

Inequality Effects of Fiscal Policy: Analysing the Benefit Incidence on Health Sector in India

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Abstract

Analysing inequality effect of fiscal policy is an elusive area of research in public economics. Using the unit record data of two recent NSS rounds on health, this paper analyses the benefit incidence of public health spending on inpatient service delivery, categorised by region, gender and economic class. Inpatient morbidity data among quintile-wise MPCE classes across three Indian states – Bihar, West Bengal and Kerala - are examined to decipher whether the benefit incidence of public health expenditure is pro-poor. The concentration curves and computed unit costs followed by polarisation ratios and odds-ratios reveal significant regional and gender differentials in access and utilisation of health services at sub national levels. West Bengal has remained unchanged in both the rounds in case of both the differentials – gender and region while Bihar has shown a significant improvement in bringing down regional differential. Kerala however explicate a different scenario where poor ‘voted with feet’ from public sector. The co-existence of private and public service provisioning in health sector may be one of the reasons for this behavioural ‘exit’ in Kerala, however it is equally interesting to note the ‘voice’ elements when the targeting of public spending reveals more pro-rich.

JEL Classifications: H51, H77, I14

Keywords: Benefit Incidence Analysis, Concentration Curve, Public Health Expenditure.

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Introduction

Inequality effects of fiscal policy is an elusive area of research, for which, there is a growing recognition of the need to analyse the distributional impact of public spending, particularly on merit goods. In Indian context, it is highly significant to analyse whether public spending is well targeted to the poor, when there is the rule based fiscal austerity measures, and, in turn, the declining or stagnant share of total development spending in the national and sub-national budgets. However, higher public spending on merit goods, per se, does not ensure that the budget is pro-poor. It is equally important to ensure that the poor receive an appropriate share of the increased or existing allocation. But ascertaining the allocation whether it is reaching the poor has been the core concern. Comprehending the incidence of public expenditure is therefore crucial since not all expenditures benefit households or individuals of different income levels to the same extent, due to different requirements.

Owing to non-rivalry in consumption and non-excludability, pure public goods are liberally provided to citizens as it is certainly difficult to grapple who uses how much, while government-funded services on merit goods (e.g. health and education) are being used by individuals on the basis of their requirements, thereby certainly can be tracked (Demery, 2000; Davoodi et al. 2003). Since the public spending on merit goods has redistributive effects, it is pertinent to analyse the effectiveness of such spending on poor income quintiles, disaggregated for gender and region. It is all the more relevant in the context of fiscal austerity measures where the spending on merit goods is either monotonically on the decline or stagnant across states in India.

Against this backdrop, the 'benefit incidence analysis' (BIA) has emerged as a tool to empirically probe this issue. It has gained popularity over the past decade and is being widely used by the World Bank researchers (Younger 2002). This tool explains which economic class is being benefited from government subsidised service delivery of merit goods and how much. In other words, BIA explicates how efficiently public spending is targeted to or distributed among the rural and urban poor, thereby helps to understand the distributional issues of public spending and that would in turn helps in creating room for introducing pertinent remedial policy measures.

This paper focuses on the benefit incidence from public spending on inpatient health care for three Indian states – West Bengal, Bihar and Kerala using National Sample Survey (NSS) unit record data. These three states have been chosen on the basis of their per capita income stance, which reveals that Bihar belongs to the low-income category and Kerala to the high-income group while West Bengal belongs to the middle income category. However, the major objective of this paper is to evaluate the link between decentralisation and public health service delivery by analysing benefit incidence.

Health, in India, is a state subject and states are largely responsible for the implementation of programmes as well as for the devolution of power to the local governments whereas Centre is responsible in devolving authority and funds to the states. Here, the District Planning Committee (DPC) plays a crucial role as a connector between the health-related service delivery requirements in the rural area and the top-down supply and management from states. To reinforce the decentralised health service delivery in rural areas, one of the major CSSs, i.e., National Rural Health Mission (NRHM) was launched by the Government of India in 2005. After that, this scheme predominantly aims to strengthen the rural health infrastructure. The released

amount for NRHM was directly going to the districts or implementing agencies bypassing state budget till 2014-15. In a decentralised setting, the effectiveness of spending, however, can be questioned if public expenditure fails to target the poor and is biased towards better off income or consumption quintiles. Fiscal data unavailability of local level has been an acute hindrance in identifying where local finances require attention and augmentation. Thus, it is difficult to analyse how local governments finance their health expenditure responsibility – how much through own revenue and how much through transfers from centre and states. Since it is challenging to separate the allocation for health care to the PRIs across states, the accessibility of rural health care to different economic class (benefit incidence) can be comprehended as the fact of collective allocation of fiscal resources. Relating to this issue, the “benefit capture” in this paper is calculated by computing average per unit usage than by computing marginal odds-ratio, since, due to programme expansion (for instance, NRHM), how much is being allocated to which region (rural or urban) is challenging to discern.

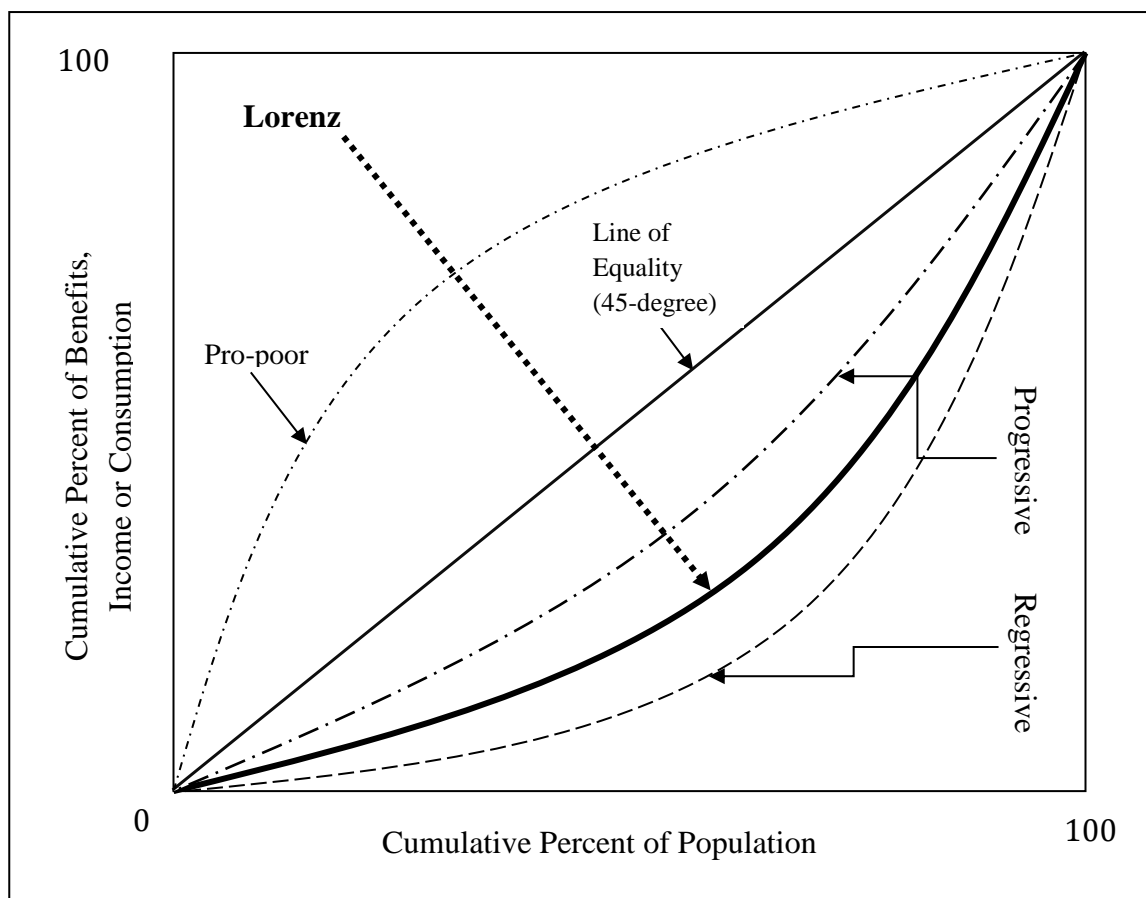
The paper is organised in seven sections. Section 2 presents the conceptual framework of benefit incidence while section 3 deals with data sources and methodology. Section 4 reviews the existing empirical literature on benefit incidence from public spending. Section 5 briefly interprets data on morbidity statistics and the structure and trends of public spending on health for the three states. Section 6 presents the results of benefit incidence of public spending on inpatient health service delivery, incorporating gender and regional differentials across economic quintiles. Section 7 concludes.

2. Conceptual Framework of Benefit Incidence

Government funds services (e.g. health, education, etc.) with welfare making intention especially for the rural poor to attain some certain affirmative outcomes. However, this may happen that the existing composition of total public spending on a particular service has minimal impact on population, particularly on poor rural people largely due to the poor composition of public spending on service delivery of merit goods. In this regard, unless priorities have been assigned in the budget for that particular service along with a suitable framing of its composition, the benefit to the targeted groups may not accrue.

Lorenz (1905) introduced the ‘concentration curves’ for measuring the concentration of wealth. Since then, many researchers (Filmer et al. 1998, Lanjouw and Ravallion 1999, Demery 2000, Davoodi e. al. 2003, Manasan et al. 2007, Chakraborty et al. 2013) have applied such curve, and further explained theoretically and tested empirically to arrive at a conclusion regarding the concentration of public spending on health – whether health spending is efficiently being targeted to the poor citizens. Davoodi et al. 2003 eloquently discussed the issues and impacts of BIA and provided a theoretical framework for analysing the incidence of benefit and targeting by using the concentration curves (or, Lorenz curve).

Figure 1: Benefit Incidence (Lorenz and Concentration Curves)



Source: Davoodi et al. (2003)

A concentration curve is plotted by the cumulative percent of benefits of subsidised government service of merit goods on the y-axis against the cumulative percent of sorted (in ascending order) per capita income or per capita consumption expenditure based population groups (deciles or quintiles) on the x-axis. Now, at the outset, two lines need to be plotted as “point of reference” curves based on income / consumption expenditure for comparison – one is the 45 degree diagonal line (or, line of equality) and the other is Lorenz curve (Figure 1). The former represents equality in the distribution of benefits while the later curve signifies that if a benefit concentration curve lies in between the line of equality and Lorenz curve then public expenditure relating to income / consumption will be considered as progressive whereas if a benefit concentration curve lies below the Lorenz curve then public spending relating to income / consumption will be considered as regressive (pro-rich). In the figure, the only convex shaped curve that lies above the line of equality reveals that the benefits of public spending are pro-poor. Davoodi et al. (2003) and Chakraborty et al. (2013) have categorised the income / consumption groups by allocating 20 percent for each into five quintiles as Q1 to Q5 (from poorest to richest). The distribution of benefits cannot be considered as regressive if the lower income / consumption group (Q1) obtains less share vis-à-vis the richer group (Q5) until the convex curve shifts below the Lorenz curve.

3. Data and Methodology

The analysis is built on two databases: one is Finance Accounts of Bihar, Kerala and West Bengal for obtaining public spending on health and the other is household and individual level data from two latest NSS rounds namely, “Morbidity, Health Care and the Condition of the Aged” (60th round in 2004-05, Report No. 507) and “Key Indicators of Social Consumption in India: Health” (71st round in 2014-15). Both the rounds have broadly focused on 4 major indicators of health care: 1) *untreated morbidity*, 2) *reasons for discontinuation and non-treatment of ailments*, 3) *public-private mix* and 4) *cost of care* by extensively covering many dimensions of health and health care such as economic profile of households, household characteristics, expenditure on inpatient and outpatient services etc. Our main focus lies on the last two indicators, i.e. public-private mix and cost of care through the expenditure on inpatient services for tracking the benefit incidence of public spending to the poorer class.

Essentially, the analysis of the framework approaches through four steps, which are:

1. *Average Unit Cost*: The first step is to compute the average unit cost of delivering a public service to the beneficiaries by dividing government spending on a particular service by the total number of beneficiaries availing the service.
2. *Grouping of Users*: Rank the population of users (individuals or households) by per capita income or per capita consumption expenditure and group by deciles or percentiles from poorest to richest.
3. *Attributing the Average Benefit*: Attribute the average benefit from public spending on a service to individuals’ welfare with respect to their income or consumption expenditure that has been grouped by deciles or quintiles from poorest to richest.
4. *Derivation of the Distribution of Benefits*: Derive of the distribution of benefits by multiplying the formerly computed average benefit by the number of users of the service in each categorised income or consumption expenditure group.

The algebra for illustrating these four steps for the case of health spending² is presented below:

$$X_j \equiv \sum_i U_{ij} \frac{S_i}{U_i} \equiv \sum_i \frac{U_{ij}}{U_i} S_i \equiv \sum_i u_{ij} S_i \quad j = 1, 2, 3, 4, 5 \quad (1)$$

The benefit incidence from public spending on health (i.e., medical and public health) accrued to group j is estimated by equation 1, where X_j is the benefit incidence from the total health spending enjoyed by income or consumption expenditure group j ; U_{ij} represents the number of beneficiaries that utilise health service in level i from group j ; U_i is the utilisation of service in level i by all income or consumption groups combined; S_i denotes net public spending on health level i ; and u_{ij} represents share of group j of utilisation of service in level i .

Ratio $\frac{S_i}{U_i}$ signifies the unit cost of providing health at level i . The unit subsidy differs across health levels but remains same across income or consumption groups. The level i indicates the level of public health spending as medical and public health, while the index j ranges from 1 to 5 signifying the quintile groups (Q1 to Q5) as very poorest (Q1), poor (Q2), poor (Q3), rich (Q4) and richest (Q5).

² The same approach can be applied for the BIA of education spending as well.

4. Selected Empirical Literature on Benefit Incidence

The benefit incidence of public spending or how the public spending is targeted to the poor has empirically been analysed by many researchers, by and large on two imperative social sectors – education and health. Primarily social sector analysis in itself is a difficult task as this solely deals with human behaviour, for instance, it is very difficult to determine an individual's choice concerning 'when' and 'where' to seek treatment on the basis of their ailments. But household / individual behaviour and public spending decisions are not unresponsive to each other, since it is presumed that in an ideal situation, the government is well responsive to such behavioural changes of households by changing the pattern and level of subsidies (Demery, 2000). Therefore, the benefit incidence, which is a non-behavioural analytical approach, is a decisive tool to deal with how well the public spending is being benefited by the poorest citizens. Demery (2000) applied BIA on four social sectors i.e., education, health, water supply and sanitation, and other infrastructure in three countries (Indonesia, Côte d'Ivoire and Colombia) and found gender inequality – males are benefited more than female from public spending on education and the poorest quintile gained 15 percent of the total education subsidy in Indonesia and Côte d'Ivoire while in Colombia, the poorest quintile gained 23 percent of total public spending on education. To provide an explanation of such occurrence, she argued that incompatibility exists between demand from households and supply from the government side.

Castro-Leal et al. (1999) estimated benefit incidence in a set on African countries and found that the government subsidies in education and health care, by and large are not well targeted to the poor and are inclined towards the economically better-off. Based on the findings, the authors suggested that unless better-off groups are encouraged to utilise private services, it would be difficult for the worse-off groups to enjoy the education subsidies.

Davoodi et al. (2003) empirically examined the benefit incidence of public spending on health care and education for 56 countries over 1960 – 2000 and found that the overall spending on these two sectors are poorly targeted as benefit reaches disproportionately to the middle quintile till 1990. After that targeting has improved, and thereby pro-poor benefit incidence of health and education spending tend to put up comparatively better health and education outcomes, good governance, high per capita income and wider accessibility to information.

Manasan et al. (2007) examined the benefit incidence of public spending on education for the Philippines and found that public spending of education has been well targeted to the poor. However, total education spending (public plus private) increased sharply between 1986 and 1997 but after that the trend had reversed till the year 2003. Since 2003, the Philippines' social sector expenditure, in particular, the education sector was adversely affected mostly due to the large fiscal deficit and rapidly spiralling of public debt. On top of that, the government has failed to enhance their revenue base; as a result, public spending on education has declined. But the result of benefit incidence remained consistent throughout – the poorest deciles have mostly been benefited from public spending on education. This clearly indicates that the role of decentralised public management is highly essential in managing fiscal space or setting priorities for the social sector. If such financial constraints would lead to a poor allocation of funds for the social sector than required then benefit to the poor may not ensue even though the benefit incidence of public spending of that particular sector shows pro-poor since the allocated base of that sector is inadequate.

Lustig (2015) analysed the level, redistributive impact and pro-poorness of government spending on education and health in thirteen developing countries that are part of the

Commitment to Equity project³: Armenia, Bolivia, Brazil, Chile, Colombia, El Salvador, Ethiopia, Guatemala, Indonesia, Mexico, Peru, South Africa and Uruguay and addressed how pro-poor the public spending on education and health is. The author found that spending on pre-school, primary and secondary education is pro-poor in twelve countries except for Ethiopia. Spending on tertiary education is pro-rich in three countries while it is progressive in ten. On the other hand, pro-poorness of health spending has been found in five countries whereas in the remaining eight countries it is found to be progressive. Besides, she concluded that spending on these two merit goods lowers the level of inequality and redistribution from rich to poor is prevalent as well.

In a study on Indian states, Sankar (2009) examined whether the benefits of public spending on elementary and secondary education are equitably distributed by gender. Comparisons of quintile shares of public education subsidies indicate that in the state of Bihar, the poorest quintiles receive disproportionately small benefits. Further girls in poor quintiles are worse off, confirming that the distribution of public subsidies on education in the state is highly regressive, that is pro-rich. In contrast, expenditure pattern in Kerala is pro-poor with greater gender parity in benefit distribution.

However, Chakraborty et al. (2013) analysed the benefit incidence of public spending on health care for India and found that gender wise behavioural differences exist in accessing public and private health care services and not well targeted to the poor across many states. Although, the authors argued that the analysis of benefit incidence is a forward step to minimise while targeting the poor segment and creates room for policy recommendations, this tool is not free from limitations. At first, the BIA process does not capture how financial inputs get translated into outcomes. However, Lanjouw and Ravallion (1999) indicated another major limitation of BIA that estimating average benefits for income / consumption expenditure group can be misleading since the poorer segment can gain a larger share of marginal benefits due to the programme expansion through priorities assigned in budget for that particular social sector but their average benefit share can remain low. Therefore, the authors emphasized on estimating the marginal incidence of benefit by computing marginal odds-ratio than the average odds-ratio and comparing these two ratios to show the differentials in the benefit incidence. Manasan et al. (2007) also highlighted one important limitation of the tool, which is that the benefit incidence, in principle, is concerned with the estimation of publicly financed outputs and not concerned with the estimation of the distribution of the benefits of public expenditure.

5. Interpreting Data

There are only four rounds so far related to morbidity and health care (42nd round in 1986-87, 52nd round in 1995-96, 60th round in 2004-05 and 71st round in 2014-15) over the last three decades. By analysing inter-survey data on morbidity and health care, Sen, Iyer and George (2002) in their paper titled "Structural Reforms and Health Equity: A Comparison of NSS Surveys, 1986-87 and 1995-96" have eloquently discussed the issues relating to the utilisation of health care in India from gender perspective. In this paper, analyses were based on as of then available two rounds (42nd and 52nd round) while in the next paper; Sen (Krishna Raj Memorial lecture, 2010) has incorporated the latest available round (60th round) for further analysis. Broadly, they have discussed the persistence of gender bias among each economic class in the utilization of health care in both the rural and urban areas.

It is evident from the comparison between the first two rounds that the gender gap of non-treatment in the bottom quintile is very low vis-à-vis the better off. Therefore, it raises concern about the incidence of reporting bias against the worse off who may not be able or willing to

³ <http://www.commitmenttoequity.org/>

recognize their own ailments for which, it reflects more illness among the rich than the poor. On the basis of this ground, NSS received criticisms for falling short of capturing the magnitude of untreated morbidity among the poor. In the next round of morbidity and health care (60th round), NSS came up with some spectacular performances through rectifying counting, which resulted in a sharp increase in reporting cases of morbidity⁴. It has been observed that the class gradient worsened for all groups in the 52nd round than 42nd round for never treated / discontinued persons. A sharp worsening for the poorest men was observed while some improvement was observed in the rates for poorest women. The situation for men was aggravated further in the 60th round, and the gender gap had almost tended to close mainly because non-treatment rates among men have gone up sharply. The occurrence of such condition is called 'perverse catch up' and achieving such kind of equality is not at all desirable in an economy. To some extent, the worsening picture in 52nd round (after liberalisation) than 42nd round can be revealed by two policy shifts after economic reforms: a) very sharp reduction in the controlled drug list leading to significant increases in drug prices and b) the entry of user fees.

Subsequently, they have argued that public-private mix of outpatient and inpatient care has been volatile over last two decades⁵. In both rural and urban India, outpatient care in the public sector had declined in 1995-96 from the year 1986-87 while in the private sector it had increased. But in 2004 it had again reverted to the almost same situation as it was in 1986-97. In contrast, the pattern of inpatient care was more striking. The public-private share was 60:40 in 1986-87 while that was nearly reversed in 2004-05. Also, it is imperative to understand the trends in out and inpatient care in rural and urban India in terms of inequality. Authors (Sen, Iyer and George, 2002 and Sen, 2010) analysed these issues by using data from NSS reports and thereby, this paper delves deeper into unit record⁶ NSS data to capture the benefit incidence from public spending and incidence of gender and regional inequality in inpatient care. However, economic class-based inequalities in access to health care services and gender inequity in untreated morbidity have been severe over the last two decades.

Apropos, Younger (2003) concludes that using individual or household level data (if obtainable) for analysing benefit incidence yield smaller standard errors vis-à-vis using regional level data. As a support of his conclusion, we use this NSSO unit record data to track the incidence in this paper, which collects a substantial amount of observations for approaching towards more precision.

5.1. Trends and Composition of Public Health Spending

In nominal terms, during the period 1988-2010, public spending on health in Bihar has risen at an annual compound rate of 8.75 percent from Rs. 267.47 crore in 1987-88 to Rs. 2345.81 crore in 2009-10. In Kerala and West Bengal, it has grown at an annual compound rate of 10.99 percent and 11.99 percent from Rs. 201.46 crore and Rs. 317.24 crore in 1987-88 to Rs. 2269.83 crore and Rs. 4036.85 crore in 2009-10 respectively. A rising trend for the states has been observed in per capita terms as well. However, it has been observed from Figure 2 that per capita public health care spending has gradually increased for the three states while Kerala lies at the top and Bihar lies at the bottom. However, India is among the lowest in the world in terms of the level of government expenditure on health, and the performance of these three states is

⁴ All of the NSS morbidity data is self-reported, and self-reported sickness data can be used with cautions because of variability in whether and how people perceive themselves to be ill.

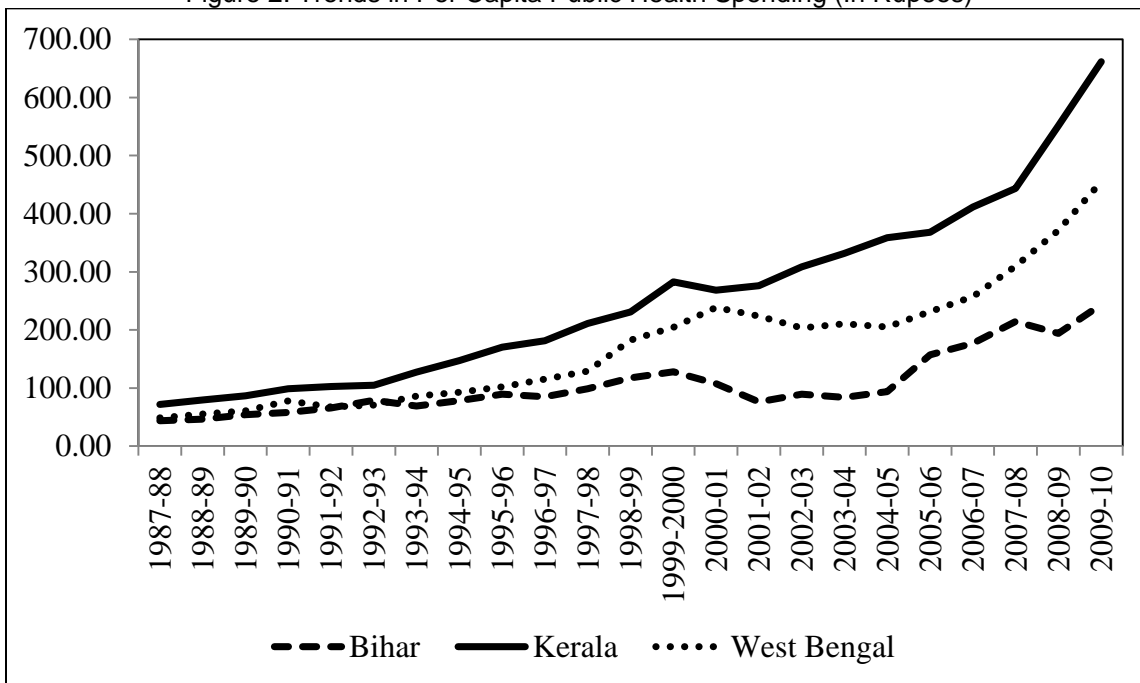
⁵ Sen, Iyer and George op cit 2002; Selvaraj and Karan, 2009.

⁶ NSS report provides aggregate level data. To obtain disaggregated data (quintile wise), one needs to extract the unit level data that is given in txt format (notepad) using a statistical software like STATA or SPSS.

comparatively feeble. In contrast, Figure 3 reveals that public health spending as a percent of nominal gross state domestic product (GSDP) for the three states has eventually declined during the period 1987-88 to 2012-13 and even below one percent.

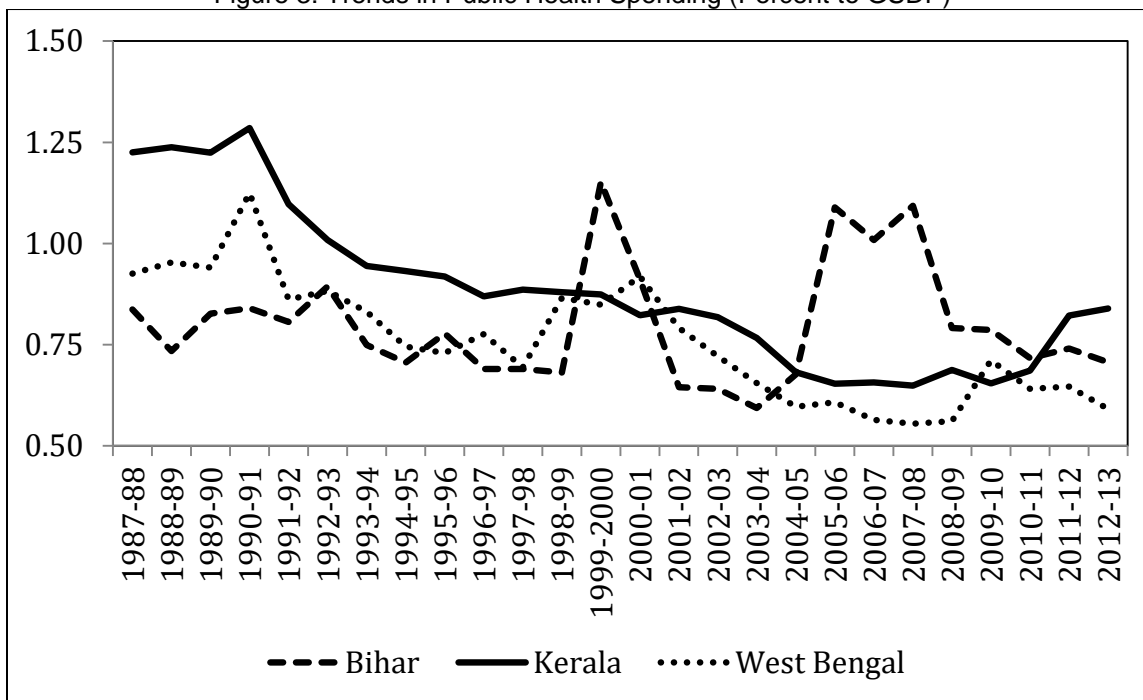
Figure 4 shows the regional (rural and urban) composition of public health spending across Bihar, Kerala and West Bengal for the year 2010-11. Except Bihar, the share of public spending on rural area in Kerala and West Bengal is lower than urban area. Also, the urban - rural gap, however, is considerably higher in Kerala followed by West Bengal. While most of the population in the states resides in the rural area, such disproportionate composition may impede the benefit targeting to the poorest segment of the states.

Figure 2: Trends in Per Capita Public Health Spending (In Rupees)



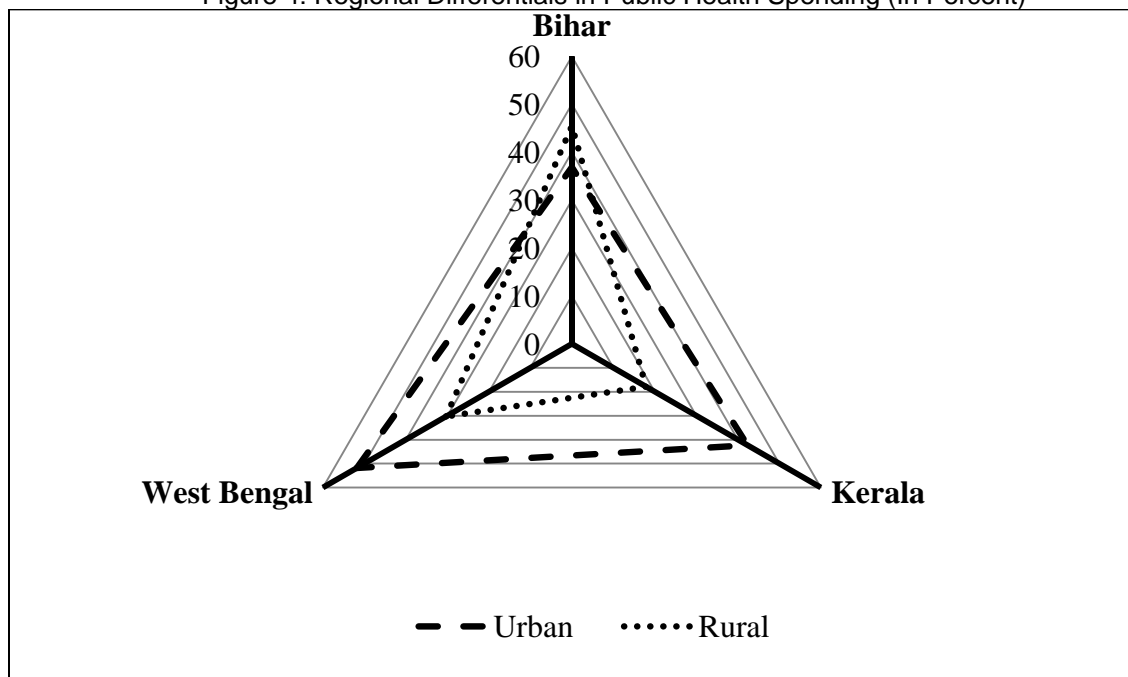
Sources: 1) Finance Accounts (various years), 2) Registrar General of India, Census Data and Projections, Government of India.

Figure 3: Trends in Public Health Spending (Percent to GSDP)



Sources: 1) Finance Accounts and state budgets (various years),
 2) Central Statistics Office, Ministry of Statistics and Programme Implementation, Government of India.

Figure 4: Regional Differentials in Public Health Spending (In Percent)



Source: Finance Accounts, 2010-11.

6. Inferences from Benefit Incidence

Figures 5 to 10 and Tables 1 to 3 depict the performance of benefit incidence of public spending related to the distribution of inpatient care of West Bengal, Bihar and Kerala with a comparison between the two NSS rounds. All these six figures explicate the trend of benefit incidence through unit utilisation while the three tables elucidate the computed unit costs for all the five consumption based quintiles for the three states. The figures and tables specifically show the gender and regional gap in the benefit incidence of the same.

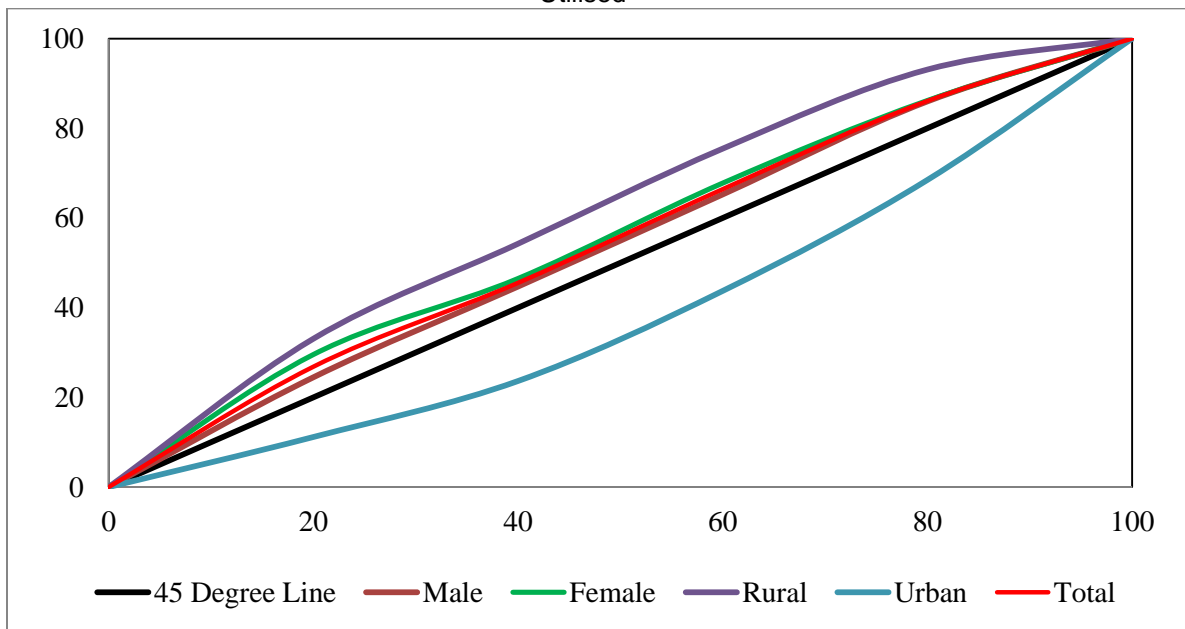
In case of gender and regional gap in benefit incidence of public spending on health in 2004-05, the concentration curves of West Bengal for both male and female is above the line of equality, which signifies the benefit incidence is pro-poor for the case of unit utilisation (Figure 5). Of total public spending on health in 2004-05, i.e., Rs. 1244 crore, total male including rural and urban enjoys 54 percent while the residual 46 percent is being enjoyed by the female segment. The ratios remain almost similar in 2014-15 (Table 1). The regional differential in unit cost shows that rural West Bengal had access to 72 percent of total health spending in 2004-05, which has marginally come down to 66 percent in 2014-15. Thus, the regional gap in 2004-05 shows a significant gap in the concentration curves for rural, which reveals pro-poor whereas the benefit incidence of public spending for urban segment reveals regressive in nature, i.e., pro-rich. The situation however has remained consistent in 2014-15, vis-à-vis 2004-05. The rural – urban gap continues to remain significantly high while urban show progressive in nature. This can be interpreted as the richer segment tends to move to private sector while due to the financial constraints, poorer section opts for the public provisioning health care service, however at the same time, they do not have choice as well since private sector health service facilities are inadequate in rural area.

Bihar shows a significant improvement in targeting of public spending to the poorest segment of its economy by bringing down both the inequalities – gender and region. The regional differential in Bihar was similar to the stance of West Bengal in 2004-05, but the state has been able to alter the urban segment from pro-rich in 2004-05 to pro-poor in 2014-15, which West Bengal failed to do. While the gender differential is concerned, West Bengal showed marginal differential while female were worse off (progressive) vis-à-vis male in Bihar as they were being benefited less from public spending on health than what male had received. On this facet, Bihar has successfully brought down the differential by upturning the targeting of public spending for female segment from progressive to pro-poor. It has been observed from Table 2 that of the total public spending on health in Bihar in 2004-05 and in 2014-15, all the rural quintiles combined enjoys a larger portion i.e., 84 percent and 89 percent respectively, while there is no significant gender differential found since it is well distributed among male and female.

In contrast to these two states, Kerala shows pro-rich nature of benefit incidence for both the cases – gender and region with comparatively less differentials amongst both the categories. Since the citizens are earning more than West Bengal and Bihar, therefore they prefer to access private health care over public subsidized health care service. It is evident from Figure 9 and Table 3 that Quintile 4 was accessing public funded health care vis-à-vis other four quintiles of economic classes in 2004-05. However, from Figure 9, we can infer that the benefit incidence from public spending on inpatient health care in rural is progressive while it is regressive in nature in urban area. This is validated from the Table 3 as well, where quintile wise unit cost has been computed for all the categories. Of the total public health spending in 2004-05, the urban economic classes combined enjoyed only 23 percent while a two fold increase has been observed in 2014-15, whereas the urban economic class combined enjoys 46 percent, for which, Figure 10 shows more acute pro-richness even after a decade period. The inferences from both

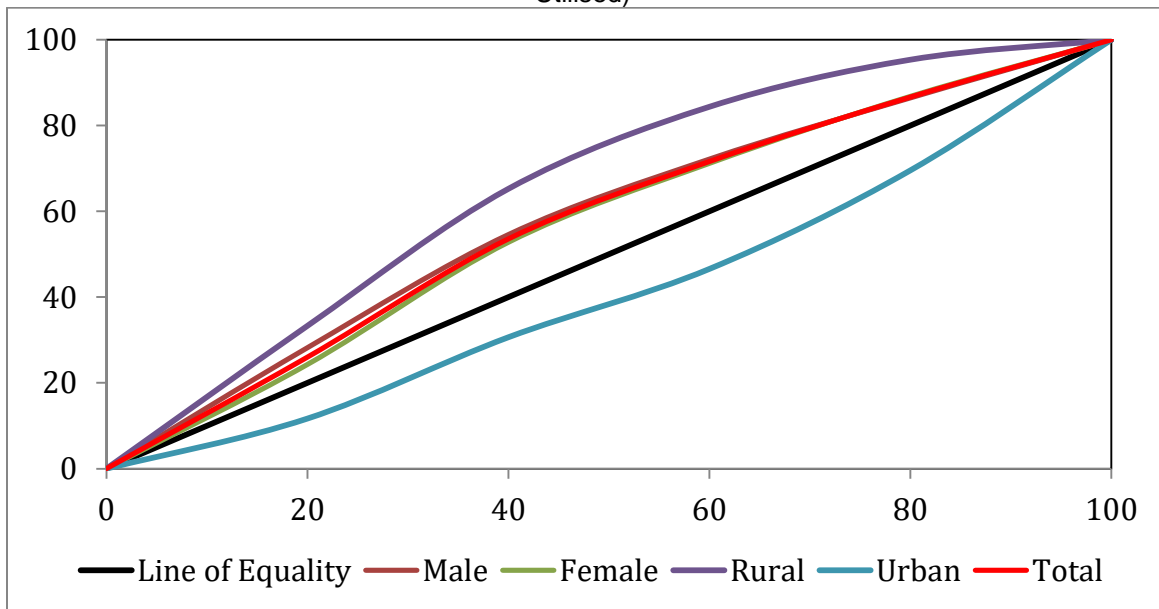
the unit utilised (Figures from 5 to 10) and unit cost (Tables from 1 to 3) for each of states did not vary. In other words, the tables validate the inferences from the figures of the three states.

Figure 5: Gender and Regional Gaps in Benefit Incidence of West Bengal in 2004-05: Unit Utilised



Source: NSS Unit Level Data, 60th Round, 2004-05.

Figure 6: Gender and Regional Gaps in Benefit Incidence of West Bengal in 2014-15 (Unit Utilised)



Source: NSS Unit Level Data, 71st Round, 2014-15.

Table 1: Gender and Regional Gaps in Benefit Incidence of West Bengal in 2004-05 and 2014-15 (A Comparison of Unit Cost)

(Rupees in Crore)

Economic Class	Male	Female	Rural	Urban	Total
60th Round (2004-05)					
Quintile 1	163	171	294	40	334
Quintile 2	135	98	189	44	233
Quintile 3	137	123	189	71	260
Quintile 4	138	106	157	88	245
Quintile 5	93	80	61	112	173
TOTAL	667	578	890	355	1244
71st Round (2014-15)					
Quintile 1	529	587	946	169	1115
Quintile 2	495	688	908	275	1183
Quintile 3	330	444	544	231	774
Quintile 4	268	377	312	333	645
Quintile 5	254	319	132	441	573
TOTAL	1876	2414	2842	1448	4290

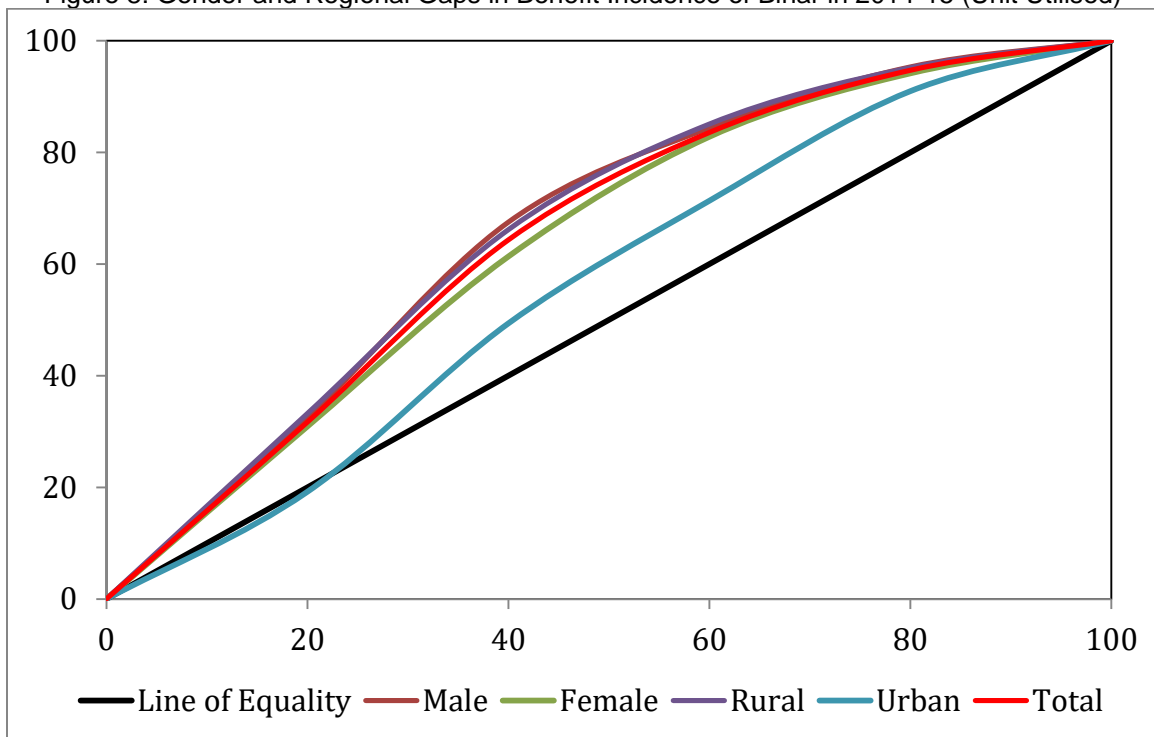
Sources: 1) Finance Accounts 2004-05 and 2013-14,
2) NSS Unit Level Data, 60th Round, 2004-05 and 71st Round, 2014-15.

Figure 7: Gender and Regional Gaps in Benefit Incidence of Bihar in 2004-05 (Unit Utilised)



Source: Same as Figure 5.

Figure 8: Gender and Regional Gaps in Benefit Incidence of Bihar in 2014-15 (Unit Utilised)



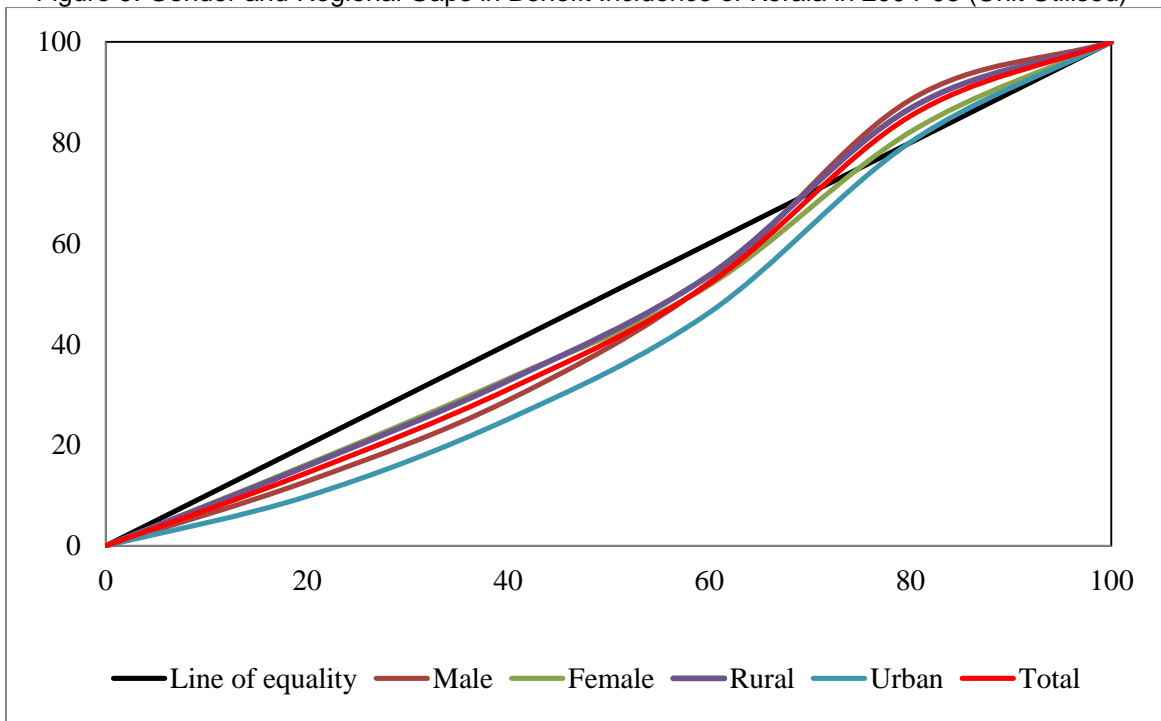
Source: Same as Figure 6.

Table 2: Gender and Regional Gaps in Benefit Incidence of Bihar in 2004-05 and 2014-15: A Comparison of Unit Cost

Economic Class	(Rupees in Crore)				
	Male	Female	Rural	Urban	Total
60th Round (2004-05)					
Quintile 1	74	38	110	3	113
Quintile 2	64	51	104	11	115
Quintile 3	45	77	112	10	122
Quintile 4	35	54	68	21	89
Quintile 5	52	36	51	37	88
TOTAL	270	256	444	82	526
71st Round (2014-15)					
Quintile 1	348	353	655	46	701
Quintile 2	374	348	649	73	722
Quintile 3	181	245	373	53	426
Quintile 4	117	130	199	48	247
Quintile 5	50	67	95	22	117
TOTAL	1070	1143	1971	242	2213

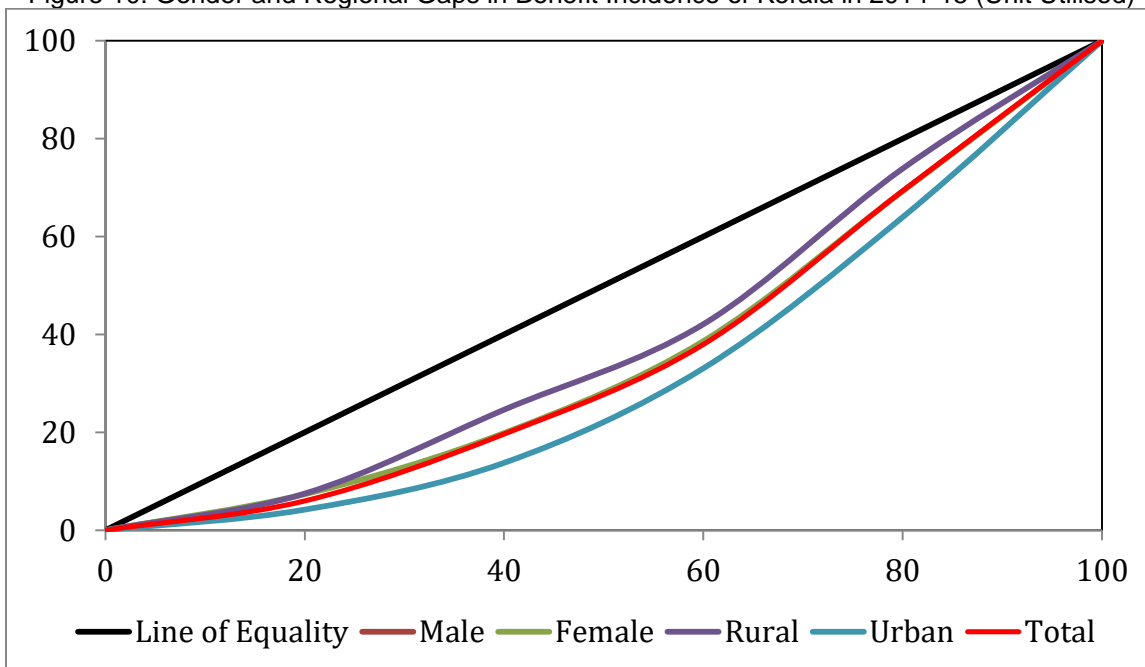
Source: Same as Table 1.

Figure 9: Gender and Regional Gaps in Benefit Incidence of Kerala in 2004-05 (Unit Utilised)



Source: Same as Figure 5.

Figure 10: Gender and Regional Gaps in Benefit Incidence of Kerala in 2014-15 (Unit Utilised)



Source: Same as Figure 6.

Table 3: Gender and Regional Gaps in Benefit Incidence of Kerala in 2004-05: Unit Cost
(Rupees in Crore)

Economic Class	Male	Female	Rural	Urban	Total
60th Round (2004-05)					
Quintile 1	52	66	100	18	118
Quintile 2	65	70	106	28	135
Quintile 3	94	76	132	39	171
Quintile 4	146	125	208	62	271
Quintile 5	46	73	83	37	120
TOTAL	402	411	629	184	813
71st Round (2014-15)					
Quintile 1	77	165	164	78	243
Quintile 2	273	280	376	178	553
Quintile 3	320	422	383	359	743
Quintile 4	583	688	698	574	1272
Quintile 5	552	690	573	670	1242
TOTAL	1806	2247	2194	1859	4053

Source: Same as Table 1.

6.1. Polarisation and Odds Ratio

The share of upper quintile (Q5) to lower quintile (Q1) is referred to as the polarisation ratio. This ratio is used to capture skewness towards quintiles, which signifies whether poorest group are using public provisioning of merit goods and the extent of the 'exit' by the richer group to private provisioning of the same. Lower the polarisation ratio, higher the benefit skewed towards the lower quintile and vice-versa. Table 4 represents the polarisation ratio of inpatient public health care services of two pronged categories - gender and region for both the years.

In order to track gender differentials across the three states, West Bengal emerges with a smaller gap in both the years. One notable point is that male segment was comparatively better off in 2004-05 while the scenario has reversed in 2014-15. In case of regional differential, rural is better off in all the three states. Among the three states, as mentioned earlier, Bihar has shown a significant improvement in targeting especially for urban area in a decade period. The share of upper quintile to lower quintile for urban had appeared considerably high (1214 percent) in 2004-05, which the state has been able to bring down to 47 percent in 2014-15. While the urban citizens were overwhelmingly accessing private inpatient health care services, bringing its level down signifies government intervention has been reinforced over time. The ratios for Kerala however explicates more pro-richness in targeting in 2014-15 than the earlier year. In sum, the polarisation ratios for both the categories across the three states reveal the incidences that have been observed from the concentration curves of the states.

Besides, Table 5 and Table 6 present the odds-ratio that shows same results for the three states. The odds-ratio has been computed as the share of a particular category of each quintile to the total of that category. The result indicates the same – Bihar and West Bengal shows pro-poor incidence while Kerala reveals pro-rich, and the gender gap, which was higher in Bihar in 2004-05, has significantly come down in 2014-15. One notable point is that since Kerala shows more pro-rich, it is predominantly because of the fourth quintile that is accessing more public funded health care than all the other four economic classes. This also validates not only the concentration curves but the unit costs that is utilised by the quintiles as well. The analyses

(Tables 4 and 5) elucidate that the benefit incidence of public provisioning of inpatient health care is comparatively more skewed towards rural segment in West Bengal and Bihar than Kerala.

Table 4: Polarisation Ratios (In Percent)

Category	West Bengal		Bihar		Kerala	
	60 th	71 st	60 th	71 st	60 th	71 st
Male	57	48	70	14	90	716
Female	47	54	94	19	111	417
Rural	21	14	47	14	83	349
Urban	282	261	1214	47	203	856
Total	52	51	78	17	102	512

Source: Same as Figure 5 and 6.

 Table 5: Odds-ratio in Public Health Sector for Inpatient (60th Round)

State	Economic Class	Male	Female	Rural	Urban
West Bengal	Quintile 1	0.131	0.137	0.237	0.032
	Quintile 2	0.108	0.079	0.152	0.036
	Quintile 3	0.110	0.099	0.152	0.057
	Quintile 4	0.111	0.085	0.126	0.070
	Quintile 5	0.075	0.064	0.049	0.090
Bihar	Quintile 1	0.141	0.073	0.208	0.006
	Quintile 2	0.121	0.097	0.197	0.020
	Quintile 3	0.086	0.146	0.213	0.019
	Quintile 4	0.066	0.103	0.129	0.040
	Quintile 5	0.098	0.069	0.097	0.070
Kerala	Quintile 1	0.063	0.082	0.123	0.022
	Quintile 2	0.080	0.086	0.131	0.035
	Quintile 3	0.116	0.094	0.162	0.048
	Quintile 4	0.179	0.154	0.256	0.076
	Quintile 5	0.057	0.090	0.102	0.045

Source: Same as Figure 5.

 Table 6: Odds-ratio in Public Health Sector for Inpatient (71st Round)

State	Economic Class	Male	Female	Rural	Urban
West Bengal	Quintile 1	0.123	0.137	0.221	0.039
	Quintile 2	0.115	0.160	0.212	0.064
	Quintile 3	0.077	0.104	0.127	0.054
	Quintile 4	0.062	0.088	0.073	0.078
	Quintile 5	0.059	0.074	0.031	0.103
Bihar	Quintile 1	0.157	0.160	0.296	0.021
	Quintile 2	0.169	0.157	0.293	0.033
	Quintile 3	0.082	0.111	0.168	0.024
	Quintile 4	0.053	0.059	0.090	0.021
	Quintile 5	0.023	0.030	0.043	0.010

Kerala	Quintile 1	0.019	0.041	0.041	0.019
	Quintile 2	0.067	0.069	0.093	0.044
	Quintile 3	0.079	0.104	0.095	0.089
	Quintile 4	0.144	0.170	0.172	0.142
	Quintile 5	0.136	0.170	0.141	0.165

Source: Same as Figure 6.

6.2. Behavioural Access in Health Care

Morbidity and its treatment seeking behaviour is an unyielding area for consideration of an economy's success and failure despite the incidence of several strong economic variables like, Personal Income (PI), Per capita Income (PCI), Distribution of National Income etc. The quality of life of a person certainly depends on his or her personal income as it enhances their purchasing power in meeting their preferences. But it is not merely an ample factor to persuade life and death of a person. Besides, it depends on several social factors like, the epidemiological atmosphere in which a person lives, whether they are living in urban area, access to modern medical knowledge as a part of education, etc. These factors are not directly linked to the national income while they have a strong impact on a person's life and death (Sen, 1998). However, above all, the crucial dimension in treatment-seeking behaviour is *inequity*. Gender-based inequity and economic class-based inequality in accessing health care have been a cause of worry over the last two decades while their existence was observed since the independence.

The behavioural differences bear intense consequences on the benefit incidence estimates, since hospital-based services generally cost comparatively more than the same being offered through primary and community health centres / clinics. Also, the perception of morbidity and 'when' and 'where' to seek medical care is difficult to confine, hence, it needs to be captured. On the other hand, the demographic differential in accessing public services is equally important to capture but it is, in particular, very much relevant to the education sector since, educational expenditure largely benefit cohorts in the younger age-groups while health expenditure is usually perceived to be distributed among all age groups based on morbidity and associated mortality. Thus, benefit incidence of different entitlement programmes, by the very nature of their design, are targeted and assimilated by different contemporaneous cohorts to differing degrees. Comparison of per capita expenditure by services (education, health etc.) could therefore be misleading, unless it is adjusted for the changing proportion of population cohorts that are targeted and benefiting from a programme or scheme.

However, non-treatment of ailments and discontinuation of treatment have increased sharply. The high financial burden of both catastrophic and routine health care makes the poor highly vulnerable, even contributing to rural poverty. This appears to be rising mainly due to the rapid spiralling of drug prices and in such situation; this is very ominous that the public spending on generic drug procurement is 0.1 percent of GDP (Sen, 2012). However, what this signifies is that the demand for health care is being restrained mainly due to the financial burden, and a few other constraints. However, enhancing public spending on health may have a direct impact on poverty reduction if this increase leads to shrink or reverse the high level of private expenditure especially Out-of-Pocket (OOP) spending.

The behavioural differential however is considered as highly relevant in capturing the accessibility pattern in health service delivery. In this study, the behavioural differences have been tracked through the discontinuation or no treatment of ailments for these three states. It was found in the 60th round report that the mostly cited reason of no treatment was 'ailments not considered serious' accounting for 32 percent of the estimated sample and 50 percent of the total

untreated ailments in the rural and urban areas. The 'financial problem' was next in position as a reported reason for no treatment accounting for 28 percent and 20 percent of the untreated ailments in the rural and urban areas respectively.

Table 7 depicts the behavioural access (percentages of person, who never treated over all sick persons in each category-wise quintile) to public health care through the no treatment of ailments by gender and region with a comparison between both the years – 2004-05 and 2014-15. At the outset, it has been observed that the ratios of ailing persons who have never been treated over all sick persons have markedly improved in 2014-15 from 2004-05. As Table 7 shows, Kerala reveals better scenario than Bihar and West Bengal in terms of the percentage shares of persons that never treated over all sick persons in each category wise economic class. Intra-state situation explicates that such percentage shares are comparatively higher for the middle quintile in Kerala and female are worse off than male. In West Bengal such share is somewhat consistent in top four quintiles whereas the richest quintile is comparatively better off. Similar to Kerala, female are worse off than male since the share of no treatment of ailments for female in total ailing persons is comparatively high across all the quintiles. In Bihar, the ratio had appeared higher for female in 2004-05 in first two quintiles (21 percent against 20 percent male and 29 percent against 16 percent male) while the scenario has been reversed for the top three quintiles. However, in all the three states, as expected from our analyses, urban is better off since such shares are lower than rural beneficiaries. The co-existence of private and public service provisioning in health sector may be one of the reasons for the behavioural 'exit' in Kerala, however it is equally interesting to note the 'voice' elements when the targeting of public spending reveals more pro-rich.

Table 7: Ailing persons never treated (60th Round)
(Percentages of person never treated over all sick persons in each category-wise quintile)

State	Economic Class	Male	Female	Rural	Urban
West Bengal	Quintile 1	15 (4)	23 (11)	21 (8)	17 (8)
	Quintile 2	16 (8)	19 (7)	20 (8)	15 (6)
	Quintile 3	16 (2)	17 (4)	21 (3)	11 (3)
	Quintile 4	14 (1)	18 (2)	22 (1)	10 (2)
	Quintile 5	13 (1)	14 (1)	18 (2)	9 (1)
Bihar	Quintile 1	20 (0)	21 (5)	22 (3)	18 (1)
	Quintile 2	16 (0)	29 (1)	20 (0)	25 (0)
	Quintile 3	12 (10)	12 (4)	23 (7)	0 (0)
	Quintile 4	25 (2)	15 (5)	17 (4)	23 (1)
	Quintile 5	15 (0)	8 (0)	12 (0)	12 (1)
Kerala	Quintile 1	0 (10)	13 (0)	0 (0)	13 (10)
	Quintile 2	5 (0)	8 (1)	5 (0)	8 (1)
	Quintile 3	10 (7)	13 (5)	20 (1)	3 (11)
	Quintile 4	7 (10)	3 (3)	7 (8)	3 (4)
	Quintile 5	4 (1)	9 (1)	5 (1)	8 (1)

Source: Same as Figure 5 and 6.

Note: Figures in the parentheses are percentages drawn from 71st Round of NSS.

7. Conclusion

The analysis of benefit incidence is a potential approach for reducing the margin of errors while targeting the poor especially when discontinuation and no treatment of ailments persist. There have been considerable gender differences in untreated morbidity – female and the rural poor are worse off. However, the gender gap is found mostly at the bottom quintiles and getting tapered to the higher quintiles. The benefit incidence analyses therefore, in this paper essentially capture the accessibility and unit costs distributed amongst category wise (gender and region) economic classes and give an insinuation about their potential in affordability.

The results on these three states of this paper are mixed and thereby inconclusive. Bihar and West Bengal shows more pro-poor targeting of public spending on health care while Kerala shows the reverse scenario – the poorest quintile is being less benefited over time from public health spending, and the richest quintile is more benefited from the same. A comparison between the two rounds for these states reveals (i) no impact of fiscal decentralisation has been found in West Bengal since gender and regional differentials behave in a same manner in both the years, (ii) despite having low per capita income and low public health spending, strong positive impact of fiscal decentralisation is observed in Bihar in case of targeting of public health spending to the rural poor since the states has capably managed to alter the regressive stance into pro-poorness for urban segment, (iii) Kerala shows an 'increasing trend' in pro-richness in targeting.

These inferences are validated from the polarisation and odds ratios as well. The results however needs to be considered carefully since, lower level of individuals' income and comparatively less availability of private health infrastructure in rural area may be explanatory reasons behind such occurrence, particularly in Bihar and West Bengal. The instance of Kerala from the analysis of benefit incidence indicates that even if benefit incidence accrues to the poorer section, utilisation of it depends on the non-price factors. Besides, the utilisation depends on choices by "voting with their feet" – if beneficiaries are given more than one options regarding where (hospitals / primary health centres etc.) and whom (doctors) to seek treatment, then they would reveal their preferences.

Mukherjee and Levesque (2010) found that economic class based inequality in India has declined since 1998, conflicting to the prevalent belief of rising inequality. However, in this paper, we found that the gender gap in accessing health services for West Bengal across income quintiles is insignificant whereas the regional differential has appeared significant. While in Bihar, the gender and regional differentials are significantly higher and female are worse off than male. But in Kerala, no gender and regional gaps have been observed and the incidence of benefit from public provisioning services of health care reaches to the richest segment. But in India, people with higher income prefer private health care for government subsidised health care services.

Given the low level of public health spending (in both per capita and as percent to GSDP terms), the region-wise composition of public health spending differs across these states and lower in rural as compared to urban area. In addition, if the composition of public spending is not properly framed on the basis of requirements for greater coverage and failed to target the poorer segment the incidence of benefit may not bear the desired results, no matter whether it is pro-poor. Thus, a critical evaluation of the role of decentralised governance is imperative for reinforcing the public service delivery of such an important merit good (Tanzi, 1996; Crook and Manor, 2000; Torres and Pachón, 2013).

It could be comprehended from our analysis that despite having limitations, the BIA is a valuable tool to capture the benefit incidence for diverse economic classes from public

provisioning of health care services in targeting the poorest segment and policy recommendations for further betterment in targeting.

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