

**Health Equity in Access and Benefit Incidence: A tale of two states in India**

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## 1. Introduction

With macroeconomic crises and fiscal austerity in the milieu, most of the developing nations found themselves in the quagmire of limited public investment in health care, coupled with too much dependence on the unregulated private sector. This resulted in inequality in access, utilization and finance of health care. India, a leading economic power in the globe, faces the exactly same situation too. While total expenditure on health in India as a percentage of GDP was broadly in line with the level achieved in other countries at similar per capita income, it was skewed heavily in favor of private expenditure. Public expenditure on health in India remained stagnant near 1 per cent of GDP till 2010, with an urban-centric policy orientation. Again, the National Health Policy 2002 identifies a paradigm shift at policy level resulting in market segmentation, whereby government resources were to be used only for the *deserving* section of the society, while the *affording* population was expected to purchase medical care services from the private sector. If the rich people use public health facilities for curative care, this deprives the poor people from using those services due to insufficient facilities with public health sector, resulting in partial crowding out. Thus the two issues that gain independence are access to health care and access to public subsidy for the most vulnerable population.

In this context, it is crucial to define access to health care. Access to health care is defined as the *potential and actual entry of a given individual or population group into the health care delivery system* (Aday and Andersen 1974, Kirby and Kaneda 2005). Penschansky and Thomas (1981) described access as the '*degree of fit*' between clients and the health system depending up on acceptability, affordability, availability, physical accessibility and accommodation. Though equality of access is about equal opportunity, the question is whether the opportunity exercised is relevant to equity defined in terms of access (Mooney 1983). This automatically brings in the issue of equity and equality in health care, largely accepted as a public good. Though 'equity' and 'equality' are used synonymously, there exists a clear distinction between them (Culyer 1995). While equality means equal division of the *distribuendum* (the entity to be distributed), equity refers to fairness in that distribution (fairness is 'what reduces inequality'). In Aristotle's famous principle of justice, equals should be treated equally and unequals unequally, which outlines the two different aspects of equity: horizontal and vertical. *Horizontal equity* in health care means providing equal healthcare to those who are the same in 'need', whereas *vertical*

*equity* means treating differently those who are different in 'need' (Jerehiah 2000). However, equitable distribution of health care resources is a necessary, but not sufficient condition for equitable access.

Given this backdrop, it is crucial:

- i. To locate the access to publicly funded health care across different economic classes providing a measurement of **horizontal equity**;
- ii. To identify the distribution of public subsidies enjoyed by these classes giving an indicator of **vertical equity**;

This paper attempts to deal with these two aspects with respect to two Indian states, the eastern and highly populated state of West Bengal (WB) and the southern state of Tamil Nadu (TN). The choice of the states is particularly strategic. While both of them have health indicators (Infant Mortality Rate and Life Expectancy at Birth) better than Indian average, there are some basic differences in them. TN and WB both have achieved the fertility transition lowering the overall fertility rate below two. While the former overwhelmingly depends on the public sector for health care, the latter has been able to reap the benefits of an optimal public-private mix. TN has been identified as a model state offering good health at low cost (Balabanova et al 2013), thus lowering Infant and Maternal Mortality Rates at the fastest speed in India. While TN has been able to gain from its higher literacy rate and infrastructure development in improving health care, WB has continued to suffer from poor quality of public services and extremely high cost of health care. The state of TN has successfully implemented the reform in procurement and distribution of medicines in the public hospitals through Tamil Nadu Medical Services Corporation, established in 1995. While this streamlined the access to free drugs in government hospitals reducing overall out of pocket expenditures (Bennett S et al 2000), the other state continued with low quality of drugs coupled with extremely low and irregular availability in public health facilities. Given these similarities and dissimilarities, it would be interesting to study the above two research questions in these two Indian states.

## 2. Data and Methodology:

For the present study, National Sample Survey (NSSO) 60<sup>th</sup> round data (collected during January-June 2004) on “Morbidity, Health Care and the Conditions of the Aged” (25<sup>th</sup> schedule) has been used. NSSO provides information on different household level information (like house type, structure, social group, religion, monthly expenditure of household, type of latrine, drainage etc.) along with the detail individual level characteristics (like age, sex, education, marital status, relation to head of the household etc.). The survey provides information on inpatient and outpatient health care particulars of the individuals along with the cost as well as sources of finances for the services. For the out-patients care the reference period was 15 days and for inpatients care it was 365 days. OOP expenditure for hospitalization (IPD) and non-hospitalization (OPD) are recorded in NSSO along with detail expenditure for bed, medicines<sup>1</sup>, diagnostic test, fees for doctors and physiotherapists and other services like blood, food, transport etc. are also available. Information on type of hospital accessed (public or private) for treatment is also available. NSSO also elicited the reasons for the morbid patients who are not seeking for any health care. In West Bengal, for 60<sup>th</sup> round NSS data, the sample size was 16111 individual for rural sector and 8793 individual for the urban sector and the corresponding figures of the rural and urban sectors for Tamil Nadu were 10348 individual and 10946 individual respectively.

In NSS data information on monthly per capita expenditure (MPCE) of the household<sup>2</sup> is also available; it has been used as a proxy for income and financial condition of a family. Due to difference in cost-of-living the MPCE classes in Rural and Urban areas do not always correspond. However, in each region the total sample is spread over 12 MPCE classes. So, we have clubbed three consecutive classes in each economic sub-stratum and form four broad group viz. Poorest (P), Lower Middle (LM), Upper Middle (UM) and the Richest (R).

Concentration index ( $\Omega$ ) which is the twice the area of the concentration curve and the line of equality, has been computed to provide a composite measure of inequalities. Mathematically, the concentration index is calculated by the formula –

$$\Omega = (\gamma_1 \delta_2 - \gamma_2 \delta_1) + (\gamma_2 \delta_3 - \gamma_3 \delta_2) + \dots + (\gamma_{n-1} \delta_n - \gamma_n \delta_{n-1})$$

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<sup>1</sup> It includes both, available from hospitals and purchased from outside.

<sup>2</sup> Recall period of one month.

Where,  $\gamma_k$  ( $k=1, 2, \dots, n$ ) is the cumulative per cent of the sample ranked by MPCE,  $\delta_k$  is the corresponding concentration curve ordinate, and  $n$  is the number of MPCE groups. The value of the index ranges from -1 to +1; where positive value signifies pro-rich distribution and vice versa. But concentration index is an additive index, which can be misleading (O'Donnell et al. 2008). Concentration curves are also drawn to cope up with this problem.

Utilization of publicly provided healthcare services (like bed, medicine etc.) and the distribution of subsidy benefit among different socio-economic groups can be estimated by the Benefit Incidence Analysis (BIA) (Wagstaff 2010, O'Donnell O et al 2008, McIntyre D et al 2011, Acharya D 2011). To estimate benefit incidence, information is needed on the share of group  $j$  in the utilization of service  $i$  ( $\frac{\alpha_{ij}}{\alpha_i}$ ) and the government's net expenditure on service  $i$  ( $\rho_i$ ).

Mathematically, Benefit Incidence is estimated by the formula –

$$\eta_j = \sum \alpha_{ij} \frac{\rho_i}{\alpha_i} = \sum \theta_{ij} \rho_i \text{ Where,}$$

$\eta_j$  = Benefit of public subsidy enjoyed by group  $j$ ,

$\alpha_{ij}$  = utilization of service  $i$  by group  $j$ ,

$\alpha_i$  = utilization of service  $i$  by all groups together,

$\rho_i$  = government's net expenditure on service  $i$ ,

$\theta_{ij}$  = group  $j$ 's share of utilization of service  $i$ .

Access is assessed on the basis of Yes/No responses and to calculate benefit incidence we have calculated the number of in-patients who have utilized the services of government hospitals across different MPCE classes ( $\alpha_{ij}$ ). The share of a MPCE class in utilization of a service gives us the utilization share for the MPCE class ( $\theta_{ij}$ ). To calculate public subsidy (or expenditure) on in-patient care across rural and urban areas no specific information was available in a readily usable form. We have calculated the ailment<sup>3</sup> wise per capita private expenditure (PCPE) for a particular service of an income class separately for rural and urban WB. Then, to calculate the net-subsidy ( $\rho_i$ ), OOP expenditure has been deducted from the PCPE. The calculation was normalized for ailments for hospitalization as well. Multiplying the net subsidy ( $\rho_i$ ) amount

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<sup>3</sup> Following World Development Report (1993), we have classified all ailments into three broad categories viz. communicable, non-communicable and injuries or other ailments.

with the initially calculated utilization ratio ( $\theta_{ij}$ ) we can have the measure of Benefit Incidence (BI) for the service ( $\eta_j$ ).

There has been some studies on BIA on several developing countries (Mahal et al 2001, Prinja et al 2012). But there is hardly any study done on specific service provision and this paper attempts to bridge that gap.

### 3. Results

#### 3.1 Access

According to NSSO data in 2004, 8.99 per cent of rural and 10.18 per cent of urban population of West Bengal were admitted to hospitals as in-patient (Table-1). In Tamil Nadu hospitalization rate is comparatively higher than West Bengal for both the sectors. 10.18 per cent of the rural and 11.54 percent of the urban population of the state were hospitalized during the period. Urban sector of both the states enjoys more hospitalization compare to the rural counterparts. This is uniformly observed for each income class. Hospitalization rate of both the states increases as we move from lower to higher income groups of both the strata. In WB, majority of the hospitalized patients availed public facilities (76.60 per cent in rural and 65.36 per cent in urban). However in TN, most of the hospitalized patients were admitted in private institutions. 45.39 percent of the rural in-patients availed the public hospitals for hospitalization and for the urban sector it was 34.53 per cent.

Table 1: Utilization of Hospital Care across Income Class in WB & TN (%)								
MPCE	Hospitalization Rate				Hospitalization in Public Institutions			
	WB		TN		WB		TN	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
<b>P</b>	7.53	8.36	9.12	9.84	87.75	83.84	58.58	57.65
<b>LM</b>	8.63	9.46	10.17	10.61	82.18	77.67	54.23	39.15
<b>UM</b>	9.04	10.41	13.29	11.64	75.35	63.90	46.39	29.60
<b>R</b>	11.36	13.58	14.64	13.19	62.72	38.62	24.84	13.17
<b>All</b>	<b>8.99</b>	<b>10.18</b>	<b>11.54</b>	<b>11.22</b>	<b>76.60</b>	<b>65.36</b>	<b>45.39</b>	<b>34.53</b>

Note: P: poorest, LM: Lower Middle, UM: Upper Middle and R: Richest; Source: Analysed from NSSO 60<sup>th</sup> Round data.

Rural sector of both the states utilizes public hospitals more than the urban counterparts for in-patients treatment. Access pattern of both the states is showing an increasing association with the extent of deservingness where the poorest group has the maximum access to public hospitals and

the group has the minimum. In WB, the range of hospitalization in public hospitals varies from 87.75 per cent to 62.72 per cent in the rural sector and 83.84 per cent to 38.62 per cent in urban sector. Corresponding utilization rate ranges from 58.58 per cent to 24.84 per cent in rural and 57.65 per cent to 13.17 per cent in urban Tamil Nadu.

Admission in hospital as in-patients confirms the access to BED, but it does not necessarily imply that the patient has an access to other healthcare services, like medicines, diagnostic tests and doctor's services. Table-2 presents the access to other three services during hospitalization in public hospitals. It can be seen that, for both the regions of WB, only 60 per cent of the hospitalized patients has an access to MED from hospitals, whereas, in TN it is 98 per cent. 61.53 per cent of the rural and 71.11 per cent of the urban patients have an access to TEST in WB. For both the sectors poorest class has the lowest access to the service and for the richest class it is highest. In TN, 89 per cent rural and 90 per cent urban patients are enjoying TEST facility during hospitalization. More than 80 per cent of each income class of both the sectors of the state is utilizing the service. Overall, 48 percent of the rural in-patients are diagnosed by DOC in WB but in TN it is 96.49 per cent. Access to DOC service is marginally better in urban sector of WB compared to rural sector. About 64 per cent of the urban hospitalized patients have an access to the service in the state, while the corresponding figure for urban TN is 95 per cent in public institutions.

In both the sectors of WB, poorest class has the lowest access to DOC service followed by the lower middle class. Richest and upper middle class has the highest access for DOC service in rural and urban sector of WB respectively. In TN, upper middle class of the rural sector and the richest class of the urban sector have the lowest access to the DOC service during hospitalization.

State	MPCE	MED		TEST		DOC	
		Rural	Urban	Rural	Urban	Rural	Urban
WB	P	58.77	54.17	53.90	62.50	40.26	50.00
	LM	55.24	65.87	57.34	67.66	42.31	68.86
	UM	63.24	67.18	62.50	80.15	50.37	74.05
	R	61.07	56.84	75.00	82.11	61.48	68.42
	All	<b>59.46</b>	<b>60.85</b>	<b>61.53</b>	<b>71.11</b>	<b>47.93</b>	<b>63.76</b>
TN	P	98.73	97.74	88.54	82.49	99.36	94.35
	LM	98.05	96.36	89.61	93.64	98.70	94.55
	UM	97.40	98.95	87.01	95.79	92.86	96.84
	R	98.70	100.00	90.91	95.24	93.51	92.86
	All	<b>98.15</b>	<b>97.88</b>	<b>88.75</b>	<b>89.62</b>	<b>96.49</b>	<b>94.81</b>

Note: MED: hospital medicines, TEST: Diagnostic tests, DOC: Doctors services. Source: Analysed from NSSO 60<sup>th</sup> round data

### 3.2 OOPE

Overall OOP expenditure in WB is far higher than TN in both rural and urban sectors for public sector hospitalization. Additionally in rural sector OOPE (Rs. 1879.98) is higher than the urban sector (Rs. 1758.96) in West Bengal (Table-3). Urban sector has more OOP expenditure for BED and TEST compared to rural sector in WB, but for other two services (MED & DOC) OOP expenditure for the rural sector is higher. In TN, urban sector shows more OOP expenditure for each service than its rural counterparts. In rural WB OOP expenditure varies from Rs. 49.85 for the BED for poorest class to Rs. 7567.58 for the Richest class for DOC and in urban sector the range varies from Rs. 149.61 for upper middle group for MED to Rs. 1799.34 for richest class for the BED. It is heartening to see that for both the sectors of the TN, BED is provided free of cost for the poorest class and for MED and DOC urban sector has no OOP expenditure for the class, whereas, rural sector has very low OOP (Rs. 0.02 & Rs. 1.02 respectively) expenditure for the poorest for the services. In rural TN, OOP expenditure is the maximum for upper middle class for TEST (Rs. 40.30) and for the urban sector it is the maximum for richest class for TEST (Rs. 161.86).

Composition of the four services in total OOP expenditure for hospitalization in public hospitals has been presented in Figure-1. Here except for the richest class, for all other income classes have highest OOP expenditure for the TEST service (green bar) and this is uniformly observed



for both the sectors of WB. Richest class of the rural WB counts highest OOP expenditure share for the DOC service, presented by the violet bar. However, urban richest class has the maximum percentage of OOP expenditure for BED service (blue bar). In TN, for all income classes, OOP expenditure share for TEST is the maximum in the urban sector. For rural sector of TN, poorest and the two middle income classes have highest share of OOP expenditure for TEST but the richest class of the sector shows highest percentage share for the BED facility.

Table-4 presents the per-capita benefit-subsidy from four services during hospitalization in public sector. Overall benefit from all services shows that urban sector of both the states has higher benefit of public subsidy compare to the rural sector. Overall benefit is highest for the lower middle income class of the rural West Bengal followed by the richest income class and the minimum benefit of public subsidy is observed for the poorest class. Overall benefit is highest for the upper middle income class followed by the lower middle and richest income class in the urban WB. In TN, overall benefit is the maximum for upper middle class followed by the richest class in both the sectors. In rural West Bengal per capita benefit ranges from Rs. 173.61 to Rs. 731.03 and in the urban sector the range is between Rs. 131.70 to Rs. 994.16. In rural Tamil Nadu the range varies between Rs. 116.23 to Rs. 491.31 whereas in urban area the range is between Rs. 221.27 to Rs. 850.59. Ranges of both the sector indicate a wider variation for the urban region compare to its rural counterparts for both the states.

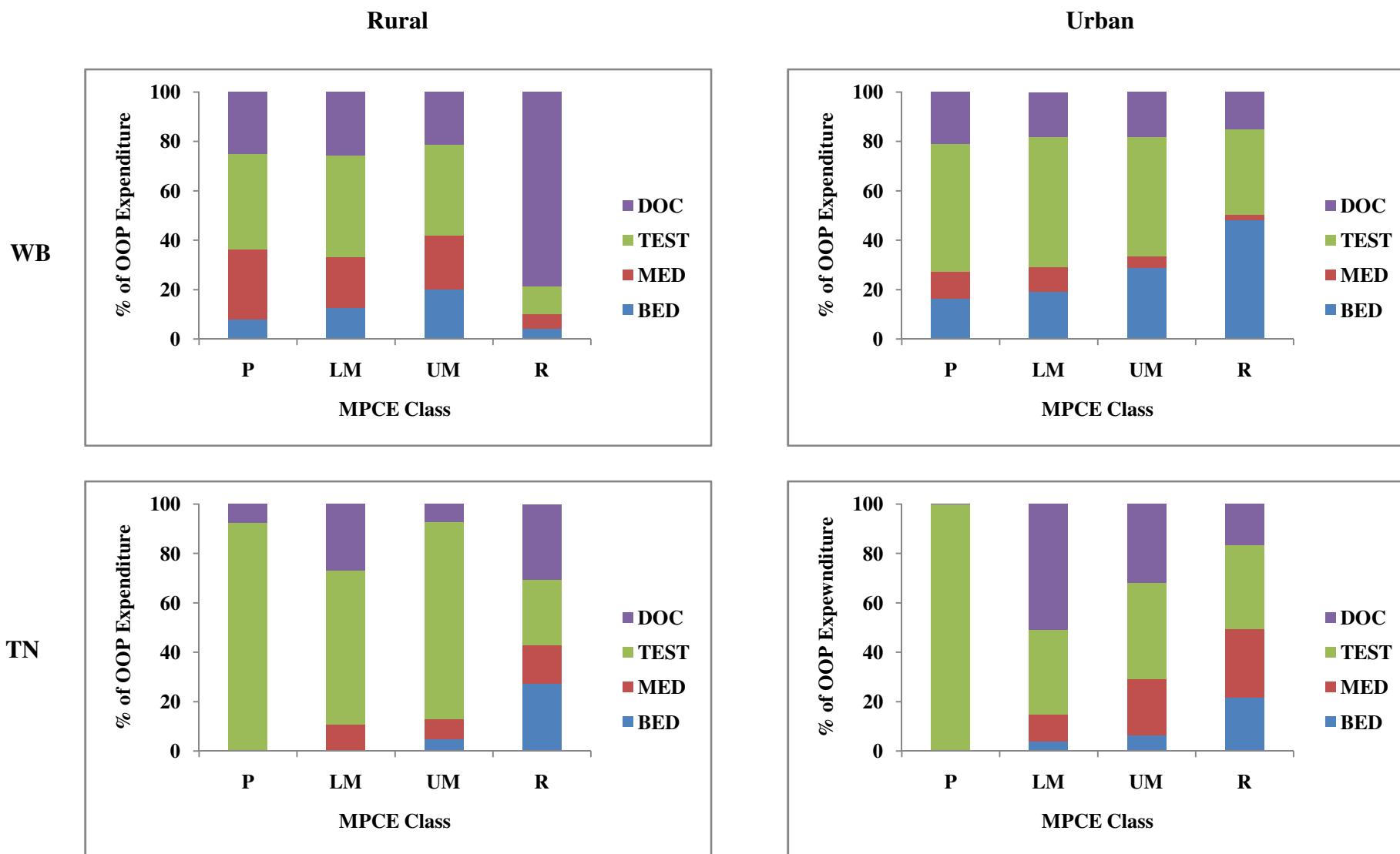
Area	MPCE	West Bengal					Tamil Nadu				
		BED	MED	TEST	DOC	Overall	BED	MED	TEST	DOC	Overall
Rural	P	49.85	302.67	449.77	393.47	628.54	0.00	0.02	13.86	1.02	13.30
	LM	85.78	258.82	491.94	421.70	689.26	0.00	1.34	8.48	3.35	12.22
	UM	188.70	321.81	547.01	398.56	934.82	2.14	3.67	40.30	3.50	44.02
	R	249.33	569.05	879.90	7567.58	5908.95	29.97	17.34	32.16	35.89	109.88
	All	<b>136.98</b>	<b>357.30</b>	<b>599.34</b>	<b>2423.98</b>	<b>1879.98</b>	<b>4.87</b>	<b>3.90</b>	<b>22.35</b>	<b>7.17</b>	<b>35.44</b>
Urban	P	158.26	191.66	797.60	409.70	965.42	0.00	0.00	12.07	0.00	9.96
	LM	241.07	181.45	971.69	325.37	1242.14	6.89	21.37	67.38	99.45	184.60
	UM	618.18	149.61	1287.56	529.15	2142.52	3.00	11.29	19.63	15.98	48.45
	R	1799.34	154.96	1568.54	828.77	3742.33	98.21	125.34	161.86	80.68	452.62
	All	<b>551.39</b>	<b>172.54</b>	<b>1113.11</b>	<b>487.79</b>	<b>1758.96</b>	<b>12.19</b>	<b>20.70</b>	<b>44.64</b>	<b>37.21</b>	<b>107.74</b>

Source: Analysed from NSSO 60<sup>th</sup> round data.

State	MPCE	BED		MED		TEST		DOC		Overall	
		Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
WB	P	173.61	381.84	292.06	166.05	176.53	305.06	448.62	334.19	1220.21	1303.05
	LM	280.49	379.40	580.41	456.58	303.64	131.70	731.03	824.80	1930.38	1874.86
	UM	379.46	510.51	274.68	385.86	202.30	227.67	435.99	994.16	1418.84	2202.97
	R	362.58	313.32	179.10	323.90	340.86	250.90	306.49	711.86	1544.36	1704.37
	All	<b>293.13</b>	<b>398.83</b>	<b>331.06</b>	<b>334.10</b>	<b>257.50</b>	<b>228.28</b>	<b>469.52</b>	<b>722.89</b>	<b>1523.12</b>	<b>1732.98</b>
TN	P	182.24	248.70	255.09	608.99	116.23	221.27	252.63	356.97	807.15	1431.57
	LM	254.67	353.48	296.89	556.00	116.84	279.52	382.78	490.49	1155.16	1684.88
	UM	284.66	585.84	400.02	816.76	146.80	448.44	491.31	850.59	1327.81	2700.71
	R	195.57	516.94	327.93	620.73	304.33	301.64	472.68	450.34	1299.58	1895.80
	All	<b>233.82</b>	<b>377.99</b>	<b>349.61</b>	<b>643.71</b>	<b>152.29</b>	<b>299.92</b>	<b>386.01</b>	<b>513.54</b>	<b>1123.93</b>	<b>1827.63</b>

Source: Analysed from NSSO 60<sup>th</sup> round data.

Figure-1: Composition of Per Capita OOP Expenditure in Public Sector Hospitalization in WB & TN (Per Episode)



Note: Here OOP expenditure is made to purchase the services from public hospitals only. Source: Analysed from NSSO 60<sup>th</sup> round data.

Service specific benefit share is presented in Table-5. For the BED, upper middle class has the highest share of benefit in both the sectors of WB. However, for the rural sector the poorest class and for the urban sector the richest has the lowest benefit share from BED in WB. Lower middle class of both the sectors of WB enjoys the maximum benefit from MED. Benefit share for TEST is highest for the richest class of the rural and poorest class of the urban WB. Lower middle and upper middle class of WB has highest benefit share from DOC in rural and urban sector respectively.

For BED, MED and DOC in both the sectors of the TN, the upper middle class enjoys the highest share of benefit from public subsidies. In rural sector of TN, richest class has the highest benefit share from TEST, but the upper middle class of the urban sector counts the maximum benefit share from the service. From the overall benefit scenario, it is interesting to note that in both the sectors of WB and TN the maximum per capita benefit is reaped by the two middle income groups. Overall benefit share is the minimum for the poorest class of the rural WB however, for the urban sector richest class experiences the lowest subsidy-benefit share. In Tamil Nadu, for both the sectors, richest class enjoys the lowest share of benefit among all income classes followed by the poorest class.

State	MPCE	BED		MED		TEST		DOC		Overall	
		Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
WB	P	16.43	31.42	24.19	14.52	16.66	38.55	22.27	11.90	22.23	24.68
	LM	24.65	27.16	41.97	42.23	28.31	15.67	35.41	35.18	32.66	30.88
	UM	31.72	28.66	21.62	28.55	19.55	25.17	23.91	35.76	22.83	28.47
	R	27.19	12.76	12.21	14.71	35.47	20.61	18.41	17.16	22.29	15.97
TN	P	22.58	27.47	21.26	39.44	22.06	28.35	19.52	28.88	20.80	32.70
	LM	30.95	24.26	24.10	22.06	22.01	25.26	28.82	24.71	29.20	23.92
	UM	34.59	34.73	32.26	28.74	26.85	35.81	34.80	37.91	33.57	33.11
	R	11.88	13.55	13.40	9.76	29.08	10.59	16.86	8.51	16.43	10.28

Source: Analysed from NSSO 60<sup>th</sup> round data.

State	MPCE	BED		MED		TEST		DOC		Overall	
		Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
WB	P	40.36	93.86	72.93	40.75	35.07	59.78	110.05	75.93	287.55	324.36
	LM	71.01	87.44	128.41	87.98	58.75	24.06	162.12	156.25	480.13	433.17
	UM	92.15	122.83	64.73	94.44	42.05	53.22	105.60	228.66	350.59	528.37
	R	80.62	78.52	36.49	66.94	70.79	53.03	66.52	141.12	350.81	419.93
	All	<b>69.80</b>	<b>96.02</b>	<b>75.85</b>	<b>72.59</b>	<b>52.06</b>	<b>47.15</b>	<b>108.47</b>	<b>151.77</b>	<b>366.52</b>	<b>416.63</b>
TN	P	43.41	57.07	62.56	136.91	26.67	45.67	61.45	83.07	196.29	327.35
	LM	57.98	73.30	89.55	115.98	26.98	54.20	87.89	94.02	262.82	348.78
	UM	64.14	127.30	91.29	173.88	31.52	94.41	112.49	182.71	298.36	584.37
	R	47.55	110.24	80.10	132.56	72.44	67.71	114.13	96.18	312.76	405.60
	All	<b>54.03</b>	<b>82.28</b>	<b>80.83</b>	<b>139.50</b>	<b>34.77</b>	<b>61.98</b>	<b>90.34</b>	<b>109.98</b>	<b>260.74</b>	<b>398.25</b>

Source: Analysed from NSSO 60<sup>th</sup> Round data.

Duration of stay is another important component of the distribution of public subsidies during hospitalization in public institutions. To normalize the subsidy benefit from public sector hospitalization duration of stay in hospitals for an illness episode has been used and the result is presented in Table-6. It has been found that for both the state overall subsidy benefit is lowest for the poorest class; and the result is uniformly observed for both rural and urban sector. In rural WB, overall per day average benefit is the maximum for the lower middle class and for the urban sector it was for upper middle class. In TN, overall per day average subsidy benefit is the highest for richest and upper middle class for rural and urban sector respectively. Except for TEST, in urban West Bengal for all other services middle class people or the richest class enjoys the highest share of the subsidy in WB and TN for both the sectors.

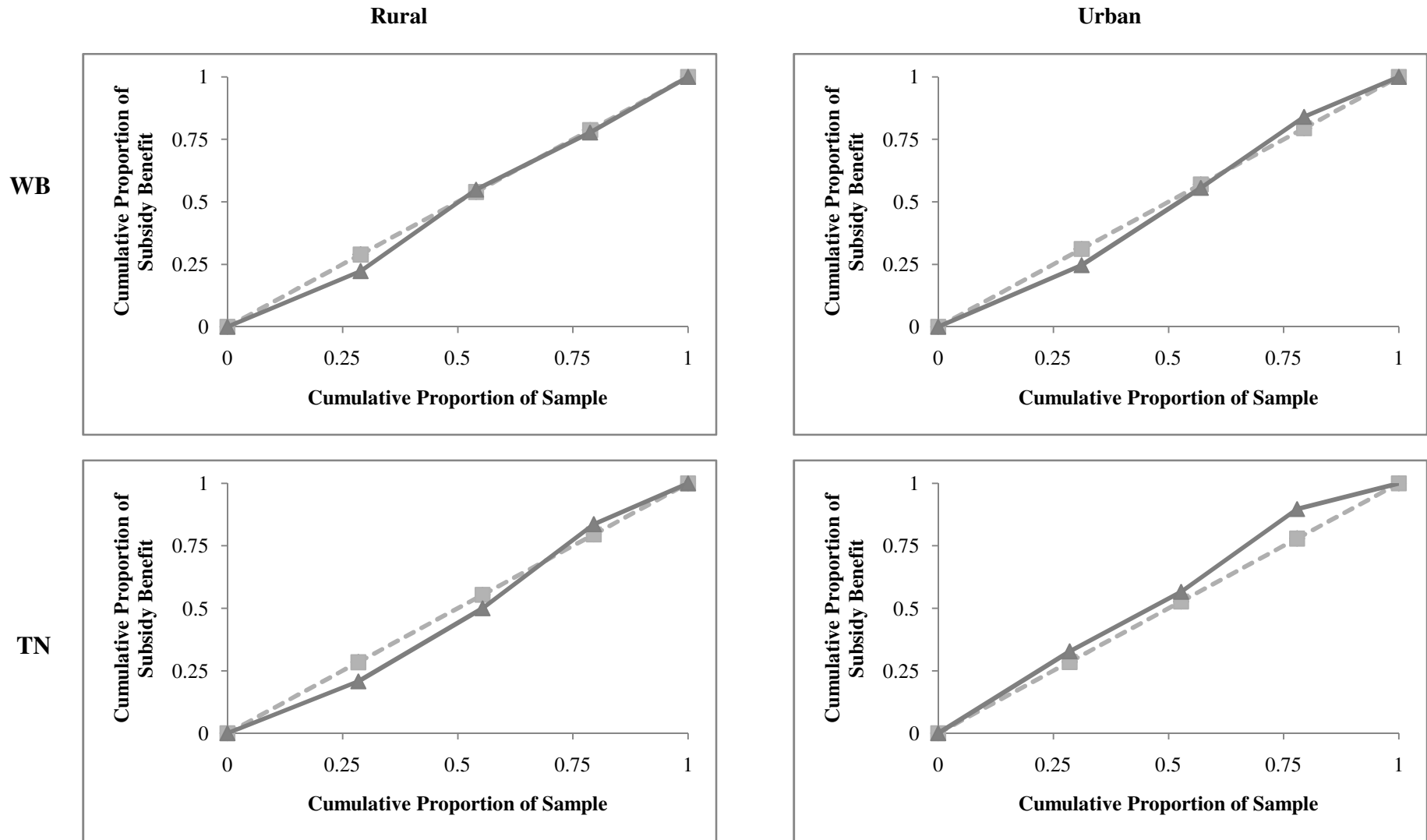
**Table 7: Service wise Concentration Indices for Benefit Incidence during Hospitalization in Public Institutions**

Service	West Bengal				Tamil Nadu			
	Per Episode		Per Day		Per Episode		Per Day	
	R	U	R	U	R	U	R	U
<b>BED</b>	0.1588	-0.0429	0.1468	-0.0420	0.0036	-0.0301	0.0257	-0.0409
<b>MED</b>	-0.0769	0.0707	-0.0985	0.0709	0.0280	-0.1593	0.0358	-0.1710
<b>TEST</b>	0.1764	-0.0287	0.1899	0.0029	0.1316	-0.0580	0.1537	-0.0456
<b>DOC</b>	0.0042	0.1428	-0.0081	0.1450	0.0692	-0.0705	0.0888	-0.0834
<b>Overall</b>	<b>0.0363</b>	<b>0.0239</b>	<b>0.0298</b>	<b>0.0223</b>	<b>0.0517</b>	<b>-0.0973</b>	<b>0.0696</b>	<b>-0.1087</b>

Source: Analysed from NSSO 60<sup>th</sup> round data.

Concentration indices of subsidy benefit from all services during hospitalization shows a pro-rich distribution of subsidy benefit for both the sectors of West Bengal (Table-7). Similar is the situation for rural Tamil Nadu where the magnitudes of the concentration index is positive, signifies a pro-rich distribution subsidy benefit, whereas, in the urban TN the distribution of public subsidy is pro-poor. In both the states, the magnitudes of concentration indices for per episode benefit from all services taken together are same as the indices of per day subsidy benefit across the sectors. But some differences in magnitudes can be observed for the service specific indices between per episode and per day subsidy benefit distribution in WB. Interestingly, for all services in urban TN the distribution of subsidy is pro-poor, however it is pro-rich for all services in rural TN. We have presented the concentration curves for better representation of the subsidy distribution scenario (Figure-2).

**Figure 2: Concentration Curves for Benefit Incidence from Public Subsidies in All Services in WB & TN**



Note: line of equal distribution line of subsidy distribution

Source: Analysed from NSSO 60<sup>th</sup> round data.

### 3.3 Benefit Incidence Analysis

Next we present the results of benefit incidence analysis (BIA) carried out after classifying the households into four groups following NSSO. As the observation is not uniform across income classes, we have calculated the BIA after normalizing the observation for each income class. Therefor the modified equation for benefit incidence is –

$$\eta_j = \sum \alpha_{ij} \frac{\rho_i}{\alpha_i} \times \left(\frac{N}{n}\right) = \sum \theta_{ij} \rho_i$$

Where,

$\eta_j$  = Benefit of public subsidy enjoyed by group j,

$\alpha_{ij}$  = utilization of service i by group j,

$\alpha_i$  = utilization of service i by all groups together,

$\rho_i$  = government's net expenditure on service i,

N = total sample size,

n = sample size of a particular group and

$\theta_{ij}$  = group j's share of utilization of service i,  $\left(\frac{\alpha_{ij}}{\alpha_i} \times \frac{N}{n}\right)$ .

Table-8 presents the per-capita benefit-subsidy from four services during hospitalization in public sector. Overall benefit from all services shows that urban sector of both the states has higher benefit of public subsidy compare to the rural sector. Overall benefit is highest for the lower middle income class of the rural West Bengal followed by the richest income class and the minimum benefit of public subsidy is observed for the poorest class. Overall benefit is highest for the upper middle class followed by the richest and the lower middle class in the urban WB, whereas poorest class has the lowest share of subsidy benefit. In TN, overall benefit is the maximum for the richest class of the rural sector and upper middle income class for the urban strata. Rural Tamil Nadu shows lowest subsidy benefit for the lower middle class followed by the poorest class. Poorest class of the urban sector has the lowest share in overall benefit in TN.



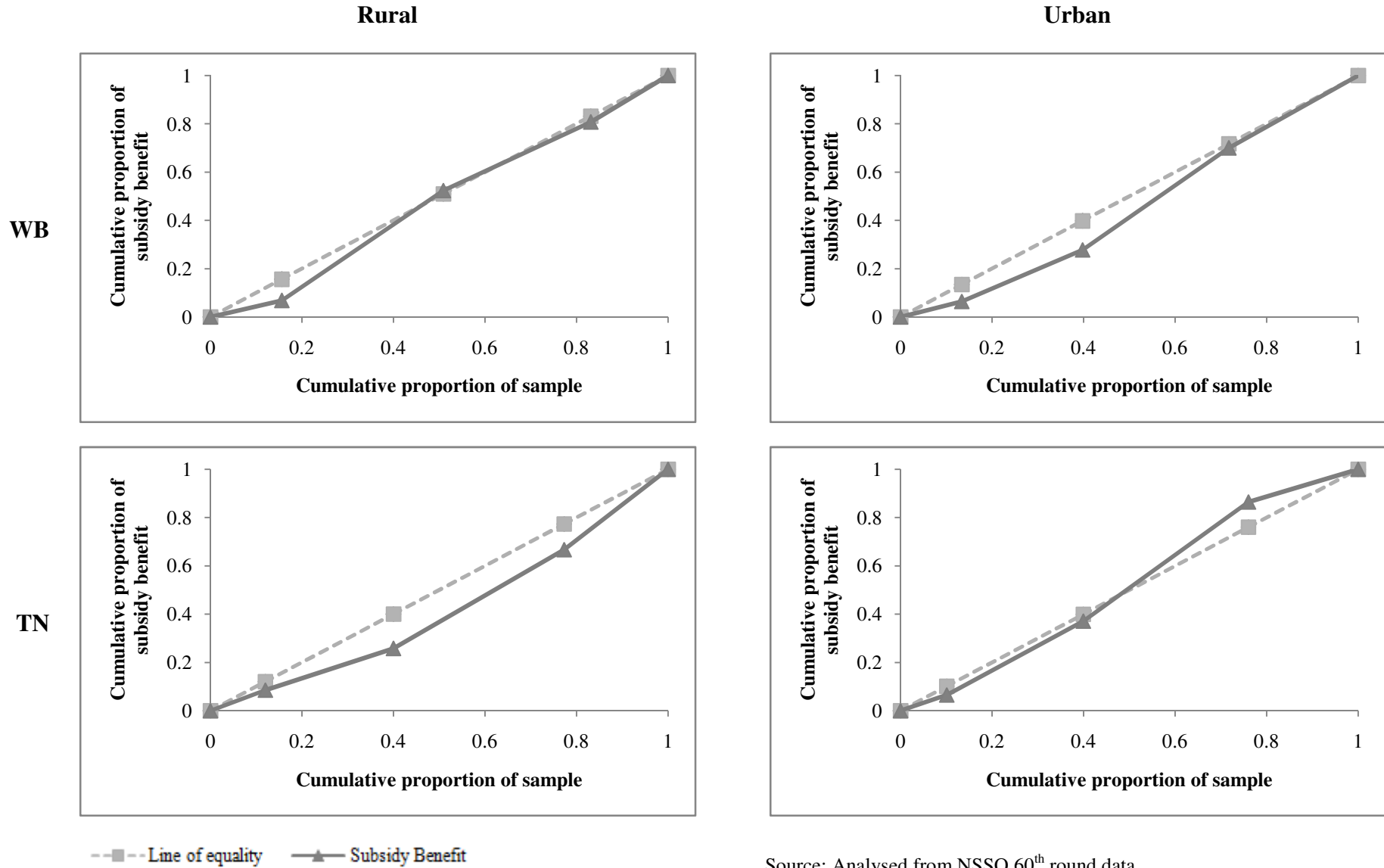
State	MPCE	BED		MED		TEST		DOC		Overall	
		Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
WB	P	673.95	865.56	365.77	219.69	902.38	647.03	546.01	493.69	2798.28	2831.71
	LM	1001.47	1216.02	2443.73	974.63	1055.65	1031.63	2995.81	1751.02	7807.92	5256.07
	UM	1373.81	1203.19	1031.39	1678.35	685.61	871.64	1775.86	4382.80	5352.12	8513.90
	R	1794.45	1591.09	767.77	1698.74	1643.90	1132.79	727.98	3431.91	6956.61	8390.82
	All	<b>1208.86</b>	<b>1248.83</b>	<b>1363.58</b>	<b>1311.10</b>	<b>1036.23</b>	<b>956.52</b>	<b>1766.93</b>	<b>3064.79</b>	<b>6126.33</b>	<b>6728.73</b>
TN	P	529.02	511.25	1141.27	908.38	398.27	576.67	1012.04	698.07	3091.46	2694.11
	LM	747.13	999.90	768.87	2420.87	439.29	767.22	822.10	1337.96	2777.33	5515.65
	UM	1022.02	2181.62	1653.18	2887.95	411.84	1675.96	1743.78	3077.07	4831.74	9851.00
	R	1107.09	2324.61	1788.03	2842.08	1665.31	1385.50	4059.75	2042.53	8672.50	8616.37
	All	<b>893.59</b>	<b>1469.86</b>	<b>1353.92</b>	<b>2381.80</b>	<b>647.74</b>	<b>1144.64</b>	<b>1760.25</b>	<b>1909.60</b>	<b>4702.55</b>	<b>6879.06</b>

Source: Analysed from NSSO 60<sup>th</sup> round data.

Service	West Bengal				Tamil Nadu			
	Per Episode		Per Day		Per Episode		Per Day	
	R	U	R	U	R	U	R	U
BED	0.1665	0.0409	0.1507	0.0403	0.0676	0.0301	0.0788	0.0215
MED	-0.0623	0.1668	-0.0691	0.1736	0.0902	-0.0811	0.0961	-0.0886
TEST	0.1444	0.0687	0.1861	0.0983	0.2408	0.0015	0.2562	0.0132
DOC	-0.0135	0.1783	-0.0169	0.1808	0.2343	-0.0126	0.2355	-0.0279
Overall	<b>0.0472</b>	<b>0.1083</b>	<b>0.0360</b>	<b>0.1134</b>	<b>0.1711</b>	<b>-0.0297</b>	<b>0.1719</b>	<b>-0.0374</b>

Source: Analysed from NSSO 60<sup>th</sup> round data.

**Figure 3: Concentration Curves for Subsidy Benefit from All Services during Hospitalization by State & Sector**



Source: Analysed from NSSO 60<sup>th</sup> round data.

In rural West Bengal per capita benefit ranges from Rs. 365.77 to Rs. 2995.81 and in the urban sector the range is between Rs. 219.69 to Rs. 4382.80. In rural Tamil Nadu the range varies between Rs. 398.27 to Rs. 4059.75 whereas in urban area the range is between Rs. 511.25 to Rs. 3077.07. Ranges of both the sector indicate a wider variation for the urban region compare to its rural counterparts for WB but for TN opposite is the scenario, where range is wider for rural sector.

For the BED, richest class has the highest amount of benefit in both the sectors of WB. Lower middle class of rural WB enjoys the maximum benefit from MED. Urban WB, on the other hand, shows the highest benefit share for the richest income group from MED. Richest class of both rural and urban WB reaps the maximum benefit from subsidies on TEST. Lower middle and upper middle class of WB has highest benefit share from DOC in rural and urban sector respectively. In TN, richest class of the rural sector enjoys the maximum subsidy benefit from all the four services, viz. BED, MED, TEST and DOC. In the urban sector of the state richest class have the highest benefit share for BED. For other three services (MED, TEST and DOC) benefit amount for the upper middle class is the maximum in the urban TN. Therefore, the benefit of the public subsidy is mostly enjoyed by the middle or richest class people of both the states. However the poorest class, who deserves the subsidy most, is obtaining the lowest share of the benefit. Concentration indices of Table-9 show the same pattern as discussed earlier. Magnitudes of the concentration indices for overall subsidy benefit in both the sectors of WB are positive, signifies a pro-rich distribution of the subsidy. In TN, rural sector has pro-rich and urban sector has pro-poor distribution of overall subsidy benefit. Overall magnitudes of the concentration indices of per episode and per day benefit are the same, as in the cases of services for both the sectors of WB and TN. Concentration curves for overall benefit share across the sector have been drawn for WB and TN (Figure-4), which presents the income class wise distribution of public subsidy clearly.

#### 4. Discussion of Results

The tale of these two states posits an extremely interesting picture. While the public sector's share in hospitalization facilities in rural areas is as high as 76 per cent in WB, the figure in TN is just 45 per cent. The corresponding figures for the poorest class are 90 and 66 per cent respectively. Essentially this meant that the horizontal equity is held in the eastern state. However, getting access to a bed in a hospital does not necessarily ensure access to other services like medicine, diagnostic tests or doctor. In rural West Bengal, the shares of inpatients who received access to other allied services like medicines, tests and doctors are 59, 62 and 48 per cent respectively, whereas the corresponding figures are 98, 89 and 96 in TN. The trend is similar in urban areas. This essentially means huge per capita out of pocket expenditures in all economic classes in WB (in the tune of Rs 1879 for all services per episode in rural areas), whereas that is very low in TN (only Rs 35). Therefore, the successful creation of horizontal equity in access to hospitalization in public facilities in the eastern state could not guarantee cheap and quality services to her citizens, whereas those who received access in TN, also received all services at a pretty low cost in a package.

Results also showed that in the two states subsidies enjoyed per episode are almost comparable in urban areas, whereas in the rural areas it is higher in West Bengal. This actually occurs due to far higher shadow prices in private sector in West Bengal, compared to the southern state. However, the benefit of the average public subsidy is actually enjoyed maximum by the upper middle class in urban areas of both the states. The picture changes in rural areas as the lower middle income class enjoys the highest share of subsidies per episode in WB, while in TN, the cream is siphoned off by the powerful richest class. The concentration index is positive in both rural and urban areas in WB and rural TN, though it is negative in urban TN. Thus except urban TN, pro rich bias dominates in subsidies violating the issue of vertical equity altogether. Even for the communicable diseases, most of which are covered by either of the vertical centrally sponsored schemes, the benefit incidence follows the same pattern the maximum benefits in urban WB and rural TN being siphoned by upper middle class. In fact, the concentration index, however, is pro poor in rural West Bengal and urban Tamil Nadu for communicable diseases as well. The violation of vertical equity in these disease specific programs portrays a sorry state of

affair in both the states. Therefore, the poorest, the most deserving class fails to get public subsidies during their hospitalization in public institutions in both states.

#### **4. Conclusions**

This study extracts a multi-faced story in the delivery mechanism of the public sector health systems in both the study states. Creating just access to hospitalization does not necessarily offer coverage from huge out of pocket expenditure. Tamil Nadu's lower access to beds, however, could ensure enough other services in a package.

The low out of pocket expenditure and low private sector costs in Tamil Nadu could ensure low need of overall subsidies. The successful, efficient and popular private health care facilities in the state attract patients even from out of the state border, as medical tourists. The availability and scale effect of the private health care facilities in urban TN under proper regulation pushes the efficiency of the private sector to create externalities in the public sector as well. Thus, urban TN exhibits a pro-poor incidence of benefits. This does not happen in rural TN, mainly because lack of private sector facilities push the richest class towards the public sector and they utilize the more expensive and complicated care. However, in WB, the access to hospitalization cannot ensure enough benefits for the poorer section resulting in pro-rich distribution of subsidy. To the utter chagrin, the subsidies offered for the communicable diseases, which is essentially targeted towards the poorest and deserving class, is also enjoyed by the non poor affording strata in the urban areas of WB, suggesting a poor effort from the government to ensure health equity.

This tale of two states tells a captivating story for the policy makers. The availability and good practice of private sector helps to create vertical equity in urban TN, even at the cost of horizontal equity, but the too much dependence on the public sector breaches the vertical equity altogether in WB. This success of TN helped her to offer '*good health at low cost*' over the years and by 2013 TN was able to create great progress in improving maternal, newborn and child health, performing consistently above the Indian national average (Balabanova et al 2013). On the other hand, the success of public sector in TN might have also created externalities on better performance of the private sector. The able bureaucracy and strong political will, even though

the political power shifted from one party to another in TN, guaranteed better target oriented distribution of public subsidy which WB lacked even with the legacy of three decades of left rule.

It should be remembered that this study is based on the dataset of 2004-05 and hence cannot capture the latest developments in policy initiatives in the two states. WB, identifying the need of subsidized supply of medicine, has launched the programmes of Fair Price Shops under Public-Private Partnership. At the national level, Rastriya Swasthya Bima Yojna (RSBY) has been started to offer protection of financial risks for the poorest strata of the society. These policy changes are expected to change the very contour of access and OOPE. Yet, the issue of vertical equity might remain unaltered given the steep increase in health care costs in private sector throughout the country. These hope and skepticism need to be verified in near future research based on new sets of forthcoming data.

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