Improving the Fiscal Health of Indian Cities: A Pilot Study of Chennai

Report Submitted by the

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Any errors remain with the authors.

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CHAPTER 1: INTRODUCTION

Background and Constituent Local Governments

The Chennai Urban Agglomeration (UA) is one of the oldest metropolitan areas of the country, with a 2001 population of 6.29 million, consisting of 1.41 million households. The Chennai UA sprawls over 36 urban local bodies (ULBs) and 17 census towns. In terms of civic status, we see a variety—one municipal corporation (Chennai), 8 municipalities governed by municipal councils, 26 town *panchayats*, and 1 cantonment board.

The main city is administered by the Municipal Corporation of Chennai which contained only 27 percent of the UA's land area, but 69 percent of its population and 68 percent of the UA's households, as of the 2001 Census (Table 1.1). Since time and budgetary considerations prevented us from visiting all the 36 ULBs in the UA, for purposes of evaluating fiscal health, we examined the relative importance of the 36 ULBs in the UA. We found that 8 out of the 36 municipal governments account for 89 percent of the UA's population, as well as of the UA's households, as of 2001. Of these, one (Chennai) is a municipal corporation, and the remaining seven are municipalities governed by municipal councils. The eight ULBs account for a total of 59 percent of the UA's land area (Table 1.1). The remaining 28 ULBs of the UA account for only 11 percent each of the UA's population and of households. Hence we decided to examine the eight ULBs (reported in Table 1.1) in detail for purposes of this study. Our measures of expenditure gaps, revenue capacities, and fiscal gaps are for these eight ULBs.

Table 1.1: Proportion of Land Area, Population and Households, Selected ULBs of Chennai UA, 2001

Name of the Local Bodies	Civic Administration Status	Area (in Sq. Km.)	Proportion of Chennai UA's area	Proportion of Chennai UA's population	Proportion of Chennai UA's households
CORPORATION OF CHENNAI	Municipal Corporation	174.00	27.14%	68.76%	67.88%
AMBATTUR	Municipality	40.36	6.30%	4.92%	5.19%
AVADI	Municipality	65.00	10.14%	3.63%	3.71%
TIRUVOTTIYUR	Municipality	21.42	3.34%	3.36%	3.46%
ALANDUR	Municipality	19.5	3.04%	2.32%	2.46%
PALLAVARAM	Municipality	18.00	2.81%	2.29%	2.38%
TAMBARAM	Municipality	20.72	3.23%	2.18%	2.24%
MADAVARAM	Municipality	17.20	2.68%	1.20%	1.21%
Total		**641.03**	**58.69%**	**88.67%**	**88.54%**

Source: PCA 2001, Town Directory 2001 and Authors' Computations.

We observe that the total area of Chennai UA increased from 612.11 sq. km. in 1991 to 641.03 sq. km in 2001. From among the 8 local bodies we study, we observed that the land area of two ULBs, Ambattur and Avadi, increased over 1991-2001. In 1991 Avadi was a municipal township and its area was 25.62 sq. km., in 2001 it became a municipality and its area increased to 65 sq. km.[1] Ambattur, was spread over 37.35 sq. km. in 1991 and in 2001 its area increased to 40.36 sq. km. In general, when the local population demands that they should be ceded to the surrounding municipalities for better services, a committee decides the municipality to which they will be ceded. In this way, the area of some municipalities has increased between 1991 and 2001.

Table 1.2 summarizes important socio-demographic characteristics for the eight ULBs. The table shows that all these ULBs experienced steady population growth during 1991-01, along with literacy. The household size in all ULBs has continuously declined during this period, which is reasonable to expect, given increases in literacy.

Table 1.2: Socio-Demographic Characteristics, Selected ULBs, Chennai UA

Urban Local Body	Total Population		Number of Households		Size of HH (Persons per HH)		% of Literacy	
	1991	2001	1991	2001	1991	2001	1991	2001
Chennai Municipal Corporation	3,841,396	4,343,645	798,279	962,213	4.81	4.51	82%	85%
Ambattur (M)	215,424	310,967	48,322	73,630	4.46	4.22	85%	89%
Avadi (MTS)	183,215	229,403	39,117	52,627	4.68	4.36	85%	87%
Tiruvottiyur (M)	168,642	212,281	36,859	49,068	4.58	4.33	80%	85%
Alandur (M)	125,244	146,287	27,054	34,927	4.63	4.19	87%	92%
Pallavaram (M)	111,866	144,623	23,699	33,759	4.72	4.28	85%	89%
Tambaram (M)	107,187	137,933	21,754	31,772	4.93	4.34	84%	87%
Madavaram (MTS)	49,256	76,093	10,386	17,145	4.74	4.44	79%	85%
Total for UA*	**5,252,953**	**6,298,968**	**1,103,503**	**1,413,384**	**4.76**	**4.46**	**82%**	**86%**

*The entire UA refers to information from all the 36 local governments (not just the eight used here), as of Census 2001.

Source: Census of India Primary Census Abstract (PCA), 1991 and 2001.

Table 1.3 summarizes the workforce participation rate of main, marginal and non workers in the Chennai UA for the selected ULBs.[2] Table 1.3 clearly indicates that on average, marginal

[1] A *municipality* is governed by a Municipal Council, whereas a *municipal township* refers to a municipal area whose floating population is greater than the local population, and is governed by a committee appointed by the state government and consists of representatives from the local area, political parties and the government.

[2] Main workers are those who had worked for the major part of the year (for 183 days or six months or more) preceding the year of enumeration. Marginal workers are those who worked for sometime in the year

workers are continuously rising, when compared with main workers, with or without the central city. We observe that the total workforce participation rate, taking into account both main and marginal workers, has considerably increased during 1991-2001. This is to be expected with rapid economic growth.

Table 1.3: Workforce Participation Rates, Selected ULBs, Chennai UA

Workforce Participation Rates, Chennai UA ULBs, with Corporation of Chennai						
Summary Statistic	**Total Workforce Participation Rate***		**Main Worker Participation Rate***		**Marginal Worker Participation Rate***	
	2001	**1991**	**2001**	**1991**	**2001**	**1991**
Average	33.60%	29.99%	30.86%	29.79%	2.74%	0.20%
Maximum	34.87%	31.43%	32.93%	31.22%	3.83%	0.32%
Minimum	31.84%	28.56%	28.01%	28.34%	1.93%	0.03%
Standard Deviation	1.10%	1.10%	1.70%	1.10%	0.70%	0.10%
Number of observations	8	8	8	8	8	8
Workforce Participation Rates, Chennai UA ULBs, without Corporation of Chennai						
Summary Statistic	**2001**	**1991**	**2001**	**1991**	**2001**	**1991**
Average	33.51%	29.91%	30.73%	29.69%	2.78%	0.22%
Maximum	34.87%	31.43%	32.93%	31.22%	3.83%	0.32%
Minimum	31.84%	28.56%	28.01%	28.34%	1.93%	0.13%
Standard Deviation	1.13%	1.15%	1.82%	1.18%	0.72%	0.06%
Number of observations	7	7	7	7	7	7

*This is computed as a proportion of population above 6 years.

Source: PCA 1991, PCA 2001 and Authors' Computations.

Table 1.4 summarizes workforce participation rates for all the 36 ULBs in Chennai UA. We observe that, for the UA as a whole, the workforce participation rate is higher than it is for the selected ULBs (with or without the Corporation of Chennai), while the main worker participation rate has declined in the UA as a whole during 1991-2001, even when it increased in the selected ULBs (see Tables 1.3 and 1.4). The primary culprits for the decrease in workforce participation

preceding the enumeration but did not work for a major part of the year (those that worked for less than 183 days or six months).

rates are Nandambakkam and Chinnaserkadu (not included in the set we study). Based on the information we had, it was difficult to conclude why this was the case.[3]

Table 1.4: Workforce Participation Rates, All ULBs, Chennai UA

Workforce Participation, Chennai UA ULBs, with Corporation of Chennai						
Summary Statistic	**Total Workforce Participation Rate***		**Main Worker Participation Rate***		**Marginal Worker Participation Rate***	
	2001	**1991**	**2001**	**1991**	**2001**	**1991**
Average	34.13%	30.48%	29.85%	30.34%	4.27%	0.15%
Maximum	39.29%	36.97%	34.78%	36.08%	16.95%	0.89%
Minimum	30.32%	22.78%	15.68%	22.78%	0.94%	0.00%
Standard Deviation	2.35%	2.80%	3.56%	2.72%	3.28%	0.25%
Number of observations	36	36	36	36	36	36
Workforce Participation, Chennai UA ULBs, without Corporation of Chennai						
Summary Statistic	**2001**	**1991**	**2001**	**1991**	**2001**	**1991**
Average	34.12%	30.48%	29.80%	30.33%	4.32%	0.15%
Maximum	39.29%	36.97%	34.78%	36.08%	16.95%	0.89%
Minimum	30.32%	22.78%	15.68%	22.78%	0.94%	0.00%
Standard Deviation	2.38%	2.84%	3.60%	2.76%	3.32%	0.25%
Number of observations	35	35	35	35	35	35

* Population in the working age group means population above 6 years.
Source: PCA 1991, PCA 2001 and authors' computation

Economic Base

The economic base of cities has implications for their revenue raising capacity as well as their expenditure needs. Some cities are more industrial and for this reason could be more polluting than others, but they might also have a larger revenue base. The economic base of ULBs in the Chennai UA is mostly agricultural or agro-based as is evident from the distribution of economic activity in Table 1.5. This table summarizes that 5 out of the eight ULBs we have selected for the study have a manufacturing base. While Ambattur is listed as having an agricultural base (manufacturer of clothes), based on our field visit, this ULB has an equally big

[3] In the 1991 town directory, the proportion of workers by industry sector (e.g., manufacturing (household-based, manufacturing (non-household based), services by sector, transport, communications, trade, commerce, and so forth). The 2001 directory provides the specific activity of every town (e.g., it provides the list of commodities manufactured, exported and imported). While the 2001 town directory information is certainly more superior, it was difficult for us to map these into the 1991 industry sectors and attribute a decrease in workforce in these ULBs during 1991-2001, to a sectoral shift defined in different ways.

industrial base which entails manufacturing of cycles and associated parts. When we take into account the economic base of the entire UA (consisting of all the 36 ULBs), we find that more than half (20 out of the 36) of them have a primary resource base while 30 percent (11 out of 36) had a manufacturing base as of 2001. We did not have information on five of them. Thus based on the selected ULBs, we have five out of the eleven ULBs in the UA with manufacturing base in our sample. This should come as no surprise since we expect the central city around Chennai Municipal Corporation to be the most industrialized part of the UA. This also means that one may expect the resource base of revenue raising capacity to be higher in the case of all these ULBs which have manufacturing as their base. This is because in India, agricultural income is not subject to taxation except in certain states.[4] Even there, revenues from taxation of agricultural income accrue to the states, not the ULBs.

Table 1.5: Economic Base of Selected ULBs in Chennai UA, 2001

Sector	Number of Local Bodies
Agriculture or agro-based/natural processing industries	3 (Ambathur, Pallavaram, Madavaram)
Manufacturing	5 (Chennai Municipal Corporation, Avadi, Tiruvottiyur, Alandur, Tambaram)

Source: Census of India Town Directory, 2001.

Physical Characteristics

Next, we reviewed the physical characteristics of the UA, since the relative dryness of an area has implications for public services such as water supply. For example, the semi-arid regions of Saurashtra have always been rain deficient and are water starved. Such conditions can raise the cost of providing water supply. Given that we are unable to control for these conditions econometrically, we review a summary picture of these characteristics, to enable us to make a general assessment.

Table 1.6 summarizes the physical characteristics for the Chennai UA, the maximum and minimum temperatures, the average rainfall and the differences between the maximum and

[4] Under the provisions of Section 10(1) of India's Income Tax Act, agricultural income is fully exempt from income tax. However, for individuals or Hindu undivided families (HUFs) when agricultural income is in excess of Rs 5,000, it is aggregated with the total income for the purposes of computing tax on the total income in a manner which results into "no" tax on agricultural income but an increased income tax on the other income. Retrieved from http://www.rediff.com/money/2007/apr/20tax.htm, December 28, 2007. Karnataka is one of five Indian states levying agricultural income tax under entry 46 of the Second List of the Seventh Schedule of the Constitution. Other states levying such a tax today are Tamilnadu, Kerala, Assam and West Bengal.

minimum temperatures, for the ULBs that have been selected for the study and for all the 36 ULBs of the Chennai UA, for purposes of comparison.

The interesting finding is that there is indeed not much of a difference between the average and maximum rainfall in the Chennai UA (at least in the set of the selected ULBs). While the UA receives more rainfall than the national average (which was 1,139 millimeters of rainfall for 2001), the mean maximum temperature (at 42 degrees centigrade) is higher than the national mean at 37 degrees. These factors point to the general dryness of the region, which imply higher costs of producing water. While the Municipal Corporation of Chennai has access to sea water, it has to be desalinized for potability, which is an expensive process.

Table 1.6: Physical Characteristics, ULBs, Chennai UA, 2001

Selected ULBs, Chennai UA				
Summary Statistic	**AVG_RAIN (in Millimeters)**	**MAX_TEMP (in Centigrade)**	**MIN_TEMP (in Centigrade)**	**Temdiff01**
Average	1,363.57	38.98	19.24	17.47222
Maximum	1,413.2	42	20.4	23.2
Minimum	1,104.9	37.5	18.5	10
Standard Deviation	106.42	1.82	0.82	4.00
Number of observations	8	5	5	8
All ULBs, Chennai UA				
Average	1,323.55	39.16	20.04	17.81
Maximum	1,500.00	49.80	25.00	32.30
Minimum	620.00	33.60	15.20	9.00
Standard Deviation	187.36	3.06	2.59	5.01
Number of observations	36	26	28	36

Source: Census of India Town Directory, 2001, and Authors' Computations.

Education

The provision of primary and secondary education is the responsibility of the state government in Tamilnadu. Despite this, given a city's literacy level has impacts on its newspaper readership, and awareness of the general level of public services, we reviewed the state of primary education in the Chennai UA at the level of the ULBs, based on data from the 2001 town directories. The 2001 town directory consists of information regarding the number of primary, secondary and middle schools by town. Table 1.7 summarizes this and the population coverage by schools in the selected ULBs of the UA. Clearly, the Municipal Corporation of Chennai has the largest number of schools in absolute terms, with more than 70 percent of all schools in the UA locating there, however population coverage by schools is better in smaller ULBs (such as

Madavaram where every 1,619 persons are covered by a school), followed by Corporation of Chennai where there are 1,721 persons for every school.[5] While the Corporation of Chennai fares well when compared with the national average of 1,800 persons per school, by far, population coverage by schools is the worst in Alandur (where there is a school for every 6,649 persons), a municipality known to be progressive, having developed a unique model of implementing a sewerage system through citizen participation for capital costs, and which has been the topic of other studies (see Monitor 2005, for instance).

Table 1.7: Availability of Primary, Secondary and Middle Schooling, ULBs, Chennai UA

Schools in Chennai UA, Selected ULBs (including Municipal Corporation of Chennai)		
Summary Statistic	**Total number of schools**	**Population per school**
Average	371.63	2,991.69
Maximum	2,524.00	6,649.41
Minimum	22.00	1,619.00
Standard Deviation	870.05	1,713.23
Number of observations	8	8
Schools in Chennai UA, Selected ULBs (excluding Municipal Corporation of Chennai)		
Summary Statistic	**Total number of schools**	**Population per school**
Average	64.14	3,173.23
Maximum	104.00	6,649.41
Minimum	22.00	1,619.00
Standard Deviation	27.14	1,765.44
Number of observations	7	7

Source: Census of India Town Directory, 2001, and Authors' Computations.

While primary, secondary and high schools give an indication of the spread of literacy, higher education enables residents to discern between good and poor quality public services. We examined the availability of the number of colleges (including arts, science, commerce, law, engineering, polytechnic and medical colleges), universities, and other colleges offering degrees, in the ULBs of the Chennai UA. Table 1.8 summarizes this for the selected ULBs first by including the central city, and then for the selected ones without Chennai Corporation.

[5] It would have been relevant to observe the number of schools and colleges for children in the school going age group, 6-14. While the number of persons below the age of 6 by town is available in the Census PCA, the entire age distribution of population by town was not available in the 2001 Census town directory. These data are typically published as part of migration tables, which are not yet published by city by the Census. Hence we had to satisfy ourselves with this broader measure indicating population coverage by schools and colleges.

Table 1.8: Institutions of Higher Education, Selected ULBs, Chennai UA

Colleges in Chennai UA, Selected ULBs (including Municipal Corporation of Chennai)		
Summary Statistic	**Number of Colleges**	**Population per College**
Average	19.00	75,478.13
Maximum	132.00	212,281.00
Minimum	0.00	32,771.86
Standard Deviation	45.71	66,297.79
Number of observations	8	7
Colleges in Chennai UA, Selected ULBs (excluding Municipal Corporation of Chennai)		
Summary Statistic	**Number of Colleges**	**Population per College**
Average	2.86	82,573.42
Maximum	7.00	212,281.00
Minimum	0.00	32,771.86
Standard Deviation	2.41	69,653.39
Number of observations	7	6

Source: Census of India Town Directory, 2001, and Authors' Computations.

As with schools, Table 1.8 shows that while the Municipal Corporation of Chennai has the largest number of colleges, with 80 percent of all colleges in the UA being located there, the coverage of population with institutions of higher education is best in one of the smaller ULBs, Avadi, at 32,770 per college. So it does appear that even with its 132 colleges, Chennai needs many more to meet the increasing demands of an educated population. Indeed we find that in many smaller ULBs such as Alandur and Tambaram, there are no colleges, with the result that they have to depend on commutes to Chennai for this. Other smaller ULBs (such as Tiruvottiyur) have a few institutions of higher education, but they are all highly inadequate, when compared with the national average of 29,116 persons per college (calculated from the 2001 census town directories).

The evidence with regard to education infrastructure in Chennai UA thus casts doubt on the awareness in Chennai UA, both of residents regarding the levels of public services, and more specifically of their ability to discern between good and poor quality public services.

Water Supply and Sewerage

We had information available in the 2001 town directory regarding the sources of water supply and type of sewerage systems by town. The eight ULBs we have selected for purposes of our analyses here represent a variety of sources for water supply consisting of tube-wells, taps, and wells. Table 1.9 summarizes the sources of water supply for ULBs in the Chennai UA, first

for the selected ULBs, and then for all the 36 ULBs in the UA. Wells are particularly common in the smaller municipalities. It is not surprising that there is a tap network only in Chennai and in some of the relatively well developed municipalities such as Alandur.

Table 1.9: Sources of Water Supply, Chennai UA

Source of Water Supply, Chennai UA, Selected ULBs	
Source of Water	**Number of ULBs**
Tubewell/Tap	1 (only Chennai Municipal Corporation)
Tubewell	2 (Ambattur, Avadi)
Tap	2 (Alandur, Tiruvottiyur)
Well/Tap	3 (Pallavaram, Tambaram, Madhavaram)
Source of Water Supply, Chennai UA, All 36 ULBs	
Tubewell/Tap	2 (Chennai Municipal Corporation, Kunnathur)
Tubewell	10
Tap	6
Well	13
Tank	2 (Pallikkaranai, Sithalapakkam)
Well/Tap	3 (Pallavaram, Tambaram, Madhavaram)

Source: Census of India Town Directory, 2001.

We also had information on the type of sewerage system prevalent in ULBs of the Chennai UA. Only Chennai Municipal Corporation has a sewerage network even as of 2001, with all the other ULBs being dependent on open surface drains. It is not quite clear why this would be the case. One aspect of governance is that the Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB) is the one that provides water supply and sewerage to the Chennai Municipal Corporation, whereas the smaller ULBs are left to fend for themselves, with merely the expertise being sourced from the CMWSSB.[6] So it does appear that finances might be the problem there. However we reserve this assessment until the last couple of chapters.

Municipal Roads

We had information in the 2001 Census town directory regarding the length (both *kaccha* and *pucca*) of municipal roads by town.[7] Table 1.10 summarizes and presents a description of the length of roads, and road length per thousand population in the selected ULBs of the Chennai UA, first including Chennai Municipal Corporation and then without it. We find something very similar to that found in other metropolitan areas, which is quite common, that the road infrastructure is much better in the central city (Chennai Municipal Corporation) than the

[6] The next chapter contains more information regarding the area of activities of the CMWSSB.
[7] We also checked these data with the primary data we had obtained from the ULBs for a few years, and they are consistent.

surrounding ULBs, in absolute terms. The Municipal Corporation of Chennai has a road length of nearly 3,000 kilometres including both *kaccha* and *pucca* roads, which however translates to a length of only 0.70 kilometres for every 1,000 population, same as a much smaller ULB, Tambaram. In relative terms, smaller ULBs such as Ambattur, Pallavaram and Madavaram have much better coverage in terms of road length of 1.37, 1.24 and 1.23 kilometres respectively, per 1,000 population. So it does appear that the municipal road infrastructure in the metropolis of 4.3 million is clearly inadequate, compared with the growing population and its needs.

Table 1.10: Municipal Road Infrastructure in ULBs of the Chennai UA, 2001

Chennai UA, Selected ULBs (including Chennai Corp.)			
Summary Statistic	**Length of Kutchha Road**	**Length of Pucca Road**	**Road length per '000 population**
Average	17.92	491.33	0.83
Maximum	111	2,920.65	1.37
Minimum	0	14	0.06
Standard Deviation	37.91	989.12	0.44
Number of observations	8	8	8
Chennai UA, Selected ULBs (excluding Chennai Corp.)			
Average	4.62	144.28	0.85
Maximum	14.85	421.70	1.37
Minimum	0.00	14.00	0.06
Standard Deviation	5.14	131.57	0.48
Number of observations	7	7	7

Source: Census of India 2001 town directory and Authors' Computations.

Lighting

As discussed earlier, the Census of India town directories are a valuable repository of information regarding various aspects of public services including road lighting. While we had information only on the number of lighting points, and not the distance between them, we computed household coverage with street lights as the measure of service here. Table 1.11 summarizes this measure we come up with, for the selected ULBs of the Chennai UA, and present this with and without the central city, Corporation of Chennai.

As before, while in absolute terms, the number of lights is the highest in the Chennai Municipal Corporation at nearly 80,000, when we examine the coverage of households with street lights, it is best in some of the smaller ULBs such as Ambattur (which also has better municipal road networks and coverage). When we combine this with information from our field visits, Ambattur is by far the most industrialized of all the ULBs, with a number of properties in some of

the richer suburbs of UA, hence is also the provider of some of the best public services including municipal roads and road lighting. The worst provider of lighting is one of the smaller ULBs (Tiruvottiyur) where there is lighting for every 16 households, compared with Ambattur where there is public lighting for every 4 households, and some of the smaller ULBs where the coverage is much better. Indeed household coverage with public lighting is much better in the smaller ULBs than in the central city (Chennai Municipal Corp.) where there is road lighting only for every 12 households, as of 2001, and is the second worst (Table 1.11). We probe as to why this could be the case in the forthcoming chapters on expenditure needs and gaps.

Table 1.11: Road Lighting and Household Coverage, ULBs, Chennai UA

Chennai UA, Selected ULBs (including Chennai Corp.)		
Summary Statistic	**Road Lighting (Points)**	**Households per road light**
Average	17,247.43	8.57
Maximum	79,303	16.85
Minimum	2,912	4.18
Standard Deviation	27,845.26	4.61
Number of observations	7*	7
Chennai UA, Selected ULBs (excluding Chennai Corp.)		
	Road Lighting (Points)	**Households per road light**
Average	6,904.83	7.98
Maximum	17,606	16.85
Minimum	2,912	4.18
Standard Deviation	5,646.97	4.74
Number of observations	6	6

Source: Census of India 2001 town directory and Authors' Computations.

Note: We decided to exclude Pallavaram from this analysis, given the lack of reliable data on road lighting for this in the 2001 Census of India town directory.

Overview of Report

The rest of this report is organized as follows. Chapter two deals with the CMWSSB, its finances and state of physical service delivery as it relates to water supply and sewerage, given it is entrusted with the responsibility of providing water supply and sewerage, to the central city, the Corporation of Chennai. Chapter 3 deals with expenditure needs and gaps. Chapter 4 analyzes revenues, chapter 5 provides an assessment of fiscal health, summarizes data caveats and contains concluding remarks.

CHAPTER 2: WATER SUPPLY

Introduction

In Chennai, the Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB) is entrusted with the responsibility of providing water supply to the central city, the Corporation of Chennai. The Municipal Corporation of Chennai hence does not have this expenditure responsibility. So this institutional arrangement is likely to have significant impacts on the expenditure needs, and revenue capacities of the Corporation of Chennai vis-à-vis the other ULBs in the Chennai UA that provide water supply and sewerage services on their own. Hence this matter deserves further attention. This chapter focuses on the CMWSSB, the physical level of services of water supply and sewerage, and the CMWSSB's finances.

Physical Level of Services

Several rivers -- Kosathalaiyar, Cooum and Adyar pass through Chennai and they are the main sources of water to the city. At the middle of the 19th century, the state government of Tamilnadu accepted a proposal to tap the Kortalayar river which is situated about 160 km north west of Chennai. That was the starting of purified water supply, after which many improvements were taken to improve its quality.

Until 1978, the Municipal Corporation of Chennai had the responsibility of providing water supply. In 1978 Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB) was established under an Act of Tamil Nadu (Act 28) as a statutory Body for exclusively attending to the growing needs of and for planned development and appropriate regulation of water supply and sewerage services in the Chennai Corporation area.[8]

Table 2.1 summarizes the physical level of water supply in Chennai during 2000-01 to 2005-06. The supply of water per day in the city has been undulating, while the demand has been continuously increasing. As 2005-06, the demand-supply gap is nearly 400 MLD. We observe that the duration of water supply has not significantly changed since 2000, at 2 hours per day. In the recent years, the range of the duration of water supply has increased to anywhere between 2-4 hours, which means that there are spatial and seasonal variations, despite the fact tat nearly all of the city is covered with water supply network. The city has switched over from an alternative day to daily supply of water only from 2005 onwards. The water consumption is 63.13 litres per capita daily in 2005-06, which is very low, when considered against a norms of 135 LPCD recommended by India's National Commission on Urbanization

Table 2.1: Availability of Potable Water Supply, COC

Year	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
Population (in Million)	4.85	4.99	5.07	5.14	5.18	5.28
Supply (in million liters) per day (yearly average)	200.14	155.14	292.23	140.4	166.5	383.05
Duration of Supply (hours per day)	2	2	2	NA	3	2-4
Flow of Supply (intermittent/ continuous)	Continuous	Alternative day supply from Dec.2000 to May 2001. Daily supply from June to Dec 2001	Continuous	Mobile water supply	Only mobile water supply from 18.12.03 to 12.10.04. Alternative supply from 13.10.04	Daily supply from 1.11.05
% of losses due to leakages and thefts	30%	10% to 15%	10% to 15%	10% to 15%	10% to 15%	10% to 15%
Demand (in mld) @ 1510lpcd	727.5	748.5	760.5	771	777	792
Number of metered connections	10192	10392	10722	12312	12217	12797
No. of Household connections (including metered connections)	318025	325014	343893	369325	388656	411798
Number of Commercial Connections	19,622	20,057	20,643	21,341	22,915	22,266
% of City's households covered with water connections	95	96	97	98	98	99
% of City's population covered with water supply	98	98	98	99	100	100
Per day per capita water consumption (Yearly average)	41.27	31.09	57.64	27.32	32.14	72.55

Source: CMWSSB

A few points need to be highlighted as they relate to metered connections, household and commercial connections for water supply summarized in Table 2.1. The number of metered connections includes both household as well as commercial connections. So overall, as of 2005-

[8] http://www.chennaimetrowater.tn.nic.in/

06, only 12,797 (or less than 3 percent of 434,064 (411,798 (household) + 22,266 (commercial) connections) are metered. This trend of a low proportion of metered connections is valid for the entire time period which Table 2.1 covers.

CMWSSB: Finances

As explained earlier, the Board spends all its money only in the Chennai corporation area. While the Board provides services for construction and related work on water supply and sewerage in the surrounding municipalities also, it gets reimbursed for this work for the other ULBs. In this sense, the CMWSSB provides only the required expertise for execution of the smaller ULBs' projects.

Clearly the water tariff is one of the most important revenue sources for the CMWSSB. There are different categories for metered and non metered connections. The metered and non metered connections rates are different for residential (domestic or flat), commercial and institutional users. Table 2A.1 in the Appendix at the end of this chapter summarizes the water tariff rate for metered connections, following this, Table 2A.2 summarizes tariffs for unmetered connections. Where water connections are not provided, a tariff is charged only for sewerage services. Table 2A.3 in the Appendix summarizes sewer tariffs where there are no water connections.

Apart from water tariff collected from users (which is part of its own source funds), the CMWSSB gets borrowed funds from financial institutions. Water charges and water and sewerage taxes are collected from property owners in Chennai Corporation, based on the annual value assessed by Chennai Municipal Corporation. Besides, the CMWSSB gets non operating revenues through sale of tender forms, sale of scrap and interest on investment. The revenues are utilized to meet operating expenditures such as power, chemicals, operations and maintenance, salaries, interest on loan, office and administration. For construction of new schemes or for creation of additional infrastructure, the CMWSSB gets grants or contributions.

The board can borrow funds from financial institutions i.e. Tamilnadu Urban Finance and Infrastructure Development Corporation (TUFIDCO), nationalized banks and Life Insurance Corporation of India. CMWSSB also gets loans from the Government of Tamilnadu as part of its annual plan. The board can also raise funds by way of issue of bonds, debentures and stocks.

Tables 2.2 and 2.3 summarize respectively the finances and capital expenditures of the CMWSSB. Table 2.2 summarizes the revenue and operation and maintenance expenditures of the CMWSSB. On average, per capita real revenue income of the Board has not increased significantly whereas per capita revenue and O&M expenditures have continuously increased.

Table 2.3 summarizes the capital expenditure spent in Chennai corporation area. The capital expenditures on water supply and sewerage have continually declined, in per capita real terms, excepting a couple of years. When the supply of water is intermittent and quite inadequate (as observed by the demand-supply gap in Table 2.1), it is not clear what explains the low capital expenditure on water supply projects in per capita real terms.

Table 2.2: Summary of CMWSSB Finances

	Per Capita Expenditure and Income (With 1999-00 Constant Prices) (In Rs.)						
	1999-2000	**2000-01**	**2001-02**	**2002-03**	**2003-04**	**2004-05**	**2005-06**
Revenue Income	439.25	493.31	392.95	414.34	434.64	466.17	489.74
Grants	NA	NA	NA	21.19	17.38	14.06	22.16
Total	439.25	493.31	392.95	435.53	452.02	480.23	511.90
(O & M) Exp	104.19	129.63	241.41	125.76	289.31	454.69	155.97
Revenue Exp	318.90	328.20	319.70	336.59	331.01	330.61	342.77
Total Exp	428.29	463.13	563.44	462.35	620.64	785.30	498.74

Source: CMWSSB, and Authors' Computations.

Table 2.3: Per Capita Actual Capital Expenditure, CMWSSB

(With 1999-00 Constant Prices) (In Rs.)							
	1999-00	**2000-01**	**2001-02**	**2002-03**	**2003-04**	**2004-05**	**2005-06**
Water Projects	444.34	335.10	116.08	128.30	1,033.17	389.78	109.46
Sewer Projects	195.89	187.00	168.88	116.94	161.15	226.15	94.71
Total	640.22	542.13	291.98	255.10	1,276.81	671.61	224.18

Source: CMWSSB, and Authors' Computations.

Note: Here we have used three different ratios to deflate water supply expenditure, sewerage expenditure and total expenditure. For deflating water supply expenditure, the sectoral deflator for "water supply, gas and electricity" (for Chennai district in which the COC is located) has been used. For purposes of deflating expenditure on sewerage, the deflator ratio of "other services" for the relevant district has been used. For deflating total expenditure, the ratio of current to constant, total GDP deflator ratio for Chennai district, has been used.

For purposes of calculating expenditure needs and gaps in Chapter three, expenditures on water supply and sewerage were deflated by the "water, gas and electricity" and "other services", as done in the Table 2.3. However, for our calculation of expenditure need and expenditure gap in Chapter three, we added the deflated expenditures on water supply and that on sewerage. Hence there is a small discrepancy in the total capital expenditure on water and sewerage given in table 2.3 and that used for calculation of expenditure needs and gaps in Chapter three.

While CMWSSB also provides sewerage services to the Chennai Corporation area, we observe in Table 2.3 that capital expenditure on water supply projects have almost always taken precedence over those of sewerage. There are a few sewerage treatment plants, with their present capacity at 486 MLD.

Table 2.4 compares the sewerage system of the city in 1978 and 2007. Clearly the area covered by sewerage has increased to cover the entire city. However, in terms of household coverage, the sewer system extends to only about 54 percent of the households, even if we compare the 2007 dwellings with sewer connections (5,15,560, Table 2.4) with the 2001 number of households (9,62,213, from the Census) in the Corporation of Chennai. So while in terms of land area, the sewer coverage seems complete, population coverage is hardly adequate. This casts doubt on the adequacy of capital spending on sewer projects (see Table 2.3).

Table 2.4: Comparison of Sewerage System, Municipal Corporation of Chennai, 1978 and 2007

Service Measure	1978	July 2007
Area covered	74%	99%
Number of dwellings with sewer connections	1,14,000	5,15,560
Length of sewer mains	1,223 km.	2,663 km.
Number of pumping stations	58	180
Number of treatment plants	3	5
Treatment capacity	57 MLD	486 MLD

Source: CMWSSB

The forthcoming chapter on expenditure needs and gaps compares these expenditures with widely accepted norms not only for water supply and sewerage, but also for other locally provided services in the selected ULBs of the Chennai UA.

Table 2.A.1: Water Tariffs for Metered Connections

Category	Quantity of Water	Rate/KL Rs. P.	Minimum rate chargeable(including sewerage charges)Rs. p.	Frequency of billing
Residential (i) Domestic Residential premises , flats or block or line of houses respectively used wholly for residential purposes.	Upto 10KL	2.50	Rs. 50/- per month per dwelling unit (per residential premises or per flat) (including sewerage charges)	Monthly
	11 to 15 KL	10.00		
	16 to 25 KL	15.00		
	Above 25 KL	25.00		
Individual flats or houses in a Block of flats or line of houses respectively used for other than residential purposes.	Partly Commercial –Rs. 150/- per month per flat. Non Water Intensive –Rs. 400/- per month per flat. **Water Intensive**-Rs. 650/- per month per flat. Private Hospital- Rs. 800/- per month per flat. **Institutional**- Rs. 300/- per month per flat. Private educational Institutions- Rs. 400/- per month per flat.			Monthly
B. Commercial	Private Hospital- upto 500 KL Rs. 50/KL		Rs.800/- * (Water Intensive) per month	
	All others upto- 500 KL Rs. 35/KL Private Hospital- above 500 KL Rs. 80/KL for entire quantity. All others- above 500 KL Rs. 60/KL for entier quantity.		Rs.400/- * (Water Intensive) per onth Rs.800/- * (Water Intensive) per month Rs.650/- * (Water Intensive) per month	
C. Partly Commercial	Upto 10KL	Rs. 5.00	Rs. 150 per month	
	11 to 15 KL	Rs. 15.00		
	Above 15 KL	Rs. 25.00		
D. Institutional	Private Education Institution	40.00 per KL entire quantity	400.00 per month	
	Government Hospital	20.00 per KL entire quantity	200.00 per month	
	All others	30.00 per KL entire quantity	300.00 per month	
Municipal Bulk supply	Entire consumption	15.00		
		7.00 (wherever local bodies met the cost of infrastructure)		

*Sewerage charges 25% on water supply charges wherever sewer connections are provided
* Water intensive means premises used fully or partly as theatres, hotels, boarding houses, lodges, clubs, private hospitals, private hostels, *kalyana mandapams*, clinic with inpatient facility, swimming baths, places for keeping animals, vehicle service stations, nurseries.
Source: http://www. chennaimetrowater.tn.nic.in/finance/financemain.htm

i	Hydrant and Public Fountains	Rs.400/-per fountain per month including maintenance charges	Monthly
ii	Maintenance charges		
G	i. Mobile Water Supply to Slums ii. Maintenance charges for steel tanks	Rs.4/- per 1000 litres for entire quantity supplied. Rs.200/- per month per tank	Monthly Monthly

H. CASUAL WATER SUPPLY	
Mobile Water supply to customers i. Domestic (Including Hostels of Colleges and Schools Recognized by State/Central Government /Government Others. etc. ii. Partly Commercial a) Domestic purpose b) Other than Domestic purpose iii. Commercial (Including Private Hospital) iv. Institutional a) Private Educational Institution including Hostels b) Govt. Offices/Schools/Colleges/Hospitals etc. **v. Water supply at the Metro water filling points** a)Domestic Including Govt. Schools/Colleges/Offices/Institutions/ Hospitals b)Commercial Including Private Hospitals / Private Educational Institutions. vi. For the employees of the Chennai Metropolitan Water Supply and Sewerage Board who desires to avail the lorry water supply for their own household requirements, the cost will be calculated at actual cost price.	Rs.400/- per load of 6000 litres/ Rs.600/- per load of 9000 litres/Rs.670/- per load of 10000 litres. Rs.400/- per load of 6000 litres./ Rs.600/- per load of 9000 litres/Rs.670/- per load of 10000 litres. Rs.510/- per load of 6000 litres /Rs.765/- per load of 9000 litres/Rs.850/- per load of 10000 litres. Rs.510/- per load of 6000 litres/Rs.765/- per load of 9000 litres./ Rs.850/- for per load of 10000 litres. Rs.510/- per load of 6000 litres/Rs.765/- per load of 9000 litres./ Rs.850/- for per load of 10000 litres. Rs.400/-per load of 6000 litres./Rs.600/- per load of 9000 litres/Rs.670/- per load of 10000 litres. Rs.40/- per 1000 litres. Rs.60/ per 1000 litres. Rs.200/- per load of 6,000 ltrs. Rs.300/- per load of 9,000 ltrs.
Hire charges for tanks hired out	Rs.250/- for two days and Rs.50/- for every additional day.

Source: http://www. chennaimetrowater.tn.nic.in/finance/financemain.htm

Table 2.A.2: Water Tariffs for Unmetered Connections

Category	Water Charges / month (including sewerage charge)	Frequency billing
A. Domestic		
Residential (i)Domestic Residential premises (Other than Flats or Block or line of Houses)	Rs.50/- per month per dwelling unit	Half yearly
(ii) Flats or houses in a Block of flats or line of houses respectively used wholly for residential purposes.	Rs.50/- per month per flat	Half Yearly.
(iii) Individual flats or Houses in a Block of Flats or line of houses respectively used for other than residential purposes.	Partly Commercial Rs.150/- per month per flat Non Water Intensive Rs.400/- per month per flat Water Intensive (All others) Rs.650/- per month per flat Private Hospital Rs.800/- per month per flat Institutional Rs.300/- per month per flat Pvt. Educational Institution Rs. 400/- per month per flat	Half yearly
B. Commercial	Water Intensive Private Hospital Rs.800/- per month All othersRs.650/- per month Non Water Intensive All OthersRs.400/- per month	Half yearly
C. Partly Commercial	Rs.150/-p.m	Half yearly
D. Institutional	i) Pvt. Educational Institution-Rs.400/- ii) Govt. Hospitals- Rs.200/- iii) All others- Rs.300/-	Half yearly
Public supply Tube Well Pumps or Mark II pumps	Rs.40/- and Rs.10/- month was additionally taken for sewerage.	Half yearly

Source: http://www. chennaimetrowater.tn.nic.in/finance/financemain.htm

Table 2.A.3: Sewerage Service Charges*

Category of Consumers	Charges	Frequency
a. Domestic	Rs.25/- p.m.	Half yearly
b. Non domestic others	Rs.150/- p.m.	-do-
c. Non domestic with water main (Water Intensive**)	Rs.650/- p.m.	-do-

Source: http://www. chennaimetrowater.tn.nic.in/finance/financemain.htm

***** These are applicable where there is no water supply connection.
**Water intensive means premises used fully or partly as theatres, hotels, boarding houses, lodges, clubs, private hospitals, private hostels, *kalyana mandapams*, clinic with inpatient facility , swimming baths, places for keeping animals, vehicle service stations, nurseries.

Rates of Taxation (per annum)

1) Water Tax 1.5% of assessed annual value.

2) Sewerage Tax 5.5 % of assessed annual value

Surcharge

2% per month on recurring basis for the belated payment for water and sewerage. Tax and other than domestic categories including metered and 1.5% per month for Domestic category upto 31.3.03 and reduced to 1.25% per month from 1.4.03 for all category of consumers/ assesses.

The Board is empowered to levy Surcharge towards belated payment as per Section 81(2)J of CMWSS Act 1978 and the same confirmed vide Judgment in W.P.No.17906/2000, and WMP.No.25965 of 2000, dated 3.12.2002.

Sales of water through lorries :- Within 24 hours

Category	Amount/ Per load of 9 KL	Amount/ Per load of 10 KL
Domestic (including Hostel of Colleges and Schools Recognized by State/Central Govt./Govt. Qtrs. Etc.)	Rs 600/-	Rs 670/-
Partly Commercial		
Domestic purpose	Rs.600/-	Rs.670/-
Other than Domestic purpose	Rs.765/-	Rs.850/-
Commercial (including private Hospitals)	Rs.765/-	Rs.850/-
Institutional		
Private Educational Institutional incl. Hostels etc.	Rs.765/-	Rs.850/-
	Rs.600/-	Rs.670/-

Source: http://www.chennaimetrowater.tn.nic.in/finance/financemain.htm

CHAPTER 3: EXPENDITURE NEEDS AND GAPS

In the case of Chennai which consists of 36 local governments, given the time and budgetary constraints we had in obtaining data from all the ULBs, we confined our study and assessment of fiscal health to only eight important ULBs, which account for nearly 90 percent of the UA's population, as described in the earlier chapters. With the time-series data we obtained on the various services for these eight ULBs, it was not possible to adopt an econometric approach to estimate expenditure needs. Hence, we adopted a structured case study approach in the case of Chennai, in which we computed expenditure gaps by comparing actual expenditures of the local governments over time, to relevant norms for various services recommended to attain a certain physical level of the service.

In this chapter, we summarize expenditure gaps for water supply and sewerage, solid waste, sanitation, municipal roads and street lighting, comparing the Chennai UA ULBs' actual expenditures on these services, with those generally accepted as norms for cities and towns of their size. Finally, we compare the total expenditure needs with the total actual spending on these services, to arrive at expenditure gaps or needs on a per capita basis. We do this keeping in mind the expenditure responsibility of the ULBs. Since the Municipal Corporation of Chennai does not provide water supply and sewerage, we study expenditure gaps first including water supply and sewerage, and then excluding them, for the Municipal Corporation of Chennai (COC), given that the provision of water supply & sewerage is the responsibility of the CMWSSB. However, for the other ULBs, water supply is part of their own expenditure, hence we present only a single set of expenditure gaps for those. Further, in the other ULBs, there is no underground sewerage system (see Chapter 1), hence none of the other ULBs reported any expenditure on their open surface drains, except Tiruvottiyur for one year. Hence, with the exception of the COC, there are no separate expenditure gaps we could compute for sewerage for the other ULBs. The chapter concludes by summarizing caveats.

When the objective is to assess actual expenditures for the provision of water supply, sewerage, or any other service, we need to compare them with some benchmark expenditure required to meet a certain physical level of these services. For purposes of doing this, we examined and studied various norms for the provision of all relevant services including water supply and sewerage. After a detailed examination during our field visits, discussions with relevant officials, and a review of existing studies relating to this area, we found that very few studies deal with ideal expenditure norms. Our discussion with officials in all cities indicated that while a physical requirement of 135 liters per capita daily (LPCD) (proposed by the National Commission on Urbanization) is broadly followed with respect to water supply, no expenditure

norms are actually used. For other services such as solid waste, sanitation/sewerage, roads and street lights, no expenditure or financial norms were being followed in any of the cities where we visited.

Based on our discussion, we found one study which summarizes various norms for most public services with which we are concerned, a National Institute of Urban Affairs (NIUA) Working Paper, by Mathur et.al. (2007). For water supply and sewerage, solid waste and sanitation, we used norms summarized in Mathur et.al. (2007). These are national norms for these services expressed in per capita terms.[9] Indeed, the first State Finance Commission (SFC) for Tamil Nadu pointed out that some states may have crossed the physical level of services that have been fixed as a National Minimum by some studies. In those cases the norms thus set should not act as a disincentive in further improving the services.

Water Supply and Sewerage

For the selected set of eight local governments in the Chennai UA, for all services including water supply and sewerage, we used different norms for cities of different sizes, corresponding to the size of the respective local governments. For the COC, for water supply, the norm we use is summarized in Mathur et.al. (2007) and is based on a 1995 study by NIUA on the costs of urban infrastructure. Given that the COC is a large city, with Census 2001 population of 4.3 million, we used the norm suggested by the 1995 NIUA study of Rs.1,043.06 per capita (in 2004-05 prices) for the cost of provision of water supply in *large cities*, and the costs of O&M to be Rs.315.93 (in 2004-05 prices) per capita in *large cities*, in order to meet an average of 115-210 litres per capita daily (LPCD).[10]

[9] This paper by Mathur et al (2007) also summarizes state-specific norms adopted by State Finance Commissions (SFCs) by some states whose cities are included in this study. While Tamilnadu is one of these, per capita actual O&M expenditures are summarized for various services -- in 1996-97, for instance, per capita expenditures on water supply were 72/-,64/-, 42/- for Chennai Corporation, other corporations, and municipalities respectively. The corresponding per capita O&M expenditures for solid waste management were 80/-, 98/-, 77/- and those for sewerage and sanitation were 103/-, 62/-, 31/-.The corresponding per capita O&M figures for roads were 48/-, 47/-, 48/- and those for storm water drains were 2/-, 1/-, 2/-, while those for street lighting were 22/-, 19/-, 17/- respectively for COC, other corporations and municipalities. It was not clear if these are in current or constant prices. As is clear, actual allocations or expenditure on these services are summarized as norms. Given we are not interested in actual spending by the corporation (which we have collected for a recent time-series), but in a desired norm, we decided to use the national norms which are disaggregated for various public services and for which expenditures are stated separately for the cost of provision and of operations and maintenance (O&M) in (2004-05 constant prices) summarized by Mathur et.al. (2007). We converted these into 1999-00 prices, to be consistent wth the actual data, which we had also converted into 1999-00 prices.

[10] It is interesting to note from the NIUA (1995)'s norms that the per capita requirements both for cost of provision and O&M keep declining with size of city, reflecting scale economies. For instance, the norm summarized by this study for metropolitan areas is Rs.372.37 per capita for the cost of provision of water

Apart from the central city (the COC), the remaining local governments in the UA are much smaller. Given that it would be inappropriate to apply the same norm for the smaller ULBs as for the COC, for all services, for the other, much smaller ULBs, we used the norms corresponding to *small cities* summarized in Mathur et al (2007), which had Census 2001 populations of 1-4 lakhs, with only one ULB (Madavaram) being in the less than 1 lakh population category as of the 2001 census (described in Chapter 1).

Given the fact that we had data on O&M expenditures on water supply and sewerage for the COC from the CMWSSB, we compared these with the per capita O&M requirement of Rs.315.93 (expressed in the NIUA study in 2004-05 prices per capita) recommended for water supply and Rs.18.41 for sewerage in large cities.[11] Since all our data are in real terms with 1999-00 as the base, we converted these per capita O&M norms from 2004-05 prices, to 1999-00 as the base. In per capita terms, this norm for water supply in *large cities* turns out to be Rs.234.69 in 1999-00 prices, using the deflator for the district of Chennai (in which COC is located), and Rs.15.43 for sewerage. The O&M norms for water supply and sewerage in the smaller ULBs are converted into 1999-00 prices, using appropriate deflators (for water, gas and electricity) for the district in which they are located (these norms in 1999-00 prices vary across the smaller ULBs, depending on the deflator for the relevant district).

We confirmed that the COC is the only recipient of CMWSSB's expenditures on water supply and sewerage, unlike in the case of the HMWSSB whose service area spanned several municipalities. Further, in another difference from the HMWSSB in Hyderabad, we found that the COC does not spend anything by itself on water supply and sewerage, in addition to what is spent by the CMWSSB, unlike the Municipal Corporation of Hyderabad (MCH) and other ULBs in the Hyderabad UA, which reported own expenditures on the service as well, in addition to that spent by the HMWSSB in their areas.

Further, as described earlier, none of the ULBs in the Chennai UA, with the exception of one, reported any expenditure data on sewerage, given that they do not have underground drains, but only open surface ones. We surmised that the O&M expenditures on this must have been quite minimal, hence we got no data on sewerage from the other ULBs (apart from the COC).

We had information regarding actual capital expenditures on water supply by some ULBs (COC, Madhavaram, and Alandur), hence we used norms for the *cost of provision* of water

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supply, and Rs.139.83 (both in 2004-05 prices) for meeting the costs of O&M per capita, both lower than they are for *large cities*.

[11] Expressed in 2004-05 prices and in per capita terms, the O&M norm for sewerage is half of the norm for sewerage and sanitation combined, which is Rs.36.82. The other half, Rs.18.41 is allocated as the O&M

supply in *large* cities (which is Rs.1,043.06 in 2004-05 prices, Rs.774.84 in 1999-00 prices) to benchmark COC's expenditure on water supply and sewerage, and norms for the cost of provision of water supply in *small cities* (which is Rs.888.94 (in 2004-05 terms, per capita), to compare against the estimated cost of provision in the smaller ULBs (which was Rs.659.83 or Rs.659.35, depending on the deflators for districts in which they are located). We deflated both the capital (cost of provision) and O&M norms for smaller cities using the price index for water, gas and electricity for the districts in which the ULBs are located.

Table 3.1 summarizes the various norms we have used for water supply and sewerage, for ULBs of varying sizes, for the cost of provision and O&M, of both water supply and sewerage, in 1999-00 prices.

Table 3.1: Norms for Water Supply and Sewerage Used, by City Size

Size of city→ Capital/O&M Norm↓	**Large cities (Rs. Per Capita, in 1999-00 Prices)**	**Small cities (Rs. Per Capita, in 1999-00 Prices)**
Water Supply:		
Capital	774.84	659.83 (Tiruvallur district ULBs); 659.35 (Kanchipuram district ULBs)
O&M	234.69	191.85 (Tiruvallur district ULBs); 191.71 (Kanchipuram district ULBs)
Sewerage:		
Capital	90.03	115.05*
O&M	15.43	19.91*

* Same for all districts, to two decimal places.

Sources: NIUA (1995) study on "Costs of Urban Infrastructure" obtained from Mathur et al (2007), Directorate of Economics and Statistics, Government of Tamilnadu, and Authors' Computations.

Given that the COC maintained its financial records combined for water supply & sewerage, we added the norm for sewerage to that for water supply, to compare COC's expenditures on this service. For sewerage/drainage, we used the norm developed by NIUA (1995) for the cost of O&M on sewerage/sanitation and divided the norm equally between sewerage and sanitation. The norm for sewerage was added to that for water supply, and used for comparison against actual expenditures on water supply and sewerage/drainage, and the sanitation part of the norm was added to that on sanitation.

The norm summarized by NIUA (1995) for sewerage, is Rs.36.82 per capita for O&M on sewerage/sanitation in *large* cities (in 2004-05 prices). We converted this to 1999-00 prices, using

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norm for sanitation (in per capita terms, 2004-05 prices). This is also explained in greater detail in the section on sanitation.

the appropriate price index for the district in which the COC is located, and the O&M norm turns out to be Rs.30.86 in 1999-00 prices (see Table 3.1). The relevant norm for sewerage is half of this (with the other half allocated to sanitation), Rs.15.43 per capita. The relevant norm for the cost of provision of sewerage in large cities (cities of COC's size) is Rs.180.06 per capita (in 1999-00 prices). As with O&M, we divided Rs.180.06 into half and allocated Rs.90.03 for the cost of provision of sewerage (with the remaining Rs.90.03 allocated as the norm for the provision of sanitation). For the smaller ULBs, the sewerage (or sanitation) O&M and the cost of provision norms (of sanitation or sewerage) are different, depending on which district they happen to be in (see Table 3.1).

We compared actual expenditures on water supply and sewerage, against these norms combined, by ULB. Table 3.2 summarizes the per capita expenditures on water supply, and expenditure gaps, when compared with the relevant norms (summarized in Table 3.1) for water supply (O&M expenditures) by all local governments in the Chennai UA for which reliable data are available. It should be noted that expenditures on water supply and sewerage were available for COC whereas for the other ULBs (with the exception of Tiruvottiyur, for which sewerage expenditures were available for just one year, 1999-00), Table 3.2 summarizes their expenditure and relevant norms for water supply only. As described earlier, the other ULBs, given the fact that they have no sewerage networks in place, did not report any expenditure (at least it was not available because it was probably very small) on sewerage. Keeping these caveats in mind, Table 3.2, which summarizes the expenditure gaps for water supply and sewerage, presents some interesting issues.

On average, the per capita O&M norm for both water supply and sewerage is Rs.250 for COC (that is, for large cities). However, after accounting for expenditure of the CMWSSB, taking into account O&M, on both water supply and sewerage, the average real per capita expenditures of roughly Rs.214 by the COC, are well below the norm, recommended in order to attain a water supply standard of anywhere between 115-210 LPCD. For the COC, the per capita expenditure gap on water supply and sewerage (Rs.36) translates to an additional Rs.158 million, at the average population (4,398,676) for the COC, we projected during 1999-2005. Given the COC spends nothing on water supply and/or sewerage, apart from what is spent by the CMWSSB, it might need to change this, taking into account widely accepted norms. Alternatively the CMWSSB has to scale up its expenditure substantially over and above what it is currently spending on water supply and sewerage.

While this is the situation with the central city, it comes as no surprise that the other smaller ULBs are not in a position to spend adequately in relation to the norms. The average

expenditure in per capita real terms on water supply (O&M) by the non-COC set of ULBs, is only Rs.21 in per capita in real terms (in 1999-00 prices). Thus not surprisingly, the expenditure gap (of Rs.171) for the non-COC set of ULBs translates into an additional Rs.33 million (in 1999-00 real terms) on water supply alone, over and above what they are currently spending, at their average population (196,442 which we projected for 1999-05). It should be clear that only because of the low spending by the non-COC set of ULBs, the per capita expenditure gap for spending on water supply by all ULBs turns out to be nearly Rs.146. Of course, it is possible that if the non-COC set of ULBs had supplied us with their expenditures on sewerage, the gaps may have been less.[12]

Unsurprisingly, only the COC, due to the CMWSSB, is able to spend well above the norm for water supply and sewerage during a couple of years (2003-04 and 2004-05, see Table 3.2), when it has positive expenditure gaps (meaning a surplus of expenditure over the norms) of Rs.39 and Rs.205 respectively, in real terms, on a per capita basis. It is a different question if the level of water supply was also better in these two years. We did revisit Table 2.1 which summarizes the physical state of water supply in the COC over a time period, and find that it was following these two years that the COC indeed switched over to daily water supply, from what was an alternative day supply system until then, and an increase in the consumption of water from 32.14 in 2004-05 to 72.55 liters per capita daily (LPCD) in 2005-06. It is possible that with increases in O&M expenditures (which presumably refers to fixing of broken and leaky pipes), there is a reduction in the leakages and losses, resulting in a higher net consumption to the consumer. However we are not reviewing capital projects here. We quickly review below, capital expenditures in the ULBs of the Chennai UA, for which we had the relevant information, against the required norms covering the cost of provision.

We had information on the actual *capital* expenditures by the CMWSSB in COC and that by a few other ULBs on water supply and/or sewerage for some years, which on average, was Rs.487 per capita (in constant 1999-00 terms) (Table 3.3).[13] When all ULBs are taken into account and their actual capital expenditures on water supply/sewerage compared against the norms summarized in Table 3.1, there is a gap of nearly Rs.94 per capita. This capital expenditure gap for water supply or sewerage in the various ULBs of the Chennai UA is an additional Rs.75

[12] However the meticulous reader should note that wherever expenditure on sewerage was not available, the expenditure gaps were calculated taking into account only norms for water supply. Where both expenditures were available, there both water supply and sewerage norms were used.

[13] Specifically, we had data on capital expenditures both on water supply and sewerage for all years for the COC, and for one year for Tiruvottiyur. For all years for Alandur, capital expenditure is only on sewerage and excludes any information on water supply. The capital expenditure information for Madhavaram and Ambathur are for water supply only, and exclude any information on sewerage.

Table 3.2: Summary of O&M Expenditures on Water Supply and/or Sewerage, All ULBs, Chennai UA

ULB	Year	O & M Exp	Exp.Gaps
COC	1999-00	104.19	-145.94
COC	2000-01	129.63	-120.50
COC	2001-02	241.41	-8.71
COC	2002-03	125.76	-124.36
COC	2003-04	289.31	39.18
COC	2004-05	454.69	204.57
COC	2005-06	155.97	-94.15
Tambaram	1999-00	0.76	-190.95
Tambaram	2000-01	0.75	-190.97
Tambaram	2001-02	0.79	-190.93
Tambaram	2002-03	0.83	-190.88
Tambaram	2003-04	0.82	-190.90
Tambaram	2004-05	0.85	-190.87
Tambaram	2005-06	0.91	-190.80
Tiruvottiyur	1999-00	34.14	-159.95
Tiruvottiyur	2002-03	20.98	-170.88
Alandur	1999-00	8.16	-183.55
Alandur	2000-01	57.20	-134.51
Alandur	2001-02	66.12	-125.59
Alandur	2002-03	65.59	-126.12
Alandur	2003-04	57.72	-134.00
Alandur	2004-05	50.71	-141.00
Alandur	2005-06	50.90	-140.82
Madhavaram	2004-05	22.46	-169.40
Madhavaram	2005-06	24.77	-167.08
Ambathur	2001-02	30.88	-160.98
Ambathur	2002-03	30.30	-161.55
Ambathur	2003-04	28.70	-163.16
Ambathur	2004-05	29.22	-162.64
Ambathur	2005-06	29.49	-162.37
Pallavaram	1999-00	1.20	-190.52
Pallavaram	2000-01	1.01	-190.70
Pallavaram	2001-02	0.84	-190.87
Pallavaram	2002-03	0.70	-191.01
Pallavaram	2003-04	0.58	-191.13
Pallavaram	2004-05	0.46	-191.25
Pallavaram	2005-06	0.21	-191.50
Average, all		**57.27**	**-145.59**
Average, COC		**214.42**	**-35.70**
Average, non-COC ULBs		**20.60**	**-171.23**

Sources: CMWSSB, Other ULBs, and Authors' Computations.

million on average, over and above what the CMWSSB and the individual ULBs are currently spending on the cost of provision of water supply and/or sewerage in COC and the surrounding municipalities respectively. Surprisingly, for the non-COC set of ULBs, there is a positive expenditure gap (surplus) of Rs.27 per capita, while for the COC, taking into account all the years, there is a big expenditure gap of Rs.335 per capita (in 1999-00 prices). This trend is largely due to Alandur, a progressive municipality, which as described in Chapter one, is the first to have developed a unique model of implementing a sewerage system through citizen participation for capital costs, and hence has been able to spend well above the norm for capital projects on sewerage. Only for one year (2003-04) does the COC have a positive expenditure gap of Rs.330, given its spending on a huge capital water supply project of nearly Rs.1,000 per capita (refer to Table 2.3, Chapter 2).

For purposes of expositional clarity, Table 3.3 also presents a summary of capital expenditures on "water supply & sewerage" and that on "water supply" alone (as in the case of Madavaram and Ambathur). Interestingly, even while there is a positive expenditure gap (implying an expenditure surplus) of Rs.156 per capita as it relates to ULBs' spending on water supply and sewerage, there is an expenditure gap of Rs.593 per capita on water supply alone. This again corroborates what is learnt earlier, that the capital spending on sewerage is not the problem, with this outcome largely being due to Alandur. Rather it is spending on water supply that is below the norms required. However, even Alandur lacks an underground sewerage network with its kind of innovatively financed capital spending on sewerage projects. This strongly suggests that it is the history of infrastructure in a ULB that is likely to determine its success in service delivery, rather than finances alone.

One final word before we exit the discussion of water supply and sewerage. Given the fact that in most of the non-COC set of ULBs, expenditure gaps are quite frequently found, one possibility to strengthen the finances of the smaller ULBs and also to consolidate service delivery in the metropolitan area as a whole, might well be to extend CMWSSB's services to the smaller ULBs as well, similar to the HMWSSB. However, if the existing area is not being served well, the case for extending the area of service delivery would be at best weak.

Table 3.3: Capital Expenditure and Expenditure Gaps, Water Supply and/or Sewerage, ULBs, Chennai UA

ULB	Year	Capital Exp	Cap Exp.Gaps
COC	1999-00	640.22	-224.64
COC	2000-01	522.11	-342.76
COC	2001-02	284.96	-579.91
COC	2002-03	245.24	-619.63
COC	2003-04	1,194.32	329.45
COC	2004-05	615.92	-248.95
COC	2005-06	204.17	-660.70
Tiruvottiyur	1999-00	13.70	-761.17
Alandur	2000-01	326.85	195.15
Alandur	2001-02	745.74	618.55
Alandur	2002-03	698.45	574.84
Alandur	2003-04	1,357.46	1232.57
Alandur	2004-05	1,433.26	1311.85
Alandur	2005-06	1,484.28	1361.58
Madhavaram	2004-05	40.72	-619.11
Madhavaram	2005-06	69.19	-590.64
Ambathur	2001-02	81.56	-578.27
Ambathur	2002-03	74.46	-585.37
Ambathur	2003-04	70.74	-589.09
Ambathur	2004-05	66.74	-593.08
Ambathur	2005-06	61.33	-598.50
Average, all ULBs		**487.21**	**-93.71**
Average, COC		**529.56**	**-335.31**
Average, non-COC ULBs		**466.03**	**27.09**
Average, WSS		**697.62**	**156.16**
Average, WS		**66.39**	**-593.44**

Sources: CMWSSB, COC, Other ULBs, and Authors' Computations

Solid Waste Management

We performed a similar exercise for other services as we did for water supply and sewerage, to arrive at expenditure gaps. Solid waste refers to street cleaning, household garbage collection, treatment and disposal. For norms, we relied upon an Operations and Research Group (ORG) (1989) study which suggested norms for waste collection and transportation.

The national norm suggested by ORG (1989) is Rs.60-183 per capita (in 2004-05 prices) for waste collection (depending on the quantity of waste collected) and Rs.165 per capita for transportation of the waste. This assumes average waste generation level of 380 grams per capita

per day.[14] The generation of solid waste in the COC is roughly 500 grams per capita per day. Given this is higher than the higher end of the ORG's estimates, we used the upper end of ORG's estimates for norms relating to solid waste for COC. The norm for solid waste alone (generation, collection and transportation) in a city of COC's size is Rs.348 per capita (in 2004-05 prices), which is Rs.267.37 per capita (in 1999-00 prices), using appropriate deflators for the district in which the COC is located.

For the smaller ULBs, for solid waste, we used the lower end of the norm summarized above, i.e., Rs.60 per capita, and included the cost of transport, Rs.165 per capita, making for a total of Rs.225 per capita for solid waste management in the smaller ULBs (in 2004-05 prices) or Rs.172.87 in 1999-00 prices, using the deflators for the respective districts in which these other ULBs are located.

The *actual* expenditures on solid waste in most of the ULBs were available separately. Hence it was a straightforward exercise to compare actual expenditures on solid waste with the norms, and arrive at expenditure gaps.

Since in the case of solid waste it is difficult to separate the capital from O&M expenditures,[15] we arrived at norms for solid waste for all ULBs, using both O&M, revenue and capital expenditures reported by the ULBs on solid waste, where they were available, using the appropriate city sizes for generation of solid waste per capita.

We compared the norms thus constructed, to the actual expenditures of the local bodies on solid waste. With these caveats in mind, Table 3.4 summarizes the actual per capita expenditures on solid waste by the various ULBs and the expenditure gap, when actual per capita expenditures are compared with the norms summarized above (all expressed in 1999-00 prices).

[14] The approach used by ORG (1989) to arrive at these norms, relies on the estimation of waste collected, and estimates vehicle demand based on transport options in terms of trucks, compactors or matador and trips, with the compactor being the most expensive.

[15] While solid waste removal does involve trucks and cranes, it does not involve very heavy capital infrastructure, quite a contrast to water supply and sewerage (for instance, sewerage treatment plants and pumping stations are quite capital intensive). Rather it is workers with the help of small equipment that clean the streets and remove garbage.

Table 3.4: Summary of Expenditures and Gaps on Solid Waste, ULBs, Chennai UA (Rs. Per Capita, in 1999-00 Prices)

ULB	Year	O & M/Cap Exp.	Exp.Gaps
COC	1999-00	19.28	-248.09
COC	2000-01	16.68	-250.68
COC	2001-02	5.60	-261.76
COC	2002-03	0.08	-267.28
COC	2003-04	2.72	-264.65
COC	2004-05	3.72	-263.65
COC	2005-06	2.66	-264.70
Avadi	1999-00	3.34	-169.53
Avadi	2000-01	3.50	-169.37
Avadi	2001-02	3.63	-169.23
Avadi	2002-03	3.78	-169.09
Avadi	2003-04	3.85	-169.02
Avadi	2004-05	3.88	-168.99
Avadi	2005-06	39.00	-133.87
Tambaram	1999-00	65.84	-107.03
Tambaram	2000-01	96.23	-76.63
Tambaram	2001-02	89.66	-83.21
Tambaram	2002-03	83.05	-89.82
Tambaram	2003-04	76.04	-96.83
Tambaram	2004-05	71.42	-101.45
Tambaram	2005-06	73.33	-99.53
Alandur	2001-02	135.07	-37.79
Alandur	2002-03	137.77	-35.10
Alandur	2003-04	126.68	-46.18
Alandur	2004-05	116.95	-55.92
Alandur	2005-06	108.21	-64.66
Madhavaram	2004-05	127.11	-45.75
Madhavaram	2005-06	137.08	-35.79
Ambathur	2001-02	11.36	-161.51
Ambathur	2002-03	11.91	-160.95
Ambathur	2003-04	23.81	-149.06
Ambathur	2004-05	69.82	-103.05
Ambathur	2005-06	74.09	-98.78
Pallavaram	1999-00	275.17	102.30
Pallavaram	2000-01	285.29	112.42
Pallavaram	2001-02	339.74	166.87
Pallavaram	2002-03	268.25	95.38
Pallavaram	2003-04	196.08	23.21
Pallavaram	2004-05	159.05	-13.82
Pallavaram	2005-06	114.22	-58.65
Average, all		**84.62**	**-104.78**
Average, COC		**7.25**	**-260.12**
Average, non-COC ULBs		**101.04**	**-71.83**

Sources: COC, Other ULBs, and Authors' Computations.

On average, there is a clear shortfall in spending on a basic service like garbage collection and disposal, when compared against the norms, even in a large ULB like the COC. The average expenditure gap of the COC alone is roughly Rs.260 per capita, while it is only Rs.72 per capita (all in 1999-00 prices) for the non-COC set of ULBs. This means that the COC is unable to spend according to the recommended norms for a city of its size. In contrast, much smaller ULBs such as Pallavaram are able to spend above the norm. Except for some anecdotal evidences, we did not have systematic, time-series information on the physical level of solid waste collection efficiency in these ULBs, hence are unable to relate their spending above the norm to physical level of the service.

The fiscal implication of the gap for the UA as a whole is nearly an *additional* Rs.84 million on solid waste alone, at the average expenditure gap and average population of the ULBs we projected for the period 1999-2005. In the case of several smaller ULBs, as summarized earlier, we had information regarding either O&M, or revenue expenditure or on capital expenditure, not on all, so these estimates of expenditure gaps should be viewed as being quite conservative.

Sanitation

While solid waste refers to street cleaning and garbage collection, sanitation refers to the availability of public sanitation facilities. In order to evaluate ULBs' spending on sanitation, we relied on the NIUA (1995) study for relevant norms. In the case of each of these services, we made an attempt to distinguish between ULBs of various sizes.

As explained in the section on water supply and sewerage, *actual* expenditures were separately available for sanitation, whereas the *norms* for sanitation and sewerage were combined in the NIUA (1995) study. Hence our approach was to divide the norm from the NIUA study on sewerage and sanitation equally and separate them out. Then we compared the actual expenditure on sanitation with the relevant norm. For sewerage/sanitation, the norm suggested by the NIUA (1995) study is Rs.214.77 per capita (in 2004-05 prices) for the cost of provision (with half of this, Rs.107.39 being allocated for sanitation), and Rs.36.82 (in 2004-05 prices) for O&M (with Rs.18.41 being allocated for sanitation), both for *large cities*. In 1999-00 prices, these respectively turn out to be Rs.90.03 and Rs.15.43 per capita, each for sewerage and sanitation. The norms for costs of provision in the smaller ULBs turn out to be higher (due to lack of scale economies), being Rs.115.05 and Rs.19.91 for O&M (both in 1999-00 prices), arrived at, by a similar procedure after part of the norm is allocated for sewerage.

Table 3.5: Summary of Expenditures and Gaps on Sanitation, ULBs, Chennai UA (Rs. Per Capita, in 1999-00 Prices)

ULB	Year	O & M Exp.	Revenue Exp.	Sanitation, O&M & Rev gaps	Sanitation, O&M gaps
Avadi	1999-00	3.34	NA	-16.57	-16.57
Avadi	2000-01	3.50	NA	-16.41	-16.41
Avadi	2001-02	3.69	NA	-16.21	-16.21
Avadi	2002-03	3.77	NA	-16.14	-16.14
Avadi	2003-04	3.93	NA	-15.97	-15.97
Avadi	2004-05	4.23	NA	-15.67	-15.67
Avadi	2005-06	44.72	NA	24.81	24.81
Tambaram	1999-00	1.03	64.81	45.93	-18.88
Tambaram	2000-01	1.00	95.10	76.20	-18.90
Tambaram	2001-02	1.02	90.18	71.29	-18.89
Tambaram	2002-03	1.00	81.76	62.85	-18.91
Tambaram	2003-04	1.02	76.64	57.75	-18.89
Tambaram	2004-05	1.01	76.92	58.03	-18.89
Tambaram	2005-06	1.07	83.01	64.18	-18.84
Tiruvottiyur	1999-00	75.54	NA	55.63	55.63
Tiruvottiyur	2000-01	2.40	NA	-17.51	-17.51
Tiruvottiyur	2001-02	NA	NA	NA	NA
Tiruvottiyur	2002-03	NA	NA	NA	NA
Tiruvottiyur	2003-04	26.57	NA	6.66	6.66
Tiruvottiyur	2004-05	44.70	NA	24.79	24.79
Tiruvottiyur	2005-06	30.33	NA	10.42	10.42
Alandur	1999-00	14.61	69.86	64.56	-5.30
Alandur	2000-01	18.67	86.99	85.75	-1.24
Madhavaram	2004-05	98.36	40.34	118.80	78.45
Madhavaram	2005-06	109.32	47.85	137.26	89.42
Ambathur	2001-02	4.92	69.46	54.48	-14.99
Ambathur	2002-03	9.86	71.29	61.24	-10.05
Ambathur	2003-04	7.68	67.01	54.79	-12.22
Ambathur	2004-05	7.38	65.76	53.23	-12.52
Ambathur	2005-06	8.89	65.72	54.70	-11.02
Pallavaram	1999-00	6.56	268.61	255.26	-13.35
Pallavaram	2000-01	6.21	278.69	265.00	-13.70
Pallavaram	2001-02	4.80	340.78	325.67	-15.11
Pallavaram	2002-03	3.65	263.67	247.42	-16.26
Pallavaram	2003-04	2.80	197.45	180.35	-17.10
Pallavaram	2004-05	2.25	171.31	153.65	-17.66
Pallavaram	2005-06	1.74	129.22	111.06	-18.17
Average, all		**16.04**	**121.85**	**76.21**	**-3.86**

Sources: COC, Other ULBs, and Authors' Computations.

Having noted these caveats, Table 3.5 summarizes the actual expenditures and gaps on this service in all ULBs of the Chennai UA for which we had relevant and reliable data. Unfortunately we did not have any data from COC on sanitation expenditure, hence we are unable to assess them.

In the case of sanitation, we computed a gap based just on O&M services and one based on both O&M and revenue expenditures, given that in a service such as sanitation, salary expenditure (on sanitation workers) also amounts to O&M expenditure in a sense (unlike water supply or sewerage, for instance, where O&M would refer to fixing a pipe with plugs or faucets). It is clear that most of the ULBs (with the exception of Avadi) have expenditure surpluses, when both their O&M and revenue expenditures are taken into account. However to isolate the "salary" effect, we computed a gap for sanitation based only on O&M expenditures, like we have done for other services. Surprisingly, the smallest ULBs (such as Madavaram (during both years for which we had the data) and Tiruvottiyur (for most of the years for which we had information)) are the ones that meet the expenditure norms for sanitation and have surplus O&M expenditure on this service. In the case of smaller ULBs such as Madavaram, in fact, no revenue expenditure data were available. However, even solely with their O&M expenditures, this and other smaller ULBs (such as Tiruvottiyur) have expenditure surpluses on sanitation. Did this higher expenditure also translate into better service? Well, we did not have the physical data on sanitation infrastructure in these ULBs to make a judgment.

Municipal Roads

In the case of municipal roads and street lights, nationally recommended expenditure norms were not readily available. Mathur et.al (2007) is silent regarding these services.[16] Based on our consultations with cities and various local governments, for these services, no state-specific or city-specific norms are being used. Hence, as the only resort, we used expenditure norms developed by PricewaterhouseCoopers (2000) for these services for towns of various sizes, for a study they did for the Government of Chhattisgarh. These norms refer to the Zakaria committee norms for O&M expenditure, updated to 2000-01 prices. These norms for municipal roads, for towns with population greater than 20 lakhs (COC's size), population between 1-5 lakhs (all ULBs except Madavaram), and ULBs in the population size 0.5-1 lakh (the size of Madavaram) are respectively Rs.43.45, Rs.26.67 and Rs.23.71 per capita (in 2000-01 prices). In

[16] We tried very hard, but were unable to get a copy of the NIUA (1995) draft report on the costs of urban infrastructure.

1999-00 prices, these norms respectively are Rs.41.97 (for COC), Rs.25.76 (all ULBs except COC and Madavaram), and Rs.22.90 (Madavaram).

Table 3.6: Summary of O&M Expenditures and Expenditure Gaps for Municipal Roads, All ULBs, Chennai UA

ULB Name	Year	O & M Exp	Exp.Gaps
Avadi	1999-00	5.02	-20.75
Avadi	2000-01	5.17	-20.59
Avadi	2001-02	6.24	-19.52
Avadi	2002-03	10.15	-15.61
Avadi	2003-04	4.03	-21.73
Avadi	2004-05	3.45	-22.31
Avadi	2005-06	3.27	-22.50
Tambaram	1999-00	0.85	-24.91
Tambaram	2000-01	1.01	-24.76
Tambaram	2001-02	0.94	-24.82
Tambaram	2002-03	0.87	-24.89
Tambaram	2003-04	0.80	-24.96
Tambaram	2004-05	0.72	-25.04
Tambaram	2005-06	0.65	-25.11
Tiruvottiyur	1999-00	2.88	-22.88
Tiruvottiyur	2000-01	NA	NA
Tiruvottiyur	2001-02	NA	NA
Tiruvottiyur	2002-03	NA	NA
Tiruvottiyur	2003-04	1.33	-24.43
Tiruvottiyur	2004-05	0.13	-25.63
Tiruvottiyur	2005-06	0.62	-25.14
Ambathur	2001-02	31.28	5.52
Ambathur	2002-03	40.27	14.51
Ambathur	2003-04	46.76	21.00
Ambathur	2004-05	61.10	35.34
Ambathur	2005-06	54.54	28.78
Average, all		**12.26**	**-13.50**

Note: For COC, Alandur, Madavaram and Pallavaram, O&M expenditures on municipal roads were not available. For Alandur and COC, capital expenditures on roads were available. Due to lack of suitable norms they could not be compared or assessed. For Madavaram only revenue expenditure on roads were available, and for Pallavaram no expenditure information on roads was available.
Sources: COC, Other ULBs, and Authors' Computations.

Municipal roads are another service for which we had data on both capital and O&M expenditure for a few ULBs. Unfortunately we did not have O&M expenditures on roads for COC, we had only capital expenditures. However, for lack of relevant norms for capital expenditures on roads, we are not in a position to assess ULBs' (including that of the COC) capital expenditure on roads. Hence we compared the norms for O&M expenditures roads to

actual O&M expenditures on the service. The comparisons of the actual expenditure to the relevant norms are summarized in Table 3.6.

Keeping all the above caveats in mind, Table 3.6 shows that Ambathur is the only one which exhibits positive expenditure gaps (expenditure surpluses) as it relates to O&M expenditure on roads. As we may recall from Chapter 1, this is the one ULB that provides above average municipal road infrastructure, by providing much better coverage in terms of road length of 1.37 kilometres per 1,000 population, much better than the other ULBs we have selected for purposes of this study (see Chapter 1). None of the other ULBs spend adequately on municipal roads, taking into account norms for towns of their size. On average, the norm for all ULBs is roughly Rs.28, with these ULBs spending on average only Rs.13, the result is that there is a per capita gap of Rs.14 for O&M spending on this. When we observe the physical level of road infrastructure in these other ULBs, we find that their municipal road infrastructure is commensurately poorer—with road length per 1,000 population of 0.06, 0.70 and 0.47 kilometres respectively in Avadi, Tambaram and Tiruvottiyur. Thus in the case of roads, it does seem that there is a direct relationship between spending and service delivery.

Street Lights

As described in the previous section, we did not have national norms with respect to spending on street lights as well. Hence we used the PWC norms, which are the inflation-adjusted norms of the Zakaria Committee for towns in Chhattisgarh of various sizes. For street lights, these norms respectively are Rs.59.26 (for towns the size of COC), Rs.49.39 (for towns with population between 1-5 lakhs), Rs.45.44 (for towns of population size between 50,000-1 lakh), all in per capita terms, and in 2000-01 prices. These per capita norms in 1999-00 prices respectively are, Rs.53.98, Rs.45.00 and Rs.41.40, for towns of the sizes we are concerned with here, using the relevant district and sectoral deflators. Here as well, a number of ULBs reported capital as well as O&M expenditures on street lighting. The COC reported only capital expenditures on this service and we are not in a position to benchmark them, given the absence of capital expenditure norms for this service, as with roads. All the other ULBs, with the exception of Pallavaram, reported O&M expenditures on the service, with the result that we are able to report and assess their expenditure needs and gaps in spending.

Table 3.7 summarizes the differences between actual and required O&M real expenditures on street lights in all the local governments from which data were available, in per capita terms (in constant 1999-00 prices). Here we observe a story similar to that on municipal roads. Alandur is the only one that spends above the norm in some years. However, overall, there

is a gap of Rs.22 per capita (in 1999-00 prices) on average, when all ULBs are taken into account. At the average population of these ULBs (without the COC), this expenditure gap translates to an *additional* required spending of Rs.202,845. It is possible that the formation of an umbrella metropolitan wide authority might facilitate pooling of resources and better levels of infrastructure in the region as a whole.[17]

Table 3.7: Summary of O&M Expenditures and Expenditure Gaps for Street Lights, ULBs, Chennai UA

ULB	Year	O & M Exp.	Exp.Gaps
Avadi	2000-01	37.31	-7.70
Avadi	2001-02	14.25	-30.75
Avadi	2002-03	22.11	-22.89
Avadi	2003-04	25.59	-19.41
Avadi	2004-05	13.31	-31.69
Avadi	2005-06	32.23	-12.77
Tambaram	1999-00	1.26	-43.75
Tambaram	2000-01	1.36	-43.65
Tambaram	2001-02	1.32	-43.69
Tambaram	2002-03	1.33	-43.68
Tambaram	2003-04	1.64	-43.37
Tambaram	2004-05	1.62	-43.39
Tambaram	2005-06	1.60	-43.41
Tiruvottiyur	2003-04	42.06	-2.94
Tiruvottiyur	2004-05	28.19	-16.81
Tiruvottiyur	2005-06	36.56	-8.44
Alandur	1999-00	14.95	-30.06
Alandur	2000-01	55.08	10.07
Alandur	2001-02	58.29	13.28
Alandur	2002-03	7.31	-37.70
Alandur	2003-04	8.02	-36.99
Alandur	2004-05	49.77	4.76
Alandur	2005-06	15.68	-29.33
Madhavaram	2004-05	38.30	-3.10
Madhavaram	2005-06	44.95	3.55
Ambathur	2001-02	15.67	-29.33
Ambathur	2002-03	31.94	-13.06
Ambathur	2003-04	31.94	-13.06
Ambathur	2004-05	31.30	-13.71
Ambathur	2005-06	30.44	-14.57
Average, all		**23.18**	**-21.59**

Sources: COC, Other ULBs, and Authors' Computations.

[17] There is indeed a metropolitan authority in Chennai, the Chennai Metropolitan Development Authority (CMDA), whose functions however, primarily span town planning and land use.

While international norms specify that street lighting points have to be spaced every 30 metres, we did not have information on the average spacing between street lights in any of the ULBs, hence difficult to assess the spending with the physical level of the service.

Indeed we recall from Chapter 1, based on data from the Census town directories, that the coverage of households with street lighting is the best in Ambattur (with 4 households covered per street light), which, however, does not spend adequately on the service in relation to the O&M norms (Table 3.6). Hence the O&M expenditure on street lights is not probably the constraint here. It is possible that the ULB is not spending enough on fixing old street lights (which is what O&M expenditure would refer to), but is spending enough to provide new ones. Indeed we had capital expenditure on street lights from this ULB, but we could not compare them against any benchmarks, as with roads.

Since street lights are used as an indicator of safety, low spending by the ULBs probably means that either the lighting there is of good quality and does not need to be replaced often, but it could also mean that not enough defective street lights are replaced, or that the other ULBs are unable to afford enough engineers/technicians to fix defective lights. If the latter were to be the case, low spending on street lighting would cast doubt on the other ULBs' ability to provide safety to their residents. This is likely to adversely affect their ability in attracting residents or firms.

Total Expenditure

The next and final step was to compare total actual expenditures on relevant services – water supply and sewerage/drainage, solid waste, sanitation, roads, street lighting -- to that specified by the expenditure norms for the services. Given that expenditure on all services was not available for all the local governments, we computed *total expenditure norms* only for those civic services for which we had data on *actual total expenditure* from the ULBs. The total expenditures (in per capita real terms) are based on O&M and revenue expenditures on these services, and exclude capital expenditures of any kind (except in the case of solid waste where it is difficult to distinguish between capital and O&M expenditures).

For the COC, we had O&M expenditures only on water supply, (we had data on capital expenditures for sewerage, solid waste, no information on sanitation, and capital expenditures for roads and street lights for which there were no suitable norms). For most other ULBs, we had

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http://www.cmdachennai.org/aboutcmda.html Retrieved January 16, 2008.

O&M expenditure on most of these services except sewerage, given the lack of a sewerage network, and their seemingly minimal expenditure on open surface drains.

There were also only a few ULBs for which we had data on "total" O&M expenditure, which includes expenditure on all these services plus "other" services. We did not have information on "total" expenditures in several of the ULBs – Tambaram, Avadi, and Madavaram. In the case of COC, we ran into a problem which was that all expenditures we had were of a capital nature. The revenue expenditures were not available by service. While we had information on O&M expenditures on water supply and sewerage, they are the expenditure responsibility of the CMWSSB, not of COC. Hence we could not compare "other" expenditure for COC with expenditure on relevant services.

Thus in each case, we compared actual expenditures only for those services for which data were available, to the total of norms only for those services. For example, if we did not have information on sewerage in a ULB, we excluded the norm for sewerage in our computation of total expenditure gaps. With these caveats in order, Table 3.8 summarizes the total expenditure gaps for all services we computed for the ULBs in the Hyderabad UA.

On average, these ULBs spend only about Rs.214 per capita (in 1999-00 real terms) on the relevant public services we have studied here. This is inadequate while taking into account the average spending norm of roughly Rs.388 that is required on these services, leaving a gap of nearly Rs.174 per capita. The surprising finding is that the COC, even with spending on water supply & sewerage being incurred by the CMWSSB, incurs an expenditure gap of Rs.296 per capita (in 1999-00 prices), and has a higher expenditure gap when compared with that for the non-COC set of ULBs at Rs.152 per capita. At the average population for COC we have projected, COC's per capita expenditure gap translates into an additional whopping Rs.1.3 billion. However, given CMWSSB provides water supply and service, we present separate expenditure gaps for COC's services, by excluding water supply and sewerage, in Table 3.9.

The only ULB that has a positive expenditure gap when compared with the norms is a small ULB, Pallavaram, which spends above the required norms when all relevant services are taken into account. The primary reason for this is that it spends well above the norm in the case of solid waste (see Table 3.4). We did examine this ULB's solid waste collection efficiency and found it to be 80 percent, meaning that 80 percent of garbage generated, is collected. While this is substantial, it is not clear why, with its spending above the norm, this ULB is unable to attain 100 percent collection efficiency. It is possible that a large number of workers are employed for solid waste management, but are not being effectively utilized.

Table 3.8: Summary of O&M Expenditures and Expenditure Gaps, All Relevant Urban Services, ULBs, Chennai UA

ULB	Year	Total Actual O&M Exp	Exp.Gaps
COC	1999-00	123.47	-394.02
COC	2000-01	146.31	-371.18
COC	2001-02	247.02	-270.47
COC	2002-03	125.84	-391.65
COC	2003-04	292.02	-225.47
COC	2004-05	458.41	-59.08
COC	2005-06	158.64	-358.85
Avadi	1999-00	11.69	-251.85
Avadi	2000-01	49.47	-214.06
Avadi	2001-02	27.82	-235.71
Avadi	2002-03	39.81	-223.73
Avadi	2003-04	37.40	-226.13
Avadi	2004-05	24.87	-238.66
Avadi	2005-06	119.21	-144.33
Tambaram	1999-00	134.56	-320.70
Tambaram	2000-01	195.44	-259.81
Tambaram	2001-02	183.90	-271.36
Tambaram	2002-03	168.84	-286.41
Tambaram	2003-04	156.95	-298.31
Tambaram	2004-05	152.55	-302.71
Tambaram	2005-06	160.58	-294.68
Tiruvottiyur	1999-00	130.23	-300.07
Tiruvottiyur	2003-04	69.96	-20.71
Tiruvottiyur	2004-05	73.02	-17.65
Tiruvottiyur	2005-06	67.51	-23.16
Alandur	1999-00	107.58	-321.92
Alandur	2000-01	217.93	-211.56
Alandur	2001-02	259.49	-170.00
Alandur	2002-03	210.67	-218.83
Alandur	2003-04	192.42	-237.08
Alandur	2004-05	217.43	-212.07
Alandur	2005-06	174.78	-254.71
Madhavaram	2004-05	326.58	-99.45
Madhavaram	2005-06	363.97	-62.06
Ambathur	2001-02	163.58	-118.94
Ambathur	2002-03	195.57	-86.95
Ambathur	2003-04	205.91	-249.48
Ambathur	2004-05	264.57	-190.82
Ambathur	2005-06	263.16	-192.23
Pallavaram	1999-00	551.53	167.05
Pallavaram	2000-01	571.20	186.71
Pallavaram	2001-02	686.16	301.67
Pallavaram	2002-03	536.27	151.79
Pallavaram	2003-04	396.92	12.43
Pallavaram	2004-05	333.06	-51.42
Pallavaram	2005-06	245.40	-139.09
Average, all		**213.91**	**-173.86**
Average, COC		**221.67**	**-295.82**
Average, non-COC ULBs		**212.51**	**-151.97**

*Relevant data for Tiruvottiyur were not available for 2000-01 to 2002-03, hence the gaps could not be calculated.
Sources: COC, Other ULBs, and Authors' Computations.

With respect to other services, this ULB is a low spender when compared to the recommended norm, similar to others of its size. For one, we did not even have information on O&M expenditures pertaining to roads, street lights, and sewerage for this ULB, and we excluded norms for these services.

Given that the provision of water supply and sewerage are the primary responsibility of the CMWSSB, and they offer only to the COC area, we examined total expenditure gaps for the COC, by excluding water supply & sewerage, so that we can throw light on COC's actual spending, according to its expenditure responsibility. Table 3.9 summarizes per capita spending on relevant services excluding WSS, and the associated expenditure gaps.

Table 3.9: Summary of O&M Expenditures and Expenditure Gaps for Relevant Urban Services Excluding WSS, COC (in Per Capita Terms, 1999-00 Prices)

Year	Actual Exp, Without WSS	Exp. Gaps Without WSS
1999-00	19.28	-248.09
2000-01	16.68	-250.68
2001-02	5.60	-261.76
2002-03	0.08	-267.28
2003-04	2.72	-264.65
2004-05	3.72	-263.65
2005-06	2.66	-264.70
Average	**7.25**	**-260.12**

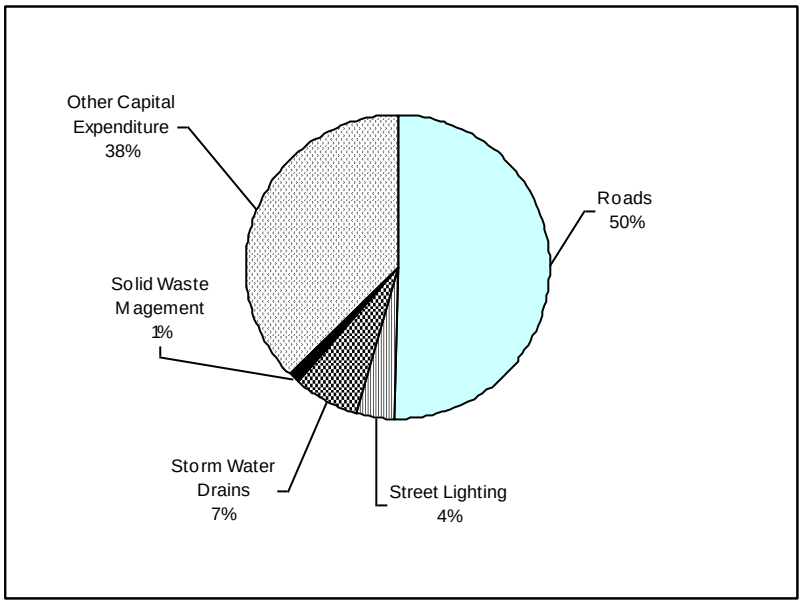
Source: COC and Authors' Computations.

Table 3.9 shows that once water supply & sewerage are excluded, the expenditure gap of the COC marginally decreases to Rs.260 per capita, on average, translating into an additional fiscal implication of Rs.1.1 billion. Part of the reason for this could be that O&M expenditures by service are not reported by the COC.

Given the information available, Figure 3.1 summarizes COC's capital expenditure for relevant services we have studied here. We note that while developmental work (such as roads) constitute roughly half of the COC's capital expenditure (in real terms) in 2005-06, expenditure on "other" services such as traffic improvement, private streets, bridges, buildings, parks and play fields, basic amenities for schools, health, India population project-V, member of council- ward

improvement works, mayor special development fund – works and works on other departments, also form a substantial part of COC's total capital expenditure (roughly 38 percent). Unfortunately we did not have a break up of the "other" expenditure on each of the services included above, to make an assessment.

Figure 3.1: Capital Expenditure by Service, COC, 2005-06



Source: ULB Budget

All Expenditure with Other Services

All expenditures include all revenue and O&M expenditures on the relevant services, and spending on "other" services such as pay and allowances, travel expenses, leave travel concession, supply of uniform, telephone charges, light vehicle maintenance, legal charges, stationery & printing, and so forth. We examined total expenditures per capita for the non-COC set of ULBs during 1999-00 to 2005-06, on the relevant services (water supply, sanitation & solid waste, sewerage, municipal roads and street lights), plus other expenditures described above. The descriptive statistics for per capita total expenditure for these smaller ULBs are summarized in Table 3.10. Table 3.11 summarizes and describes something about these smaller ULBs in Table 3.10 that is very revealing—the proportion roughly "other" expenditures form out of total expenditures. While we have studied expenditure on relevant services, it makes sense for us to understand what proportion of the pie is spent on these services, and what is spent on "other" services, to assess the quality of spending.

Table 3.10: Per Capita Total Expenditure of Smaller ULBs, Chennai UA (in 1999-00 Constant Prices)

Summary Statistic	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
Average	703.98	2263.69	2118.11	1069.39	977.50	1054.87	998.65
Maximum	980.12	6064.93	3844.40	2876.38	2140.60	2608.99	1972.42
Minimum	427.83	343.05	391.81	101.42	494.31	367.00	529.81
Standard Deviation	390.53	3292.04	2441.35	1232.67	779.38	1058.31	663.51
Number of observations	2	3	2	4	4	4	4

Sources: Seven Small ULBs, and Authors' Computations.

Table 3.11: Per Capita Other Expenditure of Smaller ULBs, Chennai UA (in 1999-00 Constant Prices)

Summary Statistic	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
Average	362.30	1988.70	1640.95	811.89	746.02	819.58	801.16
Maximum	427.00	5479.13	3152.38	2281.44	1707.51	2243.86	1708.62
Minimum	297.60	162.41	129.52	95.71	392.85	146.84	456.24
Standard Deviation	91.50	3023.89	2137.49	993.37	641.61	964.33	607.54
Number of observations	2	3	2	4	4	4	4

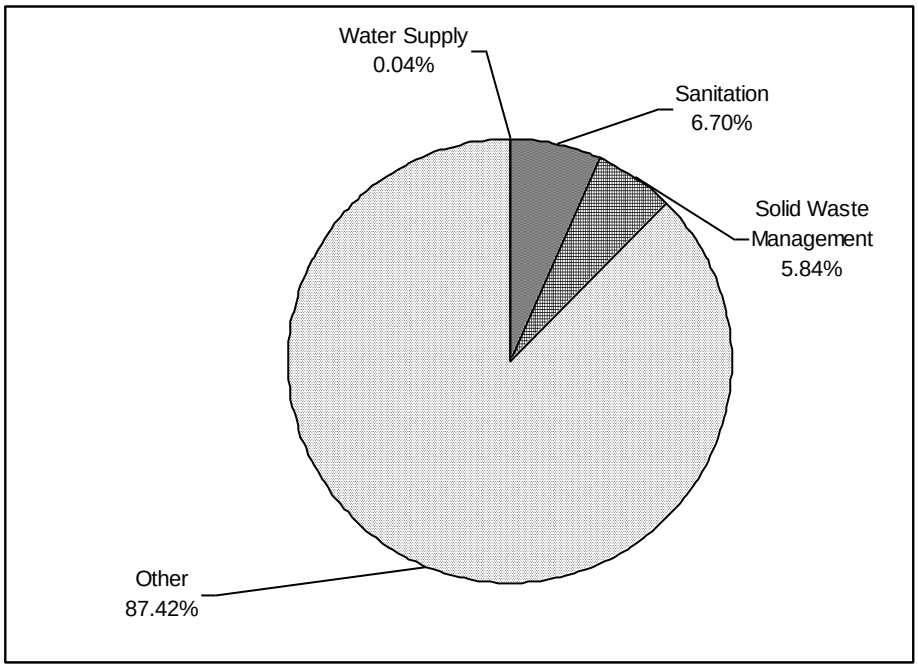
Sources: Seven Small ULBs, and Authors' Computations.

Tables 3.10 and 3.11 together say an interesting story. While "other" expenditure (apart from the relevant services which are studied here) formed only about half of the smaller ULBs' total expenditure in 1999-00, by 2005-06, these "other" expenditures formed nearly 80 percent of the ULBs' total expenditure on average. This is quite disconcerting given our study of the definition of "other" expenditure in all these smaller ULBs indicates that they are primarily non developmental in nature, with a caveat noted below. A typical example is Pallavaram, which exhibited positive expenditure gaps, due to its expenditure on solid waste management. Figure 3.2 summarizes a disaggregation of its O&M and revenue expenditure on various services for which we had the information, for Pallavaram. A caveat needs to be mentioned here for Pallavaram and other small ULBs. "Other" expenditures in Pallavaram's context include expenditures on our relevant services – roads, street lighting and sewerage, for which we couldn't get the information, along with expenditures on various "other" items.[18] A similar caveat would apply to all the other smaller ULBs. Given this, if we had had information on all our relevant services, we surmise that

the "other" expenditure of the ULBs would have scaled down greatly. However, given the information set we have, it is difficult to say what part was accounted for by the "other" components.

Given the above caveats, we do note that behavior on the part of public officials to allocate expenditure in favor of less important services is not new, but it doesn't make rational sense for a ULB to have a poor state of public services, and still spend disproportionately on services not requiring immediate attention. For instance, if outsourcing were to be practiced, it is possible that ULBs' revenue expenditures on "other" services could be reduced, and expenditure on actual delivery of basic services could be increased. But this is closely related to the political economy of decision making.

Figure 3.2: Proportion of O&M and Revenue Expenditure by Service, Pallavaram, 2005-06



Source: ULB Budget

In the case of COC, however, as we have described, "other" capital expenditure still refers to work of a developmental nature. So there the scope of our study is not broad enough to study

[18] In Pallavaram, "other" expenditure refers to salaries, others, terminal and retirement benefits, operating expenses, repairs and maintenance expenses, program expenses, administrative expenses, finance expenses, and depreciation.

those services (such as traffic management, storm water drains, and so forth) which are equally, if not more, important in city planning and growth.

In the context of the smaller ULBs, it is possible that they, despite having an expenditure gap on the services studied here, might be spending adequate amounts on other, equally important, services which are beyond the scope of our study, and for which we did not have relevant financial data or information on physical levels of those services.

Chapters 4 focuses on findings from revenues and Chapter 5 summarizes revenue capacities & fiscal gaps, providing an assessment of fiscal health, based on expenditure needs and revenue capacities for the Chennai UA as a whole.

CHAPTER 4: ANALYSIS OF REVENUES

This chapter attempts a detailed analysis of the resource base of the ULBs in Chennai UA. We would analyse a time series for seven years from 99-00 to 05-06 on all the components of revenues for the eight ULBs chosen for the study, subject to availability of data. All the financial variables are expressed in 99-00 constant prices. To make valid comparisons across ULBs in terms of their revenue components we would consider the per capita measures. The analysis will be mainly based on a set of descriptive statistics.

The ULBs raise finances through their own sources as well as the intergovernmental transfers in the form of grants and assigned revenues. Own sources consist of the tax and the non tax revenues. Of the tax revenues, property tax plays the most important role. In fact for Indian cities property tax forms the backbone of resources of the ULBs. The non tax, assigned revenues and other tax components are indicative of the vibrancy of economic activities in the city. The levels of grants determine the extent of dependence on the upper tiers of the governments.

Property Tax

The assessment of property taxes is done by Annual Rental Value method which takes into account the plinth area, nature of occupancy, usage, nature and quality of construction, etc. From the total annual rent there is a 10 per cent deduction for land. After deducting 10 per cent for land, 10 per cent of the remaining amount is deducted for repair and maintenance. Then the land value which was deducted earlier is added again. These are the steps of calculations for valuation of properties in Chennai. The rates slightly vary across ULBs. Table 4.1 below gives the property tax rates for different slabs of Annual value for COC.

Table 4.1 Property tax Rates For COC

Annual Value (Rs)	Half Yearly Tax Rate
Upto 500	6.62%
501-1000	9.92%
1001-5000	11.02%
5001 and above	12.40%

Source: ULB Budgets & Authors Computation

The collection efficiency in property taxes is quite high in COC and Alandur which is above 80 per cent for most of the years whereas the smaller ULB like Pallavaram has a collection efficiency as low as 20 per cent on an average over the years. The year wise collection efficiencies of COC are recorded in Table 4.2 below and those of some of the smaller ULBs are given in Table A 1.1-A 1.5 in the Appendix .

Table 4.2: Collection Efficiency in Property Taxes for COC

YEAR	DEMAND (Rs. Cr)	COLLECTION (Rs. Cr)	COLLECTION EFFICIENCY (%)
1996-1997	85.00	75.13	88.39
1997-1998	120.00	177.18	90.42
1999-2000	150.00	123.68	82.45
1999-2000	170.00	115.05	67.68
2000-2001	175.00	131.48	75.13
2001-2002	180.23	166.67	92.48
2002-2003	200.00	177.18	88.59
2003-2004	240.00	209.01	87.09
2004-2005	260.00	210.85	81.10
2005-2006	260.00	218.07	83.87
2006-2007	270.00	231.94	85.90
Average			83.92

Source: ULB Budgets & Authors Computation

COC records the highest per capita property tax in spite of the fact that this ULB has a much higher population compared to the other ULBs followed by Alandur for most of the years. It is interesting to note that these ULBs have higher collection efficiencies also. Pallavaram, which has the lowest collection efficiency, records the lowest per capita values of property tax

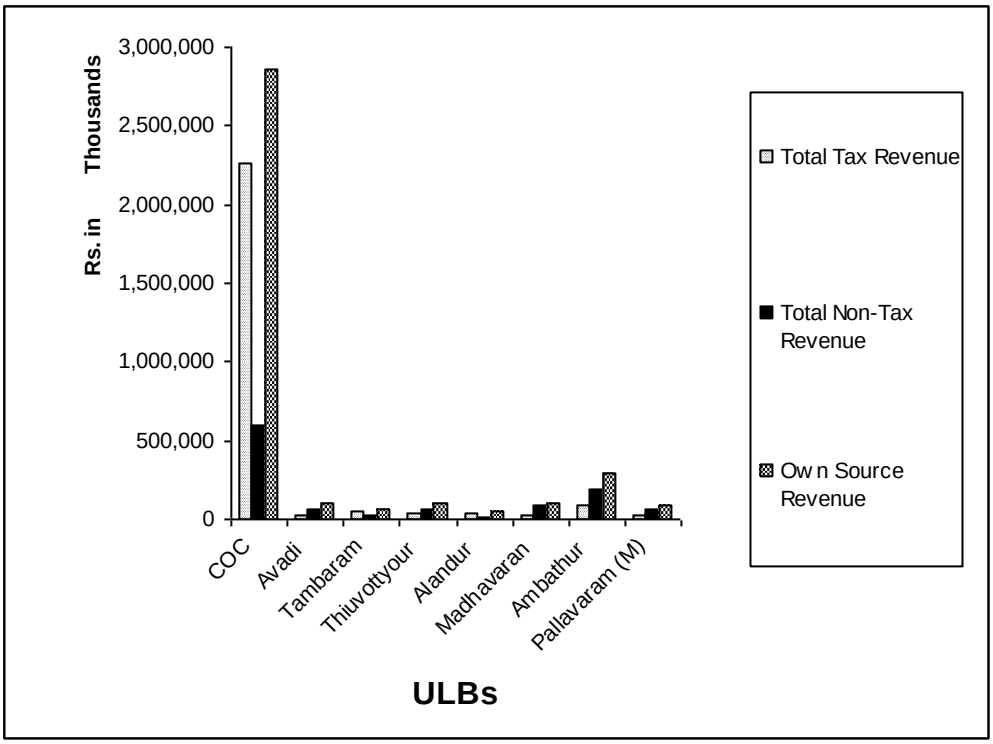
Table 4.3: Year wise Descriptive Statistics for Per capita Property Tax in ULBs of Chennai

With COC	**1999-00**	**2000-01**	**2001-02**	**2002-03**	**2003-04**	**2004-05**	**2005-06**
Average	178.02	188.79	211.54	206.78	198.11	194.46	173.84
Maximum	268.70	292.51	363.10	332.23	395.69	413.70	271.09
Minimum	47.17	84.79	87.35	61.76	44.24	31.32	40.70
Standard Deviation	77.48	72.52	88.26	79.58	104.04	113.90	81.80
No. Of Observation	6	6	8	8	8	8	7
Without COC	**1999-00**	**2000-01**	**2001-02**	**2002-03**	**2003-04**	**2004-05**	**2005-06**
Average	159.88	168.04	189.89	188.85	169.88	163.14	173.84
Maximum	229.84	240.04	280.31	248.35	238.75	232.21	271.09
Minimum	47.17	84.79	87.35	61.76	44.24	31.32	40.70
Standard Deviation	70.98	57.85	68.65	66.26	72.05	77.33	81.80
No. Of Observation	5	5	7	7	7	7	7

Source: ULB Budgets & Authors Computation

except for one year. From the descriptive statistics recorded in Table 4.3 it is clear that the per capita collections of property taxes are lower on an average for smaller ULBs than those generated by all ULBs including COC, with considerable variations across ULBs.

Figure 4.1: Components of Own Source Revenue (Absolute) for ULBs in Chennai UA in 2004-05



Source: ULB Budgets & Authors Computation

Table 4.4: Year wise Descriptive Statistics for Per Capita Total Tax Revenue in ULBs of Chennai

With COC	**1999-00**	**2000-01**	**2001-02**	**2002-03**	**2003-04**	**2004-05**	**2005-06**
Average	234.13	238.92	256.74	253.71	242.16	242.19	217.22
Maximum	324.88	362.17	424.54	394.70	453.69	501.62	325.13
Minimum	62.2	166.39	155.24	108.24	91.44	64.73	88.18
Standard Deviation	89.41	73.54	84.91	86.41	109.14	133.74	92.62
No. Of Observation	6	6	8	8	8	8	7
Without COC	**1999-00**	**2000-01**	**2001-02**	**2002-03**	**2003-04**	**2004-05**	**2005-06**
Average	215.98	214.26	232.77	233.57	211.94	205.13	217.22
Maximum	269.78	272.69	292.06	333.01	295.92	313.38	325.13
Minimum	62.26	166.39	155.24	108.24	91.44	64.73	88.18
Standard Deviation	86.73	46.93	55.22	70.18	73.31	89.71	92.62
No. Of Observation	5	5	7	7	7	7	7

Source: ULB Budgets & Authors Computation

A look at the absolute figures for the recent year 2004-05 (Figure 4.1) reveals that COC records the highest absolute values for total tax revenues followed by Ambhatur. Avadi and Pallavaram raise low Tax revenues in absolute terms. It is interesting to note that the average per

capita total tax revenues are higher for COC than the smaller ULBs with considerable variation across ULBs. The highest value is recorded in COC; Pallavaram and Avadi are the ULBs generating very low per capita taxes. The detailed values of the descriptive statistics are given below in Table 4. 4. It is clear that the average per capita tax for all the years in the smaller ULBs are lower than those generated by all ULBs including COC.

Non-Tax Revenue

A look at the absolute figures for non tax revenues (Figure 4.1) reveals that the maximum level of non tax revenues are generated in COC followed by Ambhatur while the lowest level is recorded for Alandur. If we consider the per capita levels, we find on an average over the years COC records lower values than the smaller ULBs. Madhavaram records the highest per capita average for non tax revenues while Thiuvottyor records the lowest, with considerable variation across ULBs. Table 4.5 gives the year wise details of the descriptive statistics for Non Tax Revenue. It is clear that the per capita averages for smaller ULBs are higher than those calculated for all ULBs including COC .

Table 4.5 : Year wise Descriptive Statistics for Per Capita Non-Tax Revenue in ULBs of Chennai

With COC	**1999-00**	**2000-01**	**2001-02**	**2002-03**	**2003-04**	**2004-05**	**2005-06**
Average	211.55	153.56	247.03	292.45	307.73	328.38	308.95
Maximum	733.73	310.57	1,131.01	1,165.16	1,016.43	989.86	1,161.49
Minimum	37.06	23.82	33.44	28.11	29.77	56.70	31.72
Standard Deviation	260.84	117.83	379.14	374.81	339.07	308.18	395.58
No. Of Observation	6	6	8	8	8	8	7
Without COC	**1999-00**	**2000-01**	**2001-02**	**2002-03**	**2003-04**	**2004-05**	**2005-06**
Average	234.50	165.03	269.32	320.03	337.08	356.39	308.95
Maximum	733.73	310.57	1,131.01	1,165.16	1,016.43	989.86	1,161.49
Minimum	37.06	23.82	33.44	28.11	29.77	56.70	31.72
Standard Deviation	284.77	127.93	403.82	395.98	355.09	321.68	395.58
No. Of Observation	5	5	7	7	7	7	7

Source: ULB Budgets & Authors Computation

Own Source Revenue

A look at the own source revenues across ULBs for the recent year 2004-05 reveals that COC records the highest value for absolute levels of own source revenues and Alandur the lowest (Figure 5.1). If we consider the per capita averages Madhavaram record the highest value in most

of the years while Avadi, Thiuvottyor and Pallavaram generates lowest values for per capita averages varying across years, with considerable variation across ULBs. Table 4.6 gives the details of the descriptive statistics for per capita own source revenues for the ULBs in Chennai. On the basis of comparisons of the averages for the ULBs including and excluding COC for Own revenues we cannot really say whether the smaller ULBs are generating lower own revenues than all ULBs including COC . However the differences between the two sets of averages in all the years are marginal.

Table 4.6 : Year wise Descriptive Statistics for Per Capita Own Source Revenue in ULBs of Chennai

With COC	**1999-00**	**2000-01**	**2001-02**	**2002-03**	**2003-04**	**2004-05**	**2005-06**
Average	445.68	392.47	503.77	546.16	549.90	570.57	526.17
Maximum	979.61	476.96	1,375.62	1,395.65	1,238.81	1,234.94	1,393.25
Minimum	99.32	228.07	207.23	283.07	246.22	273.06	207.73
Standard Deviation	289.11	95.39	388.19	365.56	339.00	324.80	415.92
No. Of Observation	6	6	8	8	8	8	7
Without COC	**1999-00**	**2000-01**	**2001-02**	**2002-03**	**2003-04**	**2004-05**	**2005-06**
Average	450.49	379.29	502.09	553.60	549.02	561.52	526.17
Maximum	979.61	476.96	1,375.62	1,395.65	1,238.81	1,234.94	1,393.25
Minimum	99.32	228.07	207.23	283.07	246.22	273.06	207.73
Standard Deviation	322.97	100.36	419.26	394.20	366.15	349.73	415.92
No. Of Observation	5	5	7	7	7	7	7

Source: ULB Budgets & Authors Computation

Assigned Revenues and Grants

A look at the absolute values of transfers consisting of grants and assigned revenues for 2004-05 in absolute terms reveals that COC records the highest value for these transfers while for Avadi it is the lowest. In terms of per capita values except for 2002-03 (for which COC records the highest), Alandur records the highest values and Avadi records the lowest , with considerable variation across ULBs. Table 4.7 gives the details of the year wise descriptive statistics for intergovernmental transfers. We find that for all the years the smaller ULBs taken separately record, on an average, lower intergovernmental transfers than the averages generated by all ULBs including COC.

Table 4.7 : Year wise Descriptive Statistics for Per Capita Assigned Revenue and Grants in ULBs of Chennai

With COC	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
Average	217.10	193.33	158.24	160.25	153.31	156.41	188.52
Maximum	492.12	498.18	541.87	515.43	489.22	491.88	505.51
Minimum	33.97	32.85	1.63	2.86	2.84	2.13	6.54
Standard Deviation	198.91	214.80	195.49	218.01	198.27	178.46	176.50
No. Of Observation	5	5	7	8	8	8	6
Without COC	**1999-00**	**2000-01**	**2001-02**	**2002-03**	**2003-04**	**2004-05**	**2005-06**
Average	183.27	155.85	134.10	109.51	110.41	125.50	188.52
Maximum	492.12	498.18	541.87	506.78	489.22	491.88	505.51
Minimum	33.97	32.85	1.63	2.86	2.84	2.13	6.54
Standard Deviation	212.44	228.38	202.39	177.26	169.38	168.03	176.50
No. Of Observation	4	4	6	7	7	7	6

Source: ULB Budgets & Authors Computation

Total Revenue

A close look at the total revenue figures (absolute) reveals that COC records the highest value and Tambaram the lowest (Figure 5.2). However the year wise per capita figures are highest for Madhavaram for most of the years, followed by COC and the lowest being recorded

Table 4.8 : Year wise Descriptive Statistics for Per Capita Total Revenue in ULBs of Chennai

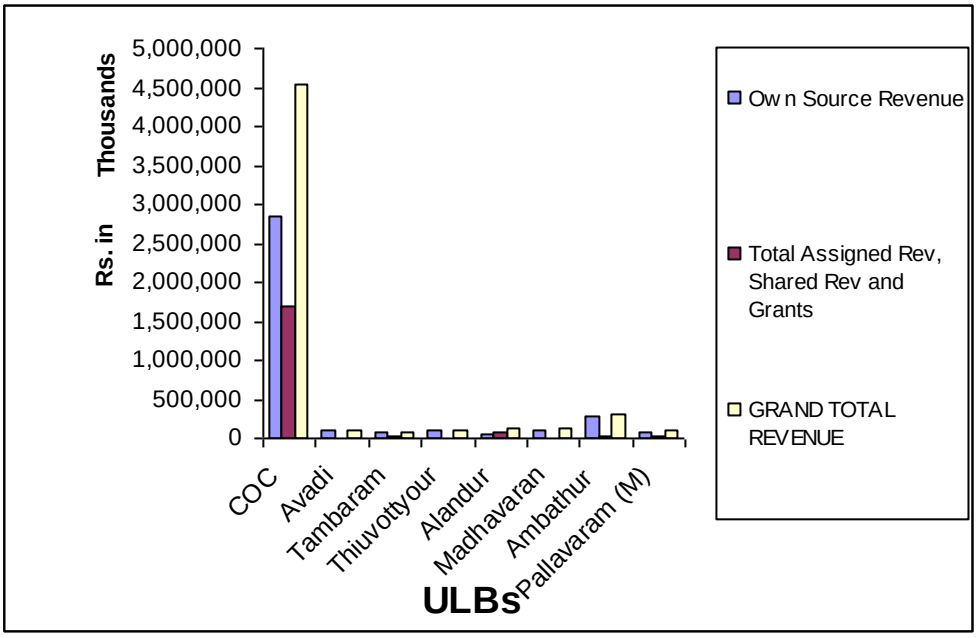
With COC	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
Average	626.60	553.58	642.23	706.41	703.20	726.98	687.76
Maximum	1,033.20	874.55	1,425.74	1,480.59	1,290.23	1,360.14	1,507.74
Minimum	99.32	280.94	208.86	320.83	268.42	319.89	232.88
Standard Deviation	349.84	234.92	416.42	390.45	360.30	356.25	442.80
No. Of Observation	6	6	8	8	8	8	7
Without COC	**1999-00**	**2000-01**	**2001-02**	**2002-03**	**2003-04**	**2004-05**	**2005-06**
Average	597.11	503.97	617.03	663.10	659.43	687.02	687.76
Maximum	1,033.20	874.55	1,425.74	1,480.59	1,290.23	1,360.14	1,507.74
Minimum	99.32	280.94	208.86	320.83	268.42	319.89	232.88
Standard Deviation	382.71	224.78	443.15	400.44	365.48	364.91	442.80
No. Of Observation	5	5	7	7	7	7	7

Source: ULB Budgets & Authors Computation

for Pallavaram and Avadi varying across years. However, the descriptive statistics recorded in Table 4.8 show that the per capita averages for the smaller ULBs record a smaller value than

those calculated on the basis of all ULBs including COC for all the years. This indicates that the higher per capita values in smaller ULBs are a result of lower population size[19].

Figure 4.2: Components of Total Revenue (Absolute) for ULBs in Hyderabad UA in 2004-05



Source: ULB Budgets & Authors Computation

It would also be interesting to study the behavior of different heads of revenues for each ULB over time. Figures A 3.1- A3.16 give the year wise details in the trends for the components of revenues for all the municipalities, both in absolute and per capita terms. Except for Pallavaram[20], the same patterns of fluctuations are visible in the absolute and per capita values of all the components for all the ULBs. In most of the ULBs, total revenue shows an increasing trend.

For COC, the behavior of intergovernmental transfers does not show any regular pattern. Total revenues record a stable value after 02-03. Own sources dominates in total revenue, tax revenues are higher than non-tax revenues. For Avadi, the data record major fluctuations till 01-02, after which there is a sharp rise in total revenue which stabilizes eventually, with a steady fall

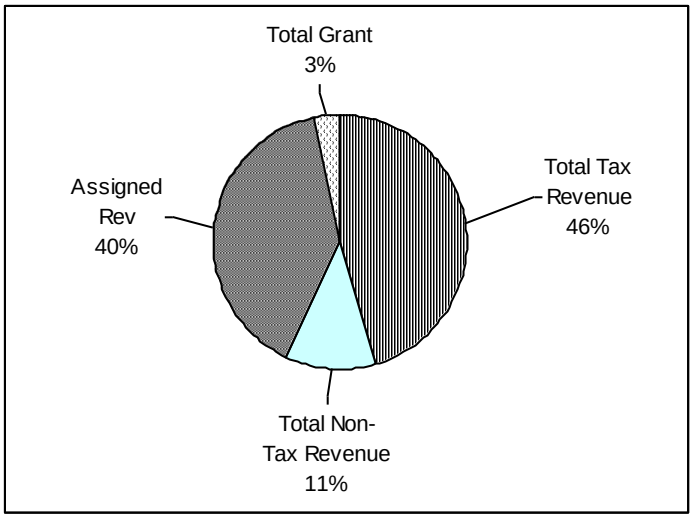
[19] The detailed year wise values for the per capita revenue components in the ULBs of Chennai are recorded in Table A2.1to A2.6 in the Appendix.

[20] This opposite trends in absolute and per capita values and some of the sharp fluctuations in the components for Pallavaram is due to the very sharp increase in population from 1991 to 2001. Since our method of population projection is dependent on the values of 1991 and 2001, the growth rate calculated on the basis of these population figures is much higher than the average growth rates of population of the ULBs of Chennai.

in total revenue and tax revenue while there is a rise in non-tax revenues. Non tax components dominates in own revenues, while own revenues dominates in total revenues. For Tambaram, there is a steady rise in all the components. While tax revenue dominates in the own revenue component, own revenue has a major share in total revenue. For Alandur, there is not much change in the own source and total revenue components. The falling trend in non tax and a rising trend in tax revenues stabilize after 01-02. This is the only ULB in Chennai which has a greater share of grants and assigned revenues than own revenues in total revenue. In Madhavaram, there is an increasing trend in total revenue, own revenue and non tax revenues while tax and intergovernmental transfers remain stable over the years. While non tax revenues dominate in own revenues, it is the own revenue which dominates in total revenue. Ambhatur shows a rising trend in total revenues after 02-03, which has risen sharply in 05-06 due to a rise in the level of transfers. While own revenues dominate in total revenue, it is the non tax revenue which dominates in own revenues.

We have also calculated the proportions of different heads of revenues to see the relative importance of each in total revenues. Figures 4.3-4.5 give the detailed proportions averaged across the years for COC, all ULBs including COC and the smaller ULBs excluding COC. We find that on an average the share of grants is much lesser in COC compared to the smaller ULBs, as a result of which even when COC is included in the list of ULBs the average proportion of grants is smaller than that of the smaller ULBs. The assigned revenue component has a high share

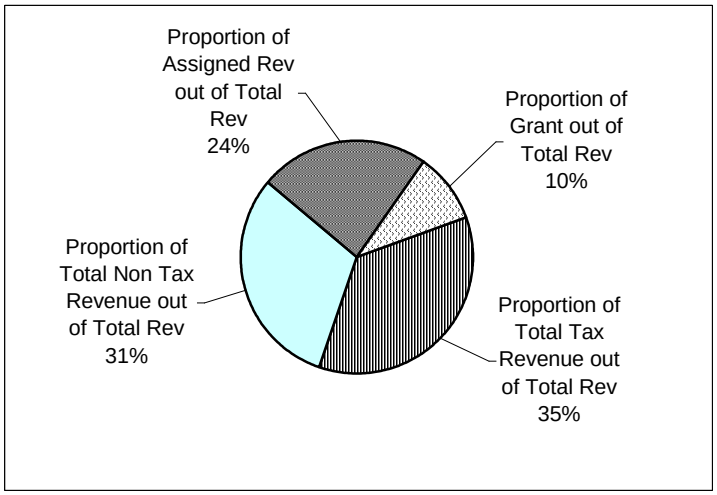
Figure 4.3: Average Proportion of Various Sources Out of Total Revenue for COC



Source: ULB Budgets & Authors Computation

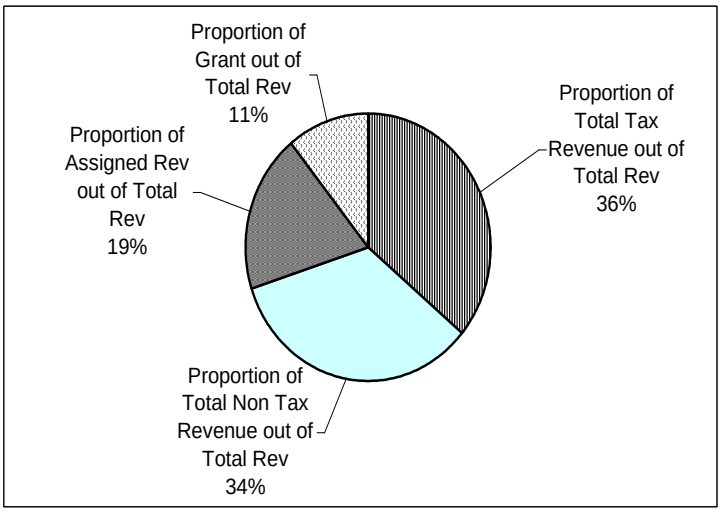
in COC's total revenue compared to the smaller ULBs as a consequence of which the share of assigned revenue is higher for all ULBs than that calculated for the smaller ULBs. The tax component has a higher share in COC whereas the non tax component has a higher share in smaller ULBs. It is interesting to note that the share of own sources in the smaller ULBs are higher compared to COC.

Figure 4.4: Average of Proportions of Various Sources Out of Total Revenue (All ULBs)



Source: ULB Budgets & Authors Computation

Figure 4.5: Average of Proportions of Various Sources Out of Total Revenue (Small ULBs)

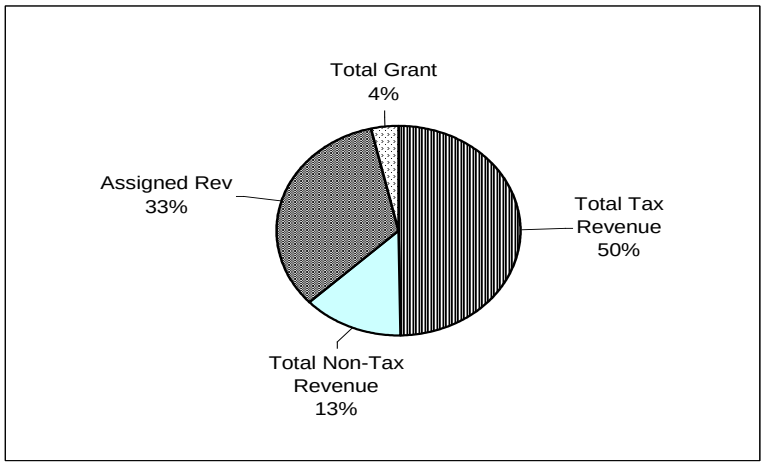


Source: ULB Budgets & Authors Computation

Figures 4.6-4.8 gives a detailed account of the proportions of different heads of revenues in total revenue for the year 2004-05. Comparing these figures with the earlier ones on average proportions for all the years we find that in the recent year there is a rise in the share of tax and

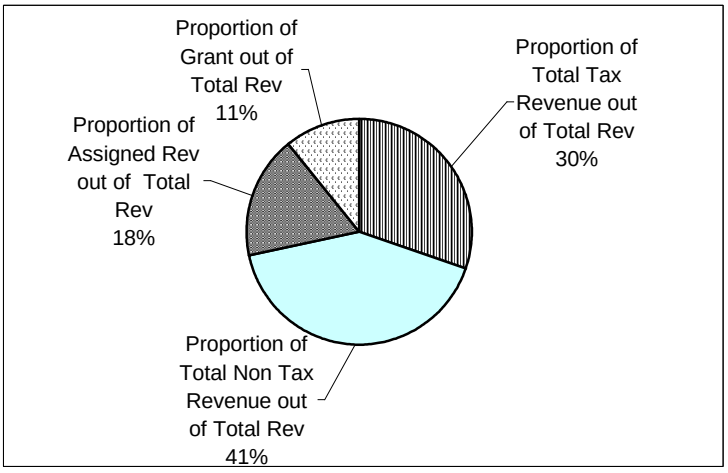
non tax revenues for COC but a rise in share of non tax revenues and a fall in tax revenues for smaller ULBs. The fall in shares of tax revenues for the smaller ULBs are somewhat disturbing and can only be attributed to administrative inefficiency reflected in the low collection efficiencies of smaller ULBs. However, the overall reliance on own sources are higher for all the categories of ULbs in 2004-05 when compared with the share of own source revenues averaged across all the years.

Figure 4.6: Average Proportion of Various Sources Out of Total Revenue for COC for 2004-05



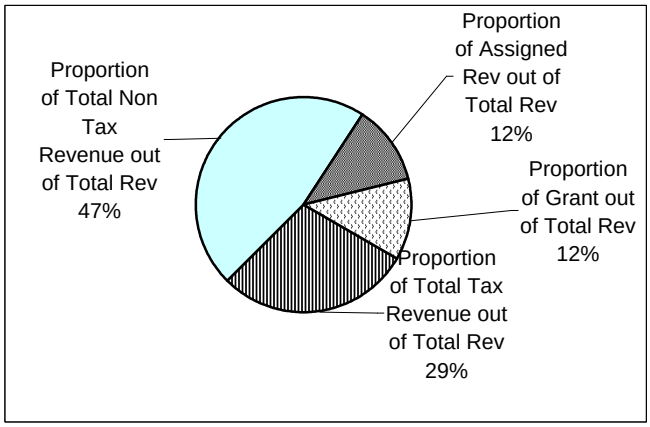
Source: ULB Budgets & Authors Computation

Figure 4.7: Proportion of Various Sources Out of Total Revenue (All ULBs) in 2004-05



Source: ULB Budgets & Authors Computation

Figure 4.8: Proportion of Various Sources Out of Total Revenue (Smaller ULBs) in 2004-05



Source: ULB Budgets & Authors Computation

The analysis of revenues for the ULBs for Chennai in the above sections gives an overall idea of the different components of revenues and their trend over time. In a nutshell we can say that the smaller ULBs generate lower levels of total revenues, with lower levels of intergovernmental transfers. The share of grants in intergovernmental transfers are higher for smaller ULBs than COC while that of assigned revenues are higher for COC. The higher shares of non tax revenues indicate to a rise in economic activities in these ULBs which is desirable. The fall in the shares of tax revenues over recent years implies that there is an underutilization of the potential property tax base. The overall increase in the reliability on own sources, both for smaller ULBs and COC, over recent years however is a positive phenomenon. The following chapter attempts to estimate the revenue capacity, fiscal gaps and some important indicators related to these gaps for the ULBs of Chennai.

Appendix

Table A 1.1: Collection Efficiency in Property Taxes for Pallawarm

	Collection	Demand	Collection Efficiency
1996-97	70.24	308.76	22.75%
1997-98	68.54	351.61	19.49%
1998-99	61.54	426.94	14.41%
1999-00	121.37	560.24	21.66%
2000-01	98.80	540.87	18.27%
2001-02	134.75	565.01	23.85%
2002-03	127.68	553.61	23.06%
2003-04	122.89	591.36	20.78%
2004-05	113.67	671.68	16.92%
2005-06	196.27	803.45	24.43%
Average			20.56%

Source: ULB Budgets & Authors Computation

Table A1.2 : Collection Efficiency in Property Taxes for Alandur

Year	Collectin	Demand	Collection Efficiency
1996	196.9	216.28	91.04%
1998	197.09	284.62	69.25%
1999	325.94	371.95	87.63%
2000	357.7	384.68	92.99%
2002	410.75	427.43	96.10%
2003	410.72	449.24	91.43%
2004	421.81	471.7	89.42%
2005	455.55	509.44	89.42%
			88.41%

Source: ULB Budgets & Authors Computation

Table A1.3 : Collection Efficiency in Property Taxes for Avadi

Year	Property Tax Revenue	Demand for Property Tax Revenue issued by the city.	Collection Efficiency Avadi
1996	13550475	32123257	42.18%
1997	12380473	33816835	36.61%
1998	14477943	34579970	41.87%
1999	10346051	43095985	24.01%
2000	33702298	62638698	53.80%
2001	29430810	58825848	50.03%
2002	36799122	62871425	58.53%
2003	27608730	62695906	44.04%
2004	25595460	67984082	37.65%
2005	27996976	78912008	35.48%
			42.42%

Source: ULB Budgets & Authors Computation

Table A1.4 : Collection Efficiency in Property Taxes for Ambattur

Year	Property Tax Revenue	Demand for Property Tax Revenue issued by the city.	Collection Efficiency Ambattur
2001	815.87	2019.96	40.39%
2002	823.4	2148.76	38.32%
2003	929.51	2385.02	38.97%
2004	925.87	2658.06	34.83%
2005	1211.74	2930.74	41.35%
			38.77%

Source: ULB Budgets & Authors Computation

Table A1.5 : Collection Efficiency in Property Taxes for Tiruvottiyur

	Collection	Demand	Collection Efficiency Tiruvottiyur
2000-01	37953714	94800735	40.04%
2001-02	39846758	107914545	36.92%
2002-03	56551583	116893928	48.38%
2003-04	50015540	104702939	47.77%
2004-05	43796400	100664194	43.51%
2005-06	51341338	99948293	51.37%
			44.66%

Source: ULB Budgets & Authors Computation

Table A 2.1 : Year wise Per Capita Property Tax In The ULBs of Chennai

	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
COC	268.70	292.51	363.10	332.23	395.69	413.70	NA
Avadi	47.17	144.99	120.08	140.97	98.90	86.80	89.88
Tambaram	195.64	193.85	192.93	192.98	181.68	182.66	185.48
Tiruvottiyur	188.37	176.55	175.69	233.98	193.42	160.26	177.73
Alandur	229.84	240.04	280.31	248.35	233.65	232.21	238.64
Madhavaram	NA	NA	227.30	214.54	198.54	226.79	213.38
Ambathur	NA	NA	245l	229.40	238.75	221.96	271.09
Pallavaram (M)	138.38	84.79	87.35	61.76	44.24	31.32	40.70

Source: ULB Budgets & Authors Computation

Table A 2.2 : Year wise Per Capita Total Non-Tax Revenue In The ULBs of Chennai

	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
COC	97	96	91	99	102	132	NA
Avadi	37	311	52	305	290	280	291
Tambaram	74	79	84	102	114	131	129
Tiruvottiyur	149	24	33	28	30	266	32
Alandur	179	124	36	52	56	57	58
Madhavaram	NA	NA	1,131	1,165	1,016	990	1,161
Ambathur	NA	NA	423	395	590	563	371
Pallavaram	734	288	126	192	263	208	120

Source: ULB Budgets & Authors Computation

Table A 2.3 : Year wise Per Capita Own Source Revenue In The ULBs of Chennai

	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
COC	421.67	458.36	515.52	494.11	556.01	633.88	NA
Avadi	99.32	476.96	207.23	492.85	429.06	390.61	398.69
Tambaram	343.92	351.52	361.22	435.25	410.15	444.09	444.13
Tiruvottiyur	410.39	228.07	229.60	283.07	246.22	451.59	232.88
Alandur	419.20	376.37	328.03	312.78	296.94	301.72	310.07
Madhavaram	NA	NA	1,375.62	1,395.65	1,238.81	1,234.94	1,393.25
Ambathur	NA	NA	706.79	655.17	867.89	834.64	696.45
Pallavaram	979.61	463.55	306.15	300.40	354.09	273.06	207.73

Source: ULB Budgets & Authors Computation

Table A 2.4 : Year wise Per Capita Grant in the ULBs of Chennai

	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
COC	15.48	14.55	19.24	62.97	33.48	37.07	NA
Avadi	NA	NA	1.63	2.86	2.84	2.13	6.54
Tambaram	33.97	32.85	47.50	62.54	73.41	116.50	85.70
Tiruvottiyur	153.42	52.87	NA	37.76	22.19	19.13	NA
Alandur	138.72	178.53	107.09	135.73	423.55	326.86	232.89
Madhavaram	NA	NA	50.12	84.94	51.43	125.20	114.49
Ambathur	NA	NA	29.18	2.49	23.81	32.60	111.64
Pallavaram	53.59	39.48	60.07	51.68	48.83	46.83	158.29

Source: ULB Budgets & Authors Computation

Table A2.5:Year wise Per Capita Assigned Revenue and Grants in the ULBs of Chennai

	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
COC	352.39	343.26	303.12	515.43	453.57	372.81	NA
Avadi	NA	NA	1.63	2.86	2.84	2.13	6.54
Tambaram	33.97	32.85	47.50	62.54	73.41	116.50	85.70
Tiruvottiyur	153.42	52.87	NA	37.76	22.19	19.13	NA
Alandur	492.12	498.18	541.87	506.78	489.22	491.88	505.51
Madhavaram	NA	NA	50.12	84.94	51.43	125.20	114.49
Ambathur	NA	NA	103.40	19.97	84.96	76.81	260.59
Pallavaram	53.59	39.48	60.07	51.68	48.83	46.83	158.29

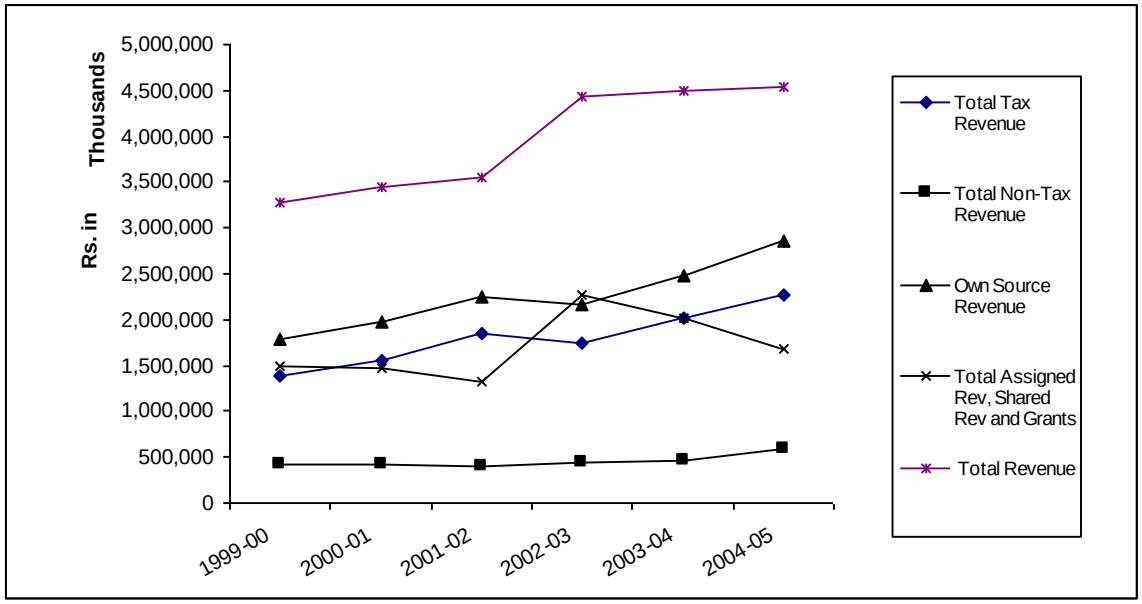
Source: ULB Budgets & Authors Computation

Table A2.6: Year wise Per Capita Total Revenue In The ULBs of Chennai

	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
COC	774.06	801.62	818.64	1,009.54	1,009.58	1,006.70	NA
Avadi	99.32	476.96	208.86	495.72	431.90	392.74	405.24
Tambaram	377.88	384.37	408.71	497.79	483.56	560.60	529.83
Tiruvottiyur	563.81	280.94	229.60	320.83	268.42	470.72	232.88
Alandur	911.32	874.55	869.90	819.57	786.16	793.61	815.58
Madhavaram	NA	NA	1,425.74	1,480.59	1,290.23	1,360.14	1,507.74
Ambathur	NA	NA	810.19	675.14	952.85	911.45	957.04
Pallavaram	1,033.20	503.03	366.21	352.09	402.92	319.89	366.02

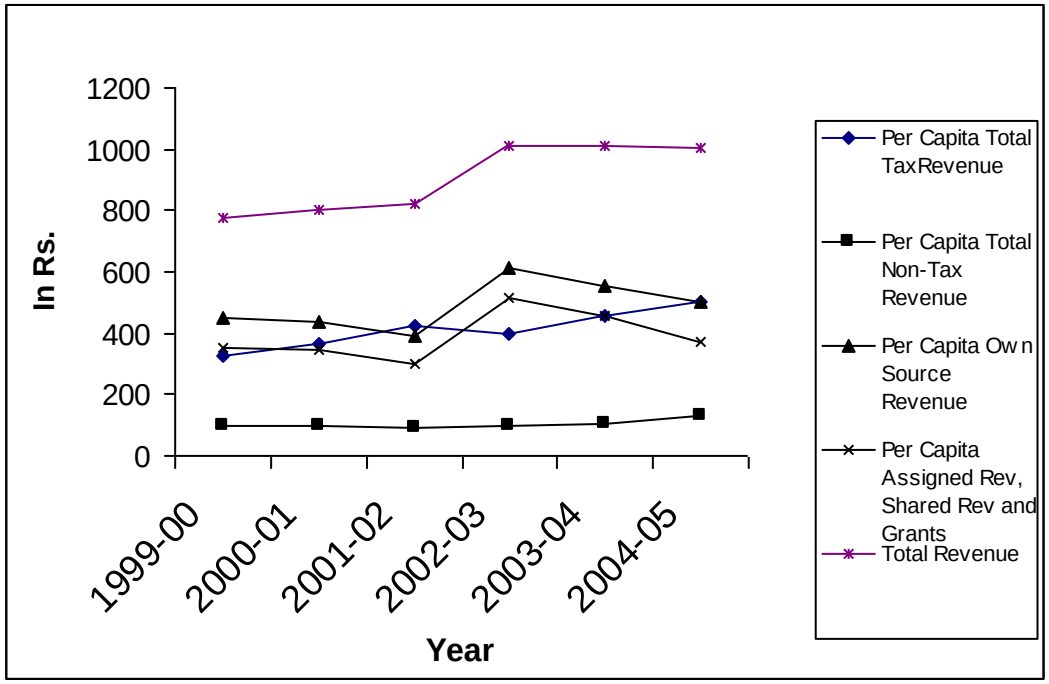
Source: ULB Budgets & Authors Computation

Figure A.3.1: Source wise Revenue Details in Corporation of Chennai (With 1999- 2000 Constant prices)



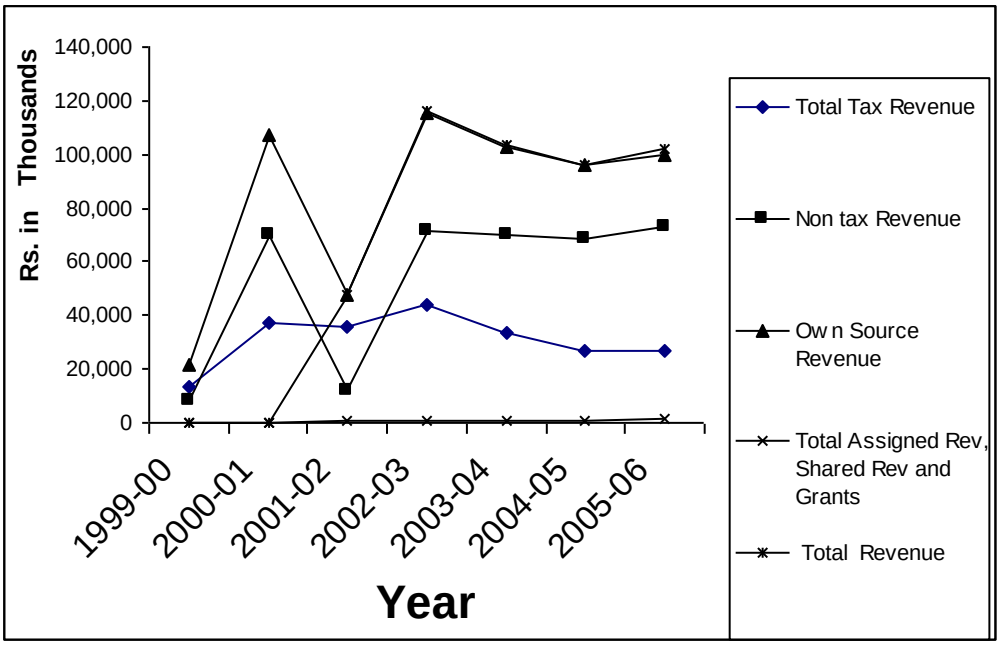
Source: ULB Budgets & Authors Computation

Figure A.3.2: Per Capita Source wise Revenue Details in Corporation of Chennai (With 1999-2000 Constant prices)



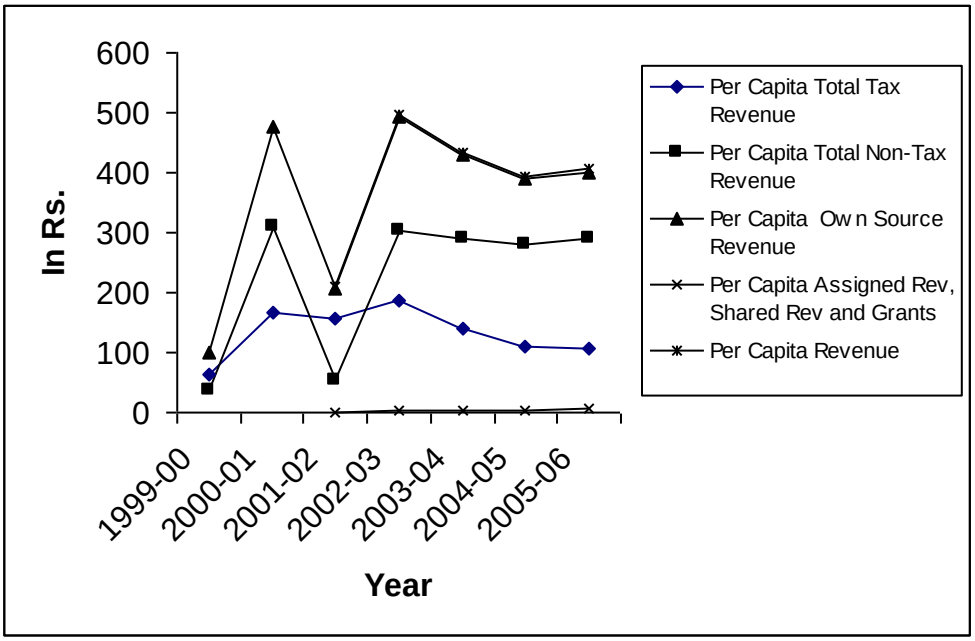
Source: ULB Budgets & Authors Computation

Figure A.3.3: Source wise Revenue Details in Avadi (With 1999-2000 Constant prices)



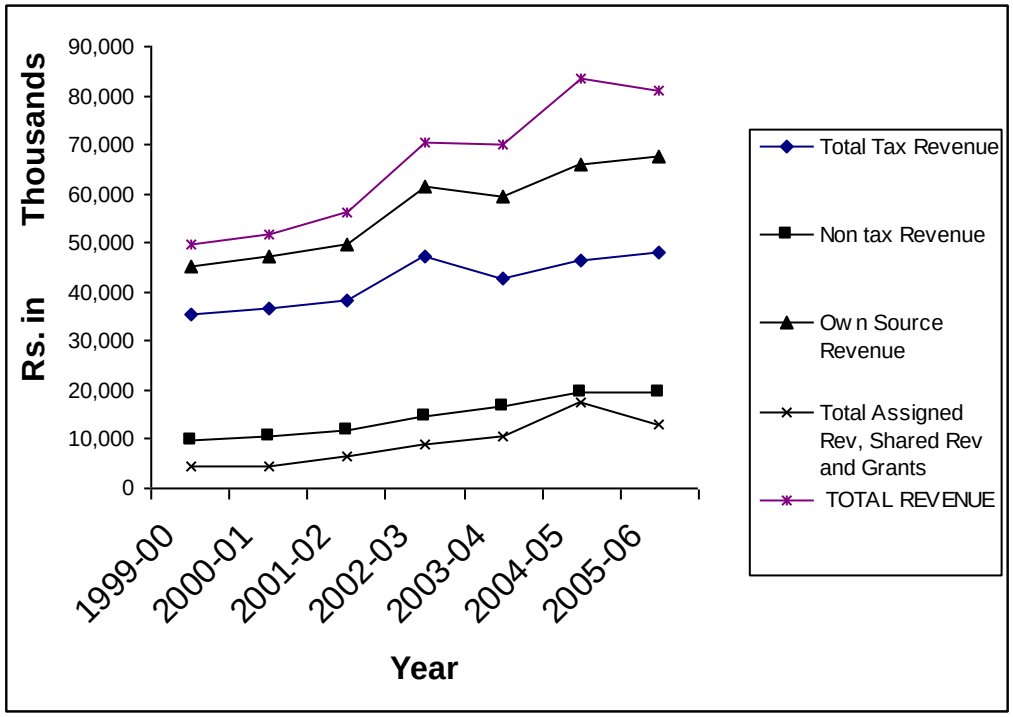
Source: ULB Budgets & Authors Computation

Figure A.3.4: Source wise Per Capita Revenue Details in Avadi (With 1999-2000 Constant prices)



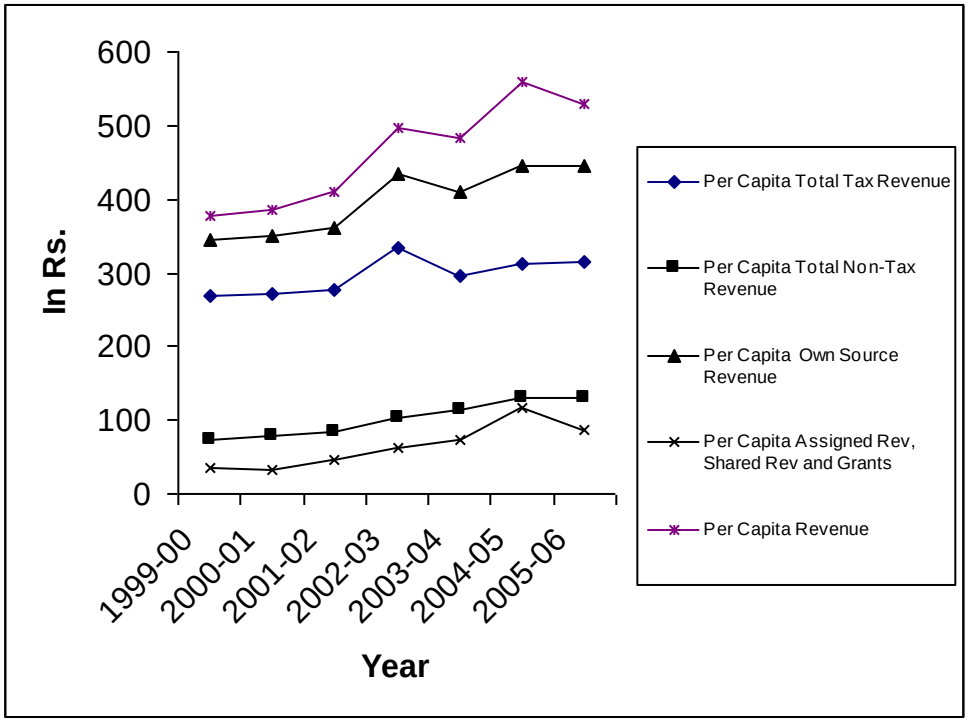
Source: ULB Budgets & Authors Computation

Figure A.3.5: Source wise Revenue Details in Tambaram (With 1999-2000 Constant prices)



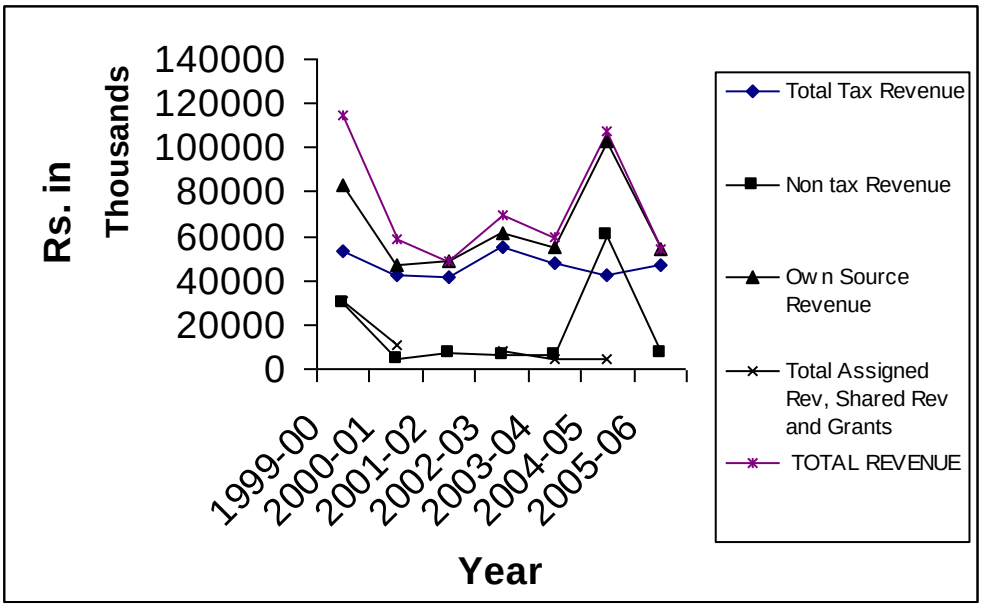
Source: ULB Budgets & Authors Computation

Figure A.3.6: Source wise Per Capita Revenue Details in Tambaram (With 1999-2000 Constant prices)



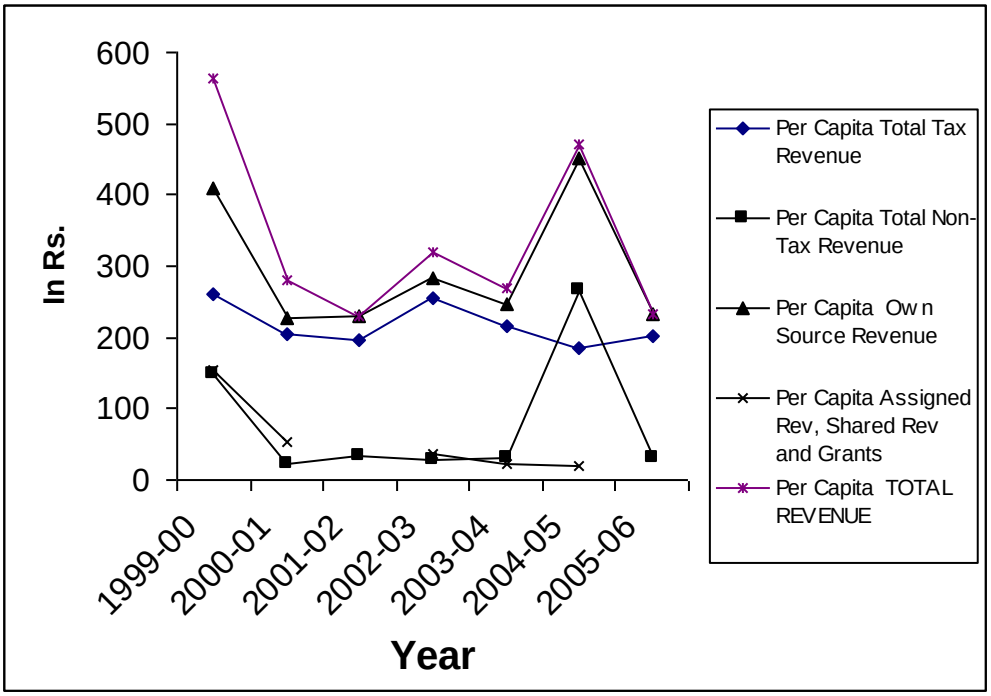
Source: ULB Budgets & Authors Computation

Figure A.3.7: Source wise Revenue Details in Tiruvottiyur (With 1999-2000 Constant prices)



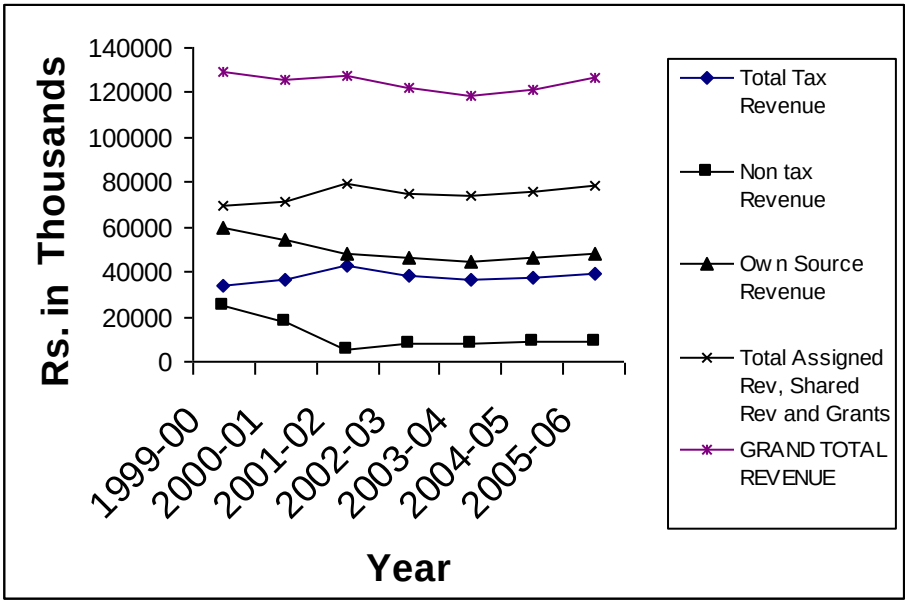
Source: ULB Budgets & Authors Computation

Figure A.3.8: Source wise Per Capita Revenue Details in Tiruvottiyur (With 1999-2000 Constant prices)



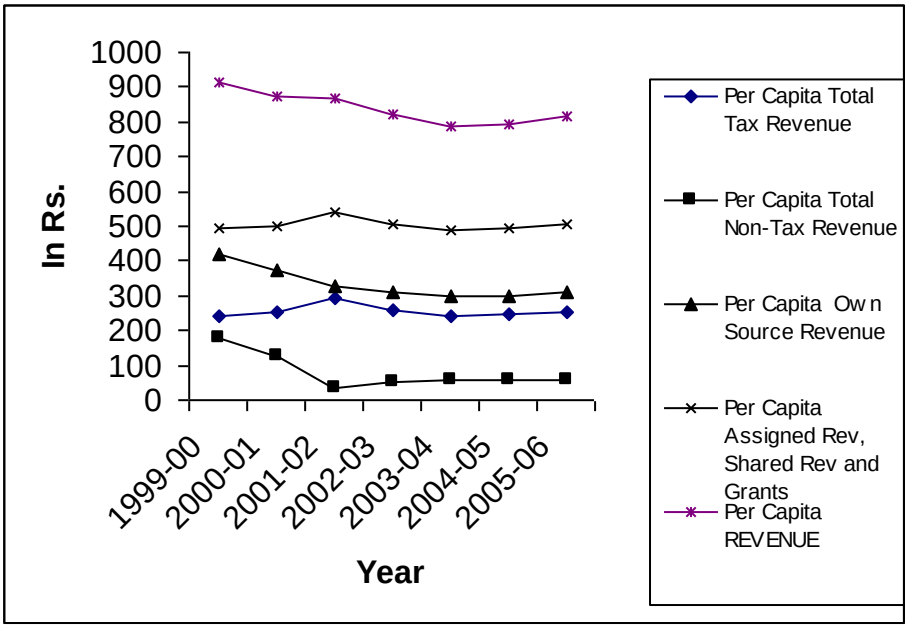
Source: ULB Budgets & Authors Computation

Figure A.3.9: Source wise Revenue Details in Alandur (With 1999-2000 Constant prices)



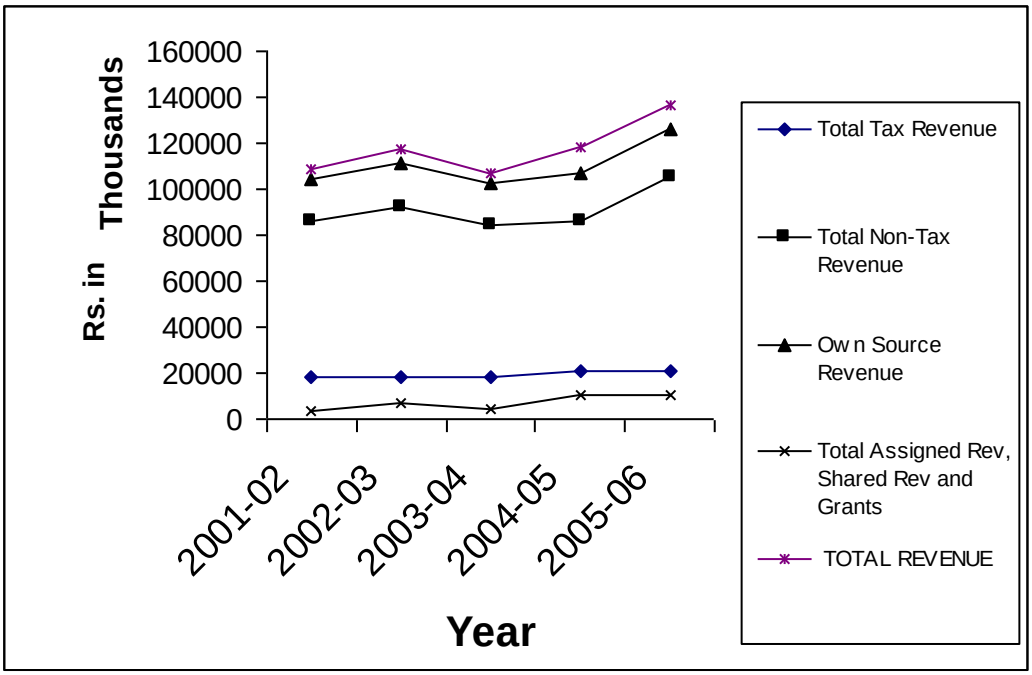
Source: ULB Budgets & Authors Computation

Figure A.3.10: Source wise Per Capita Revenue Details in Alandur (With 1999-2000 Constant prices)



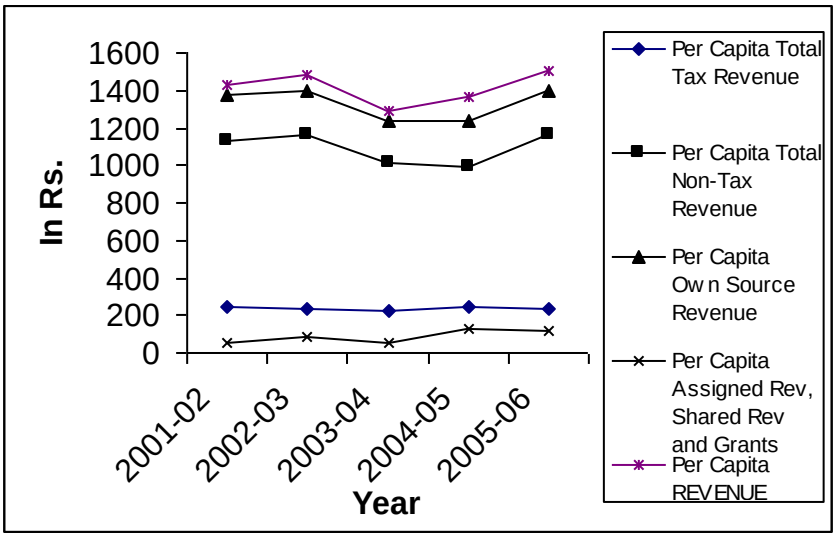
Source: ULB Budgets & Authors Computation

Figure A.3.11: Source wise Revenue Details in Madhavaram (With 1999-2000 Constant prices)



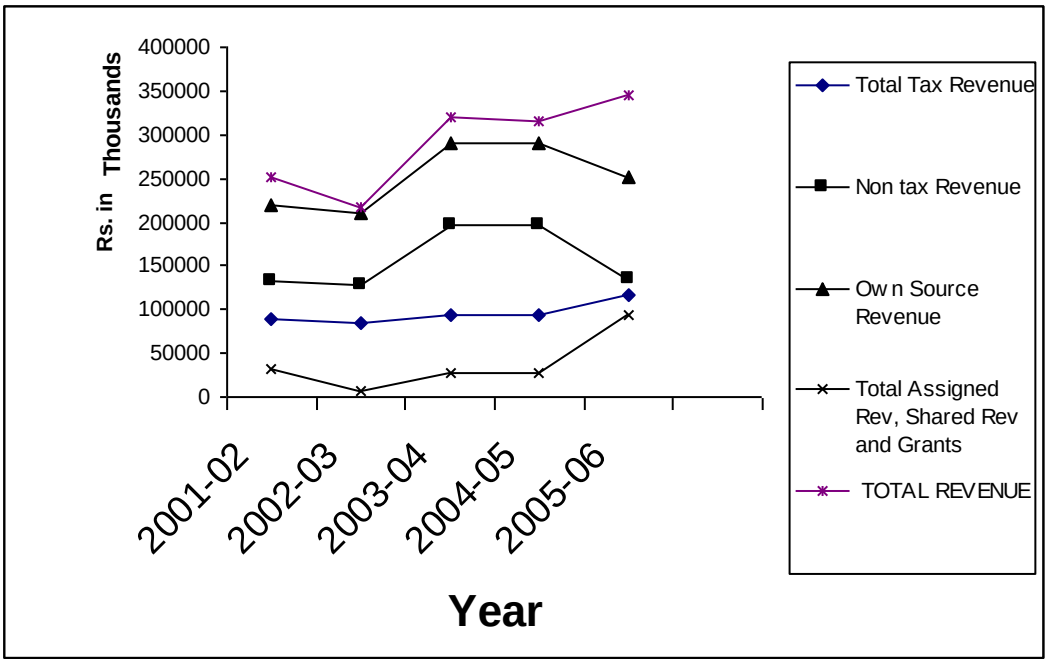
Source: ULB Budgets & Authors Computation

Figure A.3.12: Source wise Per Capita Revenue Details in Madhavaram (With 1999-2000 Constant prices)



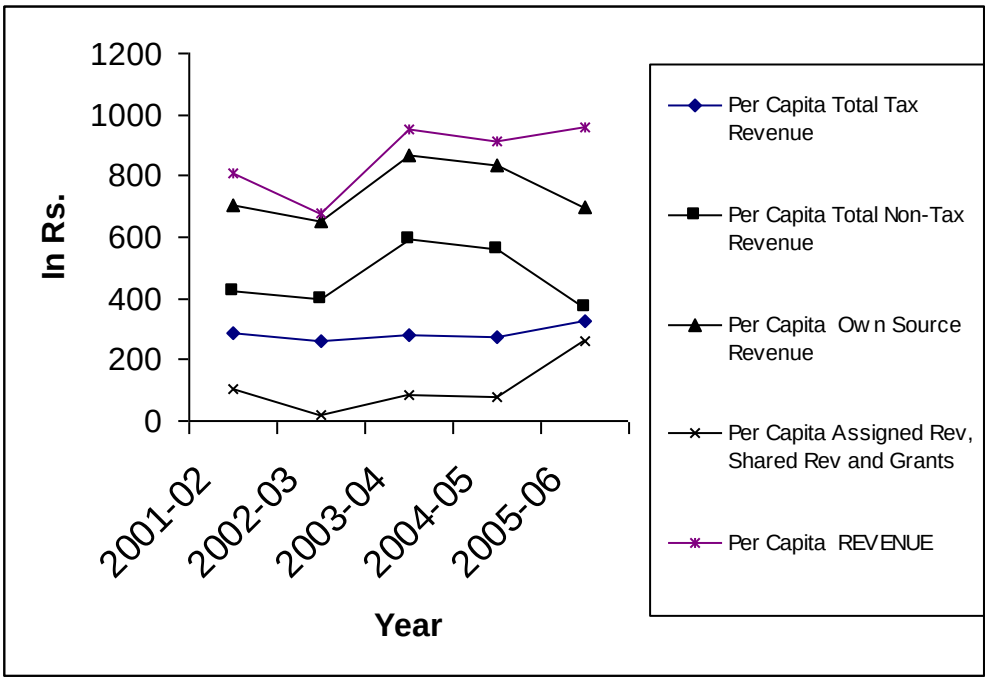
Source: ULB Budgets & Authors Computation

Figure A.3.13: Source wise Revenue Details in Ambatthur (With 1999-2000 Constant prices)



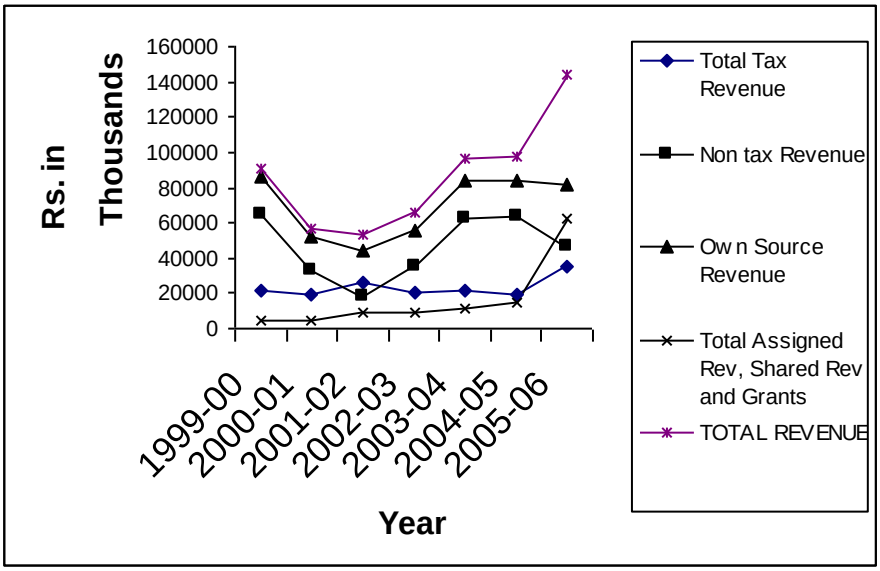
Source: ULB Budgets & Authors Computation

Figure A.3.14: Source wise Per Capita Revenue Details in Ambatthur (With 1999-2000 Constant prices)



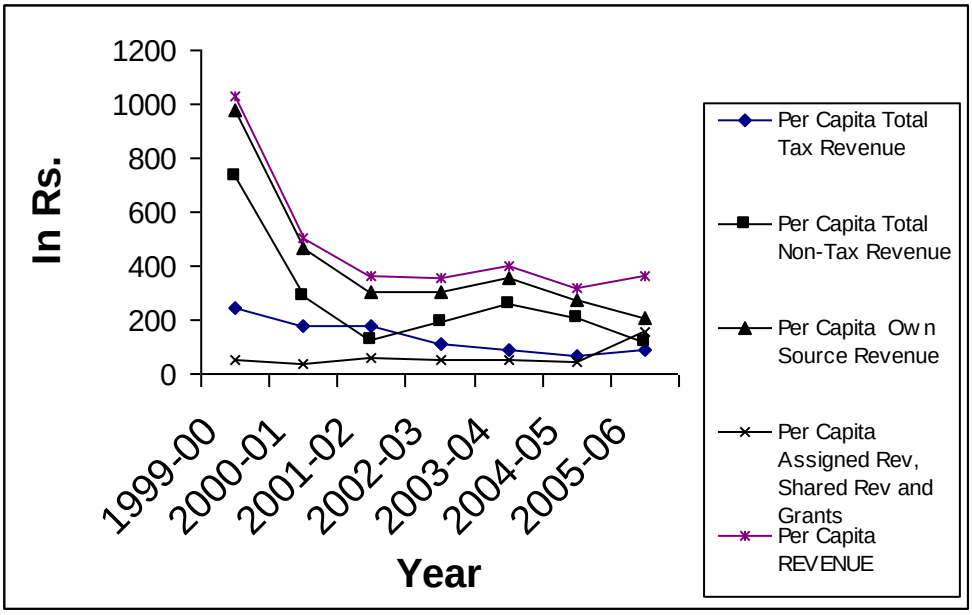
Source: ULB Budgets & Authors Computation

Figure A.3.15: Source wise Revenue Details in Pallavaram (With 1999-2000 Constant prices)



Source: ULB Budgets & Authors Computation

Figure A.3.16: Source wise Per Capita Revenue Details in Pallavaram (With 1999-2000 Constant prices)



Source: ULB Budgets & Authors Computation

CHAPTER 5 : ASSESSMENT OF FISCAL HEALTH

This chapter attempts to assess the fiscal health of Chennai Urban Agglomeration by bringing together different aspects of the sources of finances and heads of expenditures. The idea is to see whether the city is in a position to finance its expenditure requirements for service delivery. The traditional 'need- capacity approach' treats the gap between two normative measures, one for revenues called the revenue capacities and the other for expenditures called the expenditure needs, as an indicator of fiscal health. Notwithstanding the problems involved with accurate estimations of these normative measures, our assessment of fiscal health would be based on this approach.

The first section of this chapter deals with the estimation of revenue capacities for the ULBs in Chennai. Comparisons of these estimates with actual revenues collected throw some light on the extent of underutilised potential in a ULB. The total expenditure needs are calculated from the service wise norms on expenditures.[21] In the second section we estimate the need capacity gaps. We also analyse the gaps between actual revenues and expenditure needs. The third section concludes spelling out some data caveats and possible sources of errors in estimations involved with this methodology. A time series data on revenues of the ULBs for the period 99-00 to 05-06 is used for the ULBs[22]. All the financial variables are expressed in 99-00 prices. To make our comparisons valid across ULBs, the gaps are expressed in per capita terms.

Revenue Capacity

Revenue capacity refers to the maximum revenue potential of a ULB. Estimating the revenue capacity of an individual ULB is challenging for two reasons. First, the base for revenue generation needs to be identified. Second, the rate at which revenues can be generated from the base needs to be estimated accurately. The urban municipalities have heterogeneous bases with multiple tax rates and user fees. Gross City Products (GCP) can act as good proxies for the base for urban revenue generation. But in India, data on GCPs of the ULBs are not available. We have used the non agricultural component of District Domestic Product (DDP) as a proxy for GCP. With very low probability of agricultural activities in the urban areas the non agricultural components of DDPs of the respective districts in which the ULBs are situated should act as reasonably good approximations for GCPs. We have taken the per capita values of DDPs

[21] See chapter 3 for details.

[22] The averages are calculated for ULBs on the basis of the data for the years each record. Since we do not have data for all the years for all the ULBs, the overall averages are calculated on the basis of ULB level averages.

excluding the agricultural sector for the respective years and multiplied it with the population of a ULB to generate the GCP figure of the ULB. The sample of ULBs considered in the study are situated across three districts, Chennai, Thiruvallur and Kancheepuram[23].

The GCP estimates are given in Table 5.1. It is interesting to note that the average GCP for Chennai agglomeration including COC is four times as high as the average for the smaller ULBs. The GCP level on an average is the highest in COC, followed by Ambathur while the lowest value has been recorded in Madhavaram. We can rank the ULBs in terms of revenue capacities in the same order.

Table 5.1 Estimated Gross City Products and Revenue Capacities of ULBs in Chennai (Rs, 99-00)

ULB	GCP	Revenue Capacity	Own Revenue Capacity
Average COC	1,35,26,79,14,286	5,41,07,16,571	4,05,80,37,429
Average Alandur	3,46,32,18,401	13,85,28,736	10,38,96,552
Average Ambathur	9,15,11,30,756	36,60,45,230	27,45,33,923
Average Avadi	6,21,26,01,893	24,85,04,076	18,63,78,057
Average Madhavaram	2,27,29,38,913	9,09,17,557	6,81,88,167
Average Pallavaram	4,75,36,18,299	19,01,44,732	14,26,08,549
Average Tambaram	3,29,55,89,896	13,18,23,596	9,88,67,697
Average Tiruvottiyur	5,75,27,81,580	23,01,11,263	17,25,83,447
Average All	21,27,12,24,253	85,08,48,970	63,81,36,728
Average Smaller ULBs	4,98,59,82,820	19,94,39,313	14,95,79,485

Source: CSO Estimates of DDP, ULB Budgets, Authors' Computations

To arrive at an appropriate rate which if applied can realize the true revenue potential, we have the ratios for the actual total revenue to GCP and actual own revenue to GCP as our reference points. We find that on an average the ULBs of Chennai presently generate 3 per cent of GCP as total revenue and 2 per cent of GCP as own revenue.

Table 5.2: Some Useful Ratios for Chennai ULBs

ULB	Total revenue to GCP ratio	own revenue to GCP ratio
Average COC	3.0%	1.7%
Average Alandur	3.6%	1.4%
Average Ambathur	3.2%	2.8%
Average Madhavaram	5.2%	4.9%
Average Pallavaram	2.0%	1.7%
Average Tambaram	2.0%	1.7%
Average Tiruvottiyur	1.5%	1.3%
Average All	3%	2%

Source: ULB Budgets, Authors' Computations

[2323] Pallavaram, Alandur and Tambaram are situated in Kancheepuram district, Ambhatur, Thiuvottyor , Madhavaram and Avadi in Thiruvallur and Corporation of Chennai is situated in Chennai district.

We propose to apply a rate higher by 1 per cent for estimating revenue capacity and own revenue capacity as this increase by 1 per cent is not too high to be politically infeasible. The revenue capacity and the own revenue capacity estimates are given in Table 5.1. The revenue capacities are generated as 4 per cent of GCP at the ULB level and the own revenue capacities as 3 per cent of GCPs.

Table 5.3 records the average proportionate differences in revenues once the capacities are realized .It is interesting to note that on an average the ULBs in Chennai can almost double their total revenues if the revenue potentials are realized, the average proportionate increase in absolute amounts being marginally higher if the smaller ULBs are taken separately. But for COC the proportionate increase is only 35 per cent on an average. For own revenues we find that on an average the proportionate increase can be as high as 90 per cent of the present levels and the proportionate increases are roughly the same if we take smaller ULBs separately. For COC an average proportionate increase of 79 per cent in own revenues is recorded. In per capita terms we find on an average the ULBs can generate additional amounts of Rs. 339 and Rs. 260 as total revenue and own revenue if the respective capacities are realized. If we consider the smaller ULBs excluding COC the additional revenues and own revenues in per capita terms that can be generated by realizing the respective potentials are Rs.344 and Rs.243 respectively. For COC however these amounts are much higher and of the order of Rs. 458 and Rs. 502 for total revenues and own revenues respectively.

Table 5.3: Proportionate Differences in Revenues (Actuals and Capacities) for Chennai ULBs

ULB	Proportion of Revenue Capacity to Total Revenue	Proportion of Own Revenue Capacity to Own Revenue
Average COC	135%	179%
Average Alandur	111%	210%
Average Ambathur	127%	109%
Average Avadi	379%	286%
Average Madhavaram	77%	62%
Average Pallavaram	221%	206%
Average Tambaram	208%	179%
Average Tiruvottiyur	297%	286%
Average All	195%	190%
Average Smaller ULBs	203%	191%

Source: ULB Budgets, Authors' Computations

Fiscal Gaps and Related Indicators

Fiscal gaps or need-capacity gaps of ULBs are defined as the differences between the revenue capacities and the expenditure requirements of the ULB. The expenditure requirements vary across ULBs depending upon their service delivery responsibilities. We have estimated the

fiscal gaps as the difference between the per capita revenue capacities and the per capita total expenditure needs. The total expenditure needs are expressed in terms of service wise norms on expenditures added together.

Table 5.4 records the values of the fiscal gaps and related indicators for Chennai UA. It is interesting to note that the average fiscal gap in per capita terms for Chennai UA is Rs 575 and if we exclude COC and consider only the smaller ULBs, it is lesser and amounts to Rs. 538. However for COC the fiscal gap is recorded as Rs. 835 per capita. We have also calculated the fiscal gaps on the basis of own revenues and found that Chennai UA on an average records a value of Rs.315 as the fiscal gap based on own revenues in per capita terms. This value is higher (Rs.527) for COC and lower for the group of smaller ULBs (Rs.285). We find that the fiscal gaps, both on the basis of own revenues and total revenues are positive indicating to the fact that the ULBs can generate surpluses if the revenue potentials are realized given their expenditure requirements.

Table 5.4 Fiscal Gaps and Related Indicators of Fiscal Health for Chennai ULBs (Rs, 99-00)

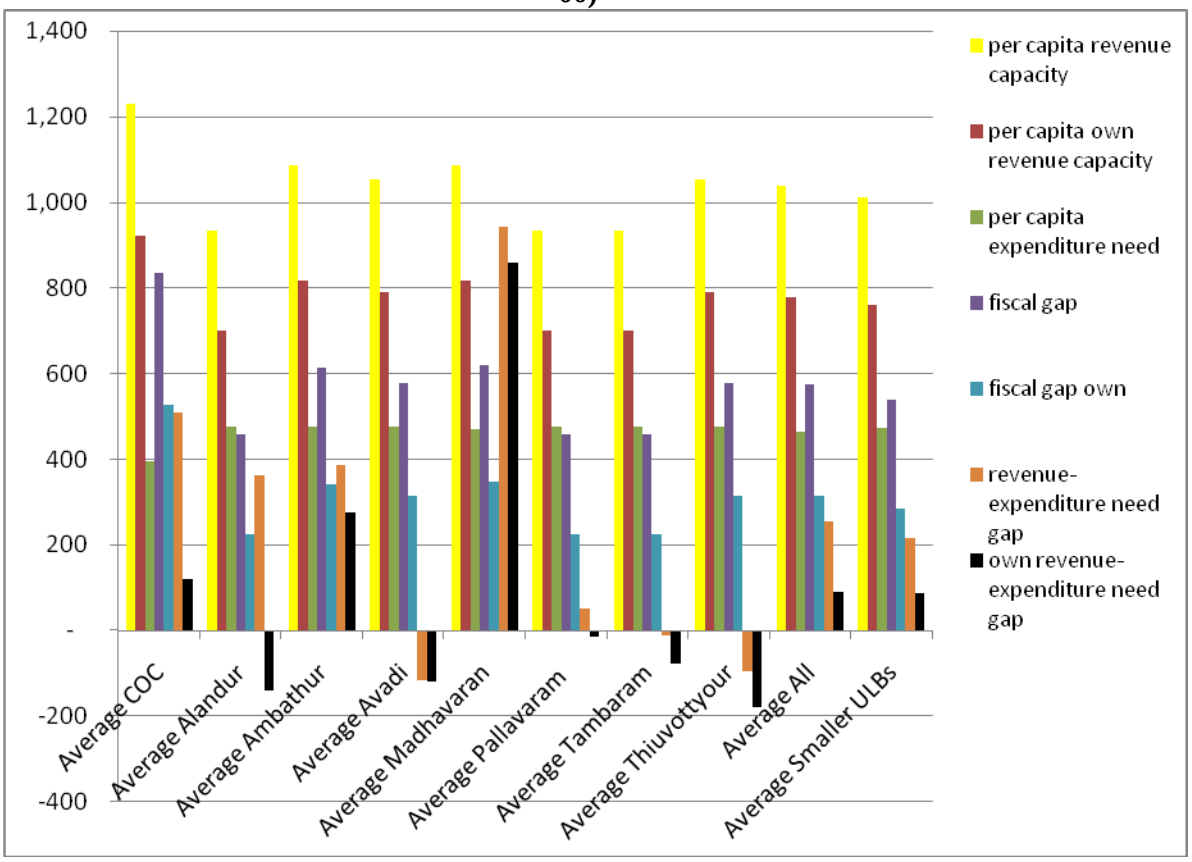
ULB	per capita revenue capacity	per capita own revenue capacity	Per capita expenditure need	fiscal gap	fiscal gap own	revenue-expenditure need gap	own revenue-expenditure need gap
Average COC	1,229	921	394	835	527	509	119
Average Alandur	934	700	475	459	225	364	(140)
Average Ambathur	1,088	816	475	613	341	386	277
Average Avadi	1,054	790	475	579	315	(116)	(119)
Average Madhavaram	1,088	816	469	619	347	944	859
Average Pallavaram	934	700	475	459	225	50	(15)
Average Tambaram	934	700	475	459	225	(12)	(76)
Average Tiruvottiyur	1,054	790	475	579	315	(94)	(178)
Average All	1,039	779	464	575	315	254	91
Average Smaller ULBs	1,012	759	474	538	285	217	87

Source: ULB Budgets, Authors' Computations

We have also calculated the gaps between the actual total (own) revenue and total expenditure need. These gaps help us to assess the fiscal health of ULBs in terms of their current finances, that is to say whether they are in a position to finance their expenditure requirements by

their actual revenues. We find that on an average for Chennai UA there is a surplus of Rs.254 per capita over total expenditure need if calculated on the basis of actual total revenue, the magnitude of surplus being slightly lower and amounts to Rs 217 per capita for smaller ULBs and higher for COC amounting to Rs. 509 per capita. When the difference between the actual own revenue and expenditure need is calculated, we find that the amounts of surpluses are of the order of Rs. 91 for the UA as a whole, Rs.87 for the smaller ULBs and Rs. 119 for COC. It is interesting to note that three ULBs, Avadi, Tambaram and Thiuvottyor record negative revenue expenditure need gaps whereas five ULBs Alandur, Pallavaram, Avadi, Tambaram and Thiuvottyor record negative own revenue expenditure needs gaps. This implies that for most of the ULBs in Chennal UA, there are shortages of finances if they have to cover the expenditure needs of the selected services by their own sources. Given the external transfers, some of them can cover the expenditure needs and have some surplus. Figure 5.1 gives the visual details of the fiscal gap calculations of the ULBs of Chennai.

Figure 5.1 Fiscal Gaps and Related Indicators of Fiscal Health for Chennai ULBs (Rs, 99-00)



Source: ULB Budgets, Authors' Computations

Concluding Remarks: Assessment of Fiscal Health

The above sections analyse different aspects of fiscal health of the ULBs in Chennai. We find that on an average the fiscal gap calculated on the basis of both total revenue capacities and own revenue capacities record a positive value with none of the ULBs reporting negative values. This indicates that if true revenue potentials are realised Chennai UA can generate some surplus over the total expenditure needs. But one point needs special mention. Positive fiscal gaps cannot be directly related to sound fiscal health of ULBs. The ULBs incur expenditures other than the services considered in the above analysis[24]. The nature of these expenditures is such that no defined norms exist for them. So even if the gap between the revenue capacities and the expenditure needs for the set of services considered by us are positive, we cannot directly infer that the ULBs are generating surpluses over their 'true' expenditure needs. In this case there is a possibility of underestimating the 'true' expenditure needs of ULBs by considering the expenditure needs of the set of services chosen.

We can also refer to the gaps calculated on the basis of actual revenues and the expenditure needs. We would like to see whether the ULBs are in a position to finance the 'ideal' expenditure requirements for the chosen services from their existing revenues. The gaps calculated on the basis of actual revenues and own revenues though record a positive value on an average for the UA, some ULBs record negative values of these gaps. This indicates that some of the ULBs are not in a position to cover their expenditure responsibilities on the basic services chosen in the study from the levels of revenues currently generated by them.

The expenditure gaps[25] can add a new dimension to the analysis. We find that on an average for Chennai UA as a whole the average value recorded for the expenditure gap is Rs. 174 and is negative. The values recorded for smaller ULBs and COC are Rs.152 and Rs.296 respectively and are negative. This shows that the expenditures actually incurred by the ULBs of Chennai on the specified services are not sufficient to cover their expenditure needs on these services.

So, on the one hand we find positive fiscal and revenue expenditure needs gaps, on the other we get negative expenditure gaps. Even if we leave out revenue capacity measures as they are normative concepts and might not get realised, the positive gaps based on actual revenues give an indication that finances are sufficient to cover the expenditure needs on the basic services. But, from the actual expenditure accounts we find the ULBs under-spend on these services. One

[24] See chapter 3
[2525] Refer to Chapter 3 for details

plausible explanation could be underutilisation of resources because the services chosen are basic services, expenditures on which should be given priority over other expenditures. Relating the phenomenon of under-spending on the services to the quality and physical levels of these services, a new dimension can be added to the analysis but due to non-availability of data on quality and physical levels of services, such analyses are not possible. But the experience of the surveys to the individual ULBs and informal communication with the inhabitants suggest that most of the ULBs do not satisfy the standards for quality and adequacy of services. Summing up, we can say that while there are potentials for the ULBs to raise revenues to a considerably large extent, proper planning on utilisation of resources on priority basis is needed for maximum gains from the existing levels of revenues generated.

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