>
<td></td>
<td>-0.248*</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>0.753</td>
<td>45</td>
</tr>
<tr>
<td><strong>Per Capita Expenditure on Lighting</strong></td>
<td>2.488</td>
<td>0.002</td>
<td>0.343</td>
</tr>
<tr>
<td></td>
<td>(3.69)</td>
<td>-1.232</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.003</td>
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<tr>
<td></td>
<td></td>
<td>-0.002</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>-0.003</td>
<td></td>
</tr>
<tr>
<td><strong>Per Capita Expenditure on Water Supply</strong></td>
<td>-0.279</td>
<td>0.002</td>
<td>0.289</td>
</tr>
<tr>
<td></td>
<td>(-0.08)</td>
<td>3.103</td>
<td>45</td>
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<td></td>
<td></td>
<td>0.050</td>
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<td></td>
<td></td>
<td>0.023</td>
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<td></td>
<td></td>
<td>0.007</td>
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<tr>
<td><strong>Per Capita Expenditure on Drainage</strong></td>
<td>2.241</td>
<td>0.001</td>
<td>0.305</td>
</tr>
<tr>
<td></td>
<td>(0.56)</td>
<td>7.681</td>
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<td></td>
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<td></td>
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<tr>
<td><strong>Per Capita Expenditure on Public Health</strong></td>
<td>-0.037</td>
<td>0.001</td>
<td>0.451</td>
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<td>(-0.01)</td>
<td>-2.037</td>
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<td></td>
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<td>0.032</td>
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<tr>
<td></td>
<td></td>
<td>0.229*</td>
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<tr>
<td></td>
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<td>-0.027</td>
<td></td>
</tr>
</tbody>
</table>

* Significant at 5 per cent level.

### Table 4
Determinants of municipal per capita expenditure in Gujarat state, India: 1968-69
Results of Multiple Regression Analysis
*(Figures in parentheses denote ‘t’ values)*

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Intercept</th>
<th>Independent Explanatory Variable</th>
<th>Degrees of Freedom</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Per Capita Aggregate Expenditure</strong></td>
<td>3.237</td>
<td>-0.001</td>
<td>0.768</td>
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<tr>
<td></td>
<td>(0.26)</td>
<td>-11.015</td>
<td>46</td>
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<td></td>
<td></td>
<td>1.813*</td>
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<td></td>
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<td></td>
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<td>2.089</td>
<td>-0.002</td>
<td>0.381</td>
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<tr>
<td></td>
<td>(2.64)</td>
<td>-1.226</td>
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<td>-0.032</td>
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<td>0.008</td>
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<tr>
<td><strong>Per Capita Expenditure on Water Supply</strong></td>
<td>0.109</td>
<td>0.003*</td>
<td>0.513</td>
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<td>(0.06)</td>
<td>-1.162</td>
<td>46</td>
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<td></td>
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<td>0.145</td>
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<tr>
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<td>-0.081</td>
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<tr>
<td><strong>Per Capita Expenditure on Drainage</strong></td>
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<td>0.001</td>
<td>0.440</td>
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<td><strong>Per Capita Expenditure on Public Health</strong></td>
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<tr>
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<td>(-0.00)</td>
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<td></td>
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<td>-0.371*</td>
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</tbody>
</table>

* Significant at 5 per cent level