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Design of a Pro-Poor Value Added Tax (VAT) System in a Federal Economy Like India

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Design of a Pro-Poor Value Added Tax (VAT) System in a Federal Economy like India

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a. Abstract

Value Added Tax (VAT) has been introduced in India in place of Sales Tax with effect from April 1,2005. These taxes are in the domain of different state governments within the federal set up in India. Although VAT is widely acclaimed to be a better system than the sales taxes on grounds of efficiency and tax collection, there is no study undertaken which has addressed the direction of this tax reform from the angle of its possible impact on social equity. This paper analyses this question with the help of concentration curves and consumption dominance curves of various orders. The conclusions reached from two major states in India, namely Maharashtra and West Bengal, using National Sample Survey Unit Level data for the 55th round, is that the reform is largely pro-poor, although there are scopes to improve it with respect to some items predominantly consumed by the relatively poorer groups (150 words).

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b. Key Words:

Poverty Alleviation, Value Added Tax, Marginal Tax Reform, Pro-poor Taxation, Public Distribution System, Concentration curve, Lorenz ratio, Marginal Efficiency Cost of Funds, Consumption Dominance, Poverty and Social Impact Analysis.

c. JEL Codes:

D12, D63, H21, H22, H71, I32

d. Introduction

Government uses many policies to foster economic growth. Among these, policies which affect consumer and producer prices can affect welfare of the citizens directly. For example, to raise revenues, one of the most popular instruments of the Governments in developing countries is to raise indirect taxes (particularly Sales Tax/VAT), because commodity taxes dominate the tax revenues in developing countries. Changes in indirect taxes such as Sales Tax/VAT affect the price of the goods consumed by both poor and rich people.

Economists strongly advocate pro-poor growth process in developing countries so that gains from aggregate economic growth are distributed across households according to their initial incomes or expenditures. However, evaluation of the impact of such pricing policies (through changes in commodity taxes) on poverty and social welfare is particularly important in developing countries, as it affects the welfare of the poor people. Such evaluation can be done in a number of ways. One important component of such PSIA (Poverty & Social Impact Analysis) analyses of effect of any commodity tax reform is to consider the empirical applicability of a “social improvement” approach. Using this approach, we may be interested in identifying marginal price changes which is socially desirable from both the classical welfare-dominance and the poverty-dominance approaches. Since actual changes in the tax system are mostly “slow and piecemeal” (Feldstein (1975)), and that it would be unwise to ignore the role of the actual tax system as a departure point for the

identification of desirable tax reforms, policy analysts may be interested only on the marginal tax reforms (Duclos, Makdissi and Woodon (2004)). One immediate advantage of evaluating the distributive impact of marginal commodity tax reforms is that it does not require estimates of individual demand and utility functions, but can instead be assessed directly from the available household consumer expenditure data.

Value Added Tax (VAT) has been introduced in India in place of Sales Tax with effect from April 1, 2005, initiating long term fiscal reforms in commodity taxes. It encompasses significant tax policy reforms as well as tax administration reforms. One major feature of the tax policy reforms in the implemented VAT system in India is significant restructuring of tax rates on major commodities.

The basic question that will be addressed in our current study is how far welfare improving commodity taxes reforms, based on welfare dominance criteria, can play an important role in overall pro-poor tax reforms design. This will be done, in the Indian context by empirically measuring effects of such changes in tax rates, on poverty and inequality.

e. Background of the study

e.1 Defects of the Sales Tax system of India:

As per the Constitutional provisions of the federal fiscal structure of India, Sales Tax was the main source of revenue of the State Governments (Kurian & Dasgupta, 2003). However, the State Sales Tax systems were inefficient, highly complex and low revenue yielding due to the following reasons.

In most of the States the Sales Tax was levied on most of the commodities at the 1st point of sale, for administrative convenience. It not only increases the risk of revenue because the entire tax is concentrated at one stage of sale, it is also inefficient as the most efficient commodity (indirect) tax should be collected from the final consumer, such as in the case of a retail sales tax. The system was also not transparent, as the amount of tax which the goods have suffered at first point of sale is not known at the subsequent stages of sale. In some commodities, the Sales Tax was levied on multistage, without any rebate of taxes paid previously, particularly on inputs and capital goods, thereby inducing the cascading (tax on

tax) effect. Such a system also made the export prices non-competitive by increasing the export prices.

The Sales Tax Laws were highly complex, with too many rates of tax (even with multiple rates on same commodities) and too many exemptions and concessions. Also as per the Constitution of India, the States are not entitled to levy tax on services, which are often an integral part of manufacturing and trade. Since, the tax base was narrow with many exemptions and concessions, to raise revenue the States resorted to levy of additional levies like Turnover Tax, Additional Sales Tax, Surcharges etc. which only rendered the tax system more in-efficient. This also provides incentives for evasion and avoidance of tax. Complex Sales Tax laws also led to very high cost of compliance and enforcement.

Under the Sales Tax system, Central Sales Tax (CST) levied on the inter-State sale (an 'origin' based tax) constituted a serious impediment to the free flow of trade within the country and was inimical to competition and efficiency. 'Tax war' due to lack of harmony in the Sales Tax rate structure and policies, often led to undercutting of tax rates and ad-hoc tax concessions to attract trade and industry, thereby resulting in gross misallocation of resources.

e2. Rationale behind implementation of VAT :

As part of the broader fiscal restructuring plan of the Central and State Governments in India, reforms have been initiated to raise revenue and cut deficits. Particular emphasis has been placed on radical reforms in direct and indirect taxes both in terms of Tax Policy Reforms (base broadening, elimination of tax concessions and reduction in the number of tax rates and rationalization of tax structures) as well as Tax Administration Reforms (modernization of tax administration and extensive use of Information and Communication Technologies (ICT) etc.).

At the State level, introduction of an efficient, uniform Value Added Tax (VAT) in place of the in-efficient Sales Tax system remained the main issue of indirect

tax reforms since 1999, when the idea was first placed by the Union Finance Minister before the Chief Ministers of the States.

After repeated interactions and discussions, most of the States have finally agreed and implemented VAT in India with effect from 1.4.2005. The following features of the new VAT system sought to remove the inherent defects of the previous Sales Tax system:

1. Converting the first point Sales Tax system into a multi-stage VAT system with rebate for tax on all purchases with minimal exceptions.
2. Extending the tax base to include all goods sold or leased with minimum exemptions.
3. Allowing input tax credit for all raw materials, consumables, goods for resale and production machinery equipments.
4. Replacing the existing structure of too many tax rates with two or three rates applicable throughout the economy.
5. Removing the exemptions except for a basic threshold limit and withdrawing other concessions such as tax holiday etc.
6. Zero-rating the exports out of the country. The Central Sales Tax also will be phased out.
7. Modernising tax administration, computerizing operations and information systems and simplifying forms and procedures.

The policy makers expected the following benefits from the introduction of VAT in India, as enumerated in Government of India's "A White Paper On State – Level Value Added Tax" (2005), published by the Empowered Committee of Finance Ministers of India :

- a set-off will be given for input tax as well as tax paid on previous purchases (which will remove cascading tax burden)
- other taxes, such as turnover tax, surcharge, additional surcharge, etc will be abolished (which will simplify the tax system)
- overall tax burden will be rationalized (this will increase efficiency)
- prices will in general fall (due to removal of cascading tax burden)

- transparency will increase
- there will be self-assessment by dealers (which will increase voluntary compliance)
- there will be higher revenue growth.

“The VAT will therefore help common people, traders, industrialists and also the Government. It is needed a move towards more efficiency, equal competition and fairness in the tax system”, the White Paper observed.

The new VAT system was expected to be revenue neutral, which was to be achieved by selecting the tax rates in the following way. During the innumerable deliberations held by the Empowered Committee of Finance Ministers in India, it was decided that there will be four groups of commodities under VAT, namely,

1. Exempted goods
2. Zero rated exports.
3. Gold/Silver (VAT @1%)
4. Inputs (VAT @ 4%)
5. Rest of the Commodities (VAT @12.5%) – Revenue Neutral Rate (RNR)

VAT for the general goods covered under serial 5 above has been calculated as a revenue neutral rate, after estimating expected tax revenue from the reduced rates covering commodities under serial numbers 1-4 above.

Hence, the policy reformers expected the move towards VAT to be REVENUE NEUTRAL. VAT Revenue Collection till now of the major States in India suggests that the States have so far registered a growth of 7-17% over previous year, indicating that yields from the new VAT regime is more or less REVENUE NEUTRAL , considering the growth rate of the previous Sales Tax regime.

Whether the newly introduced VAT will be revenue neutral in India, will be clear only after fiscal 2005-06 is completed on March 31, 2006, and the State-wise figures of VAT collection are available for the entire year 2005-06.

f. Review of literature mentioning results of other related study and their Methodologies

Various studies have suggested different tools to measure whether economic growth is pro-poor, although studies on India are notably absent. Notable among them are “poverty growth curve” proposed by Hyun Hwa Son (2003) for empirical studies on Thailand, “growth incidence curve” based on the rate of change in the Watts index of poverty normalized by the headcount ration, used by Ravallion & Chen(2003) for China, “poverty equivalent growth rate” used by Kakwani & Khandkar (2004) for Korea, Thailand and Vietnam, “growth elasticity of poverty” used by Son & Kakwani (2004) for some Asian countries. Duclos & Wodon (2004) have suggested the use of “ income growth curves” to test whether distributional changes are “robustly” pro-poor, in the sense of whether broad classes of ethical judgments would declare a distributional change to be pro-poor. Some incidence studies have tried to estimate the progressivity /regressivity of consumption taxes and distributional effects of marginal tax reform in some countries. Notable among them are studies by Sahn & Younger (1999) for Africa; Sahn, Younger & Dorosh (1999) for Madagascar; Younger (1996) for Ghana; Yitzhaki & Lewis (1996) for Indonesia; Yitzhaki (1994) for Israel; Jantti (2005) for Finland; Pahan Prasada (2005) for Sri Lanka and Munoz & Cho (2003) for Ethiopia. However, there is no empirical study on pro-poor implications of the indirect tax reform by switching over to VAT in India. Our study will be the first major attempt to measure empirically the pro-poor implications of the reform process in terms of poverty and inequality.

g. Objective of the study

As can be seen from the White Paper on VAT in India, the main reason behind the introduction of VAT was to enhance the efficiency and transparency of the commodity tax system and increase buoyancy of such tax revenue. The policy makers did not consider poverty alleviation or income redistribution as a critical component of such a reform process.

This is not an unusual experience. “Poverty and or inequality considerations have received little if any attention in LDC tax reforms. Partly this is because of the belief that few taxes are paid by the poor, and partly because of the belief that the tax system does not provide the best instruments to target the poor”(Gemmel & Morrissey, 2002). There is a strong belief that public social expenditures provide a better means to target the poor and reduce poverty (taxes are not viewed as instruments for reducing poverty) (Gemmel & Morrissey(2002), Bird & Zolt(2003)).

However, these beliefs are not always well supported by actual facts. It is true that in developing countries very few taxes are directly incident on the poor. In India for example, only 3.5% of the population are covered under the Income Tax (a direct tax). But certain consumption (indirect) taxes, particularly Sales Tax affect the prices of goods that the poor (as well as the rich) consume.

Indirect taxes dominate the tax system of the developing countries in general and the sub-national governments in particular. In India, Sales Tax is the single largest source of revenue (constitutes 29% of the revenue receipts) for the State (sub-national) governments (Kurian and Dasgupta, 2003). Since rich and poor often purchase broadly similar consumption bundles, it may appear that it is difficult to make these taxes strongly progressive (i.e. to ensure that those on higher incomes pay relatively more tax). However, recent evidence (Sahn & Younger, 1999; Gemmel & Morrissey, 2002) suggests that some indirect taxes, particularly taxes such as Sales Tax or VAT , can be quite strongly progressive or regressive and can potentially affect poverty or inequality in developing countries.

In India, after almost a decade long (1996-2005) discussion among the State and Central governments, Value Added Tax has been implemented with effect from April 1,2005, replacing the earlier Sales Tax regime. The tax structure has been radically restructured. In view of the discussion enumerated above, the motivation of the current study is to explore whether the new tax system (that is, VAT) is more progressive or regressive than the earlier Sales Tax system in India by measuring the distributional impact of such tax reforms (introduction of VAT).

In our current study, we will use Lorenz Curves and Concentration Curves and Consumption Dominance Curves to measure inequality changes due to the newly introduced VAT in place of the earlier Sales Tax system. The empirical exercise will be carried out on selected major commodities for major States in India, where the tax rates under VAT are different from the earlier Sales Tax system in those States. The Curves will be drawn using the STATA software and analyses will be based on the extent of progression/regression of the earlier Sales Tax system and the direction of reform. We will also use Poverty Head Count as a measure of poverty.

Based on the STATA software we intend to empirically carry out the following exercises to judge the pro-poor character of tax regime change in some important states in India:

1. Calculate the trend of shares of expenditure on a particular commodity. The tools to be used are Engel curve and normalised Engel curve.
2. Calculate the progressivity of previous sales taxes as well as VAT on some important commodities for the major states in India. The tools to be used are the concentration curves and Lorenz ratios. One may calculate the concentration ratios in this context
3. Calculate the direction of tax reform from the perspective of poorer groups through the consumption dominance analysis of different order. The calculation will be based on the assumption of revenue neutrality.
4. The above analysis will be done along with calculation of the distributional benefit ratio to find some critical poverty levels.

h. Methodology

The following tools have been used in our current study for poverty measures

(1) Engel Curve and Normalised Engel Curve:

Engel curve shows the how the shares of expenditure on a particular commodity changes as the income of the household increases. The normalised Engel curves depict the trend in share of expenditure on a particular commodity relative to the average share of expenditure as the income of the household increases.

(2) **The FGT poverty index:**

Measuring the impact of different taxes on poverty has been much less prevalent than assessing inequality impacts. Studies that have been undertaken demonstrate the importance of the particular poverty measure chosen for conclusions reached. The most commonly used measures in tax analyses are the head count (the numbers, or proportion, below a specified poverty line); poverty gap (the average income of those in poverty relative to the poverty line); and ‘inequality of poverty’ (the dispersion of incomes within the poor group).

Among the above, the simplest and most popular measure of poverty indices is the Foster-Greer-Thorbecke (FGT) poverty index. This uses the concept of poverty gap, where income of a group is measured from a pre-determined poverty level, say z . Assuming $F(y)$ denotes the marginal distribution of income y , FGT index is defined as

$$FGT^\alpha(z) = \int_0^z \left(\frac{z-y}{z} \right)^\alpha dF(y)$$

$FGT^0(z)$ gives the poverty headcount ratio, while $FGT^1(z)$ gives the normalized (by average expenditure) poverty gap. Similarly, $FGT^2(z)$ gives the weighted normalized poverty gap.

The following tools have been used in tax incidence analyses in the current study to measure inequality:

(3) **Concentration Curve**

The concentration curve is an important normative and descriptive tool, used in evaluating the impact of tax and transfer policies. It can capture the horizontal and vertical equity concepts related to tax impacts on social welfare.

The concentration curve is defined as,

$$C_{T(p)} = \frac{1}{\mu_T} \int_0^p \bar{T}(q) d(q)$$

Where $\mu_T = \int_0^1 Q_T(p) d(p) = \mu_X - \mu_N$ is average ‘taxes’ across the

population, noting that $Q_T(p)$ is the p -quantile function of net taxes. Since population size is normalized to 1. $C_{T(p)}$ shows the proportion of total taxes paid by the p bottom proportion of the population, and X and N signify the gross and net incomes respectively.

In general use, concentration curves are usually estimated by ordering a finite number n of sample observations $(X_1;N_1), \dots, (X_n;N_n)$ in increasing values of gross incomes, such that $X_1 \leq X_2 \dots \leq X_n$, with percentiles $p_i = i/n$; where $i=1, \dots, n$. For $i=1, \dots, n$ the sample (or “empirical”) concentration curve for taxes $(T_i = X_i - N_i)$ is then defined as

$$C_T(p = i/n) = \frac{1}{n\mu_T} \sum_{j=1}^i T_j$$

In our empirical study we will use the concentration curves to analyze the progressivity/regressivity of Sales Tax/VAT on different commodities in India. The concentration curves typically plot post-tax income, expenditure or tax payments against the proportion of the population ranked by pre-tax income. The concentration curve, like the Lorenz curve, passes through the origin. But unlike the Lorenz curve, it need not always be increasing, and its curvature depends on the income elasticity of the commodity for expenditure concentration curves.

For an indirect tax, these concentration curves can be compared to the concentration curve for total expenditures, the relevant tax base (the equivalent, in the indirect tax case, to the pre-tax Lorenz curve). If an indirect tax is unambiguously progressive, its concentration curve will lie wholly outside the concentration curve for expenditures (the Lorenz curve). This implies that the poor pay proportionately less tax than their share of expenditure.

One can also use conditional second order stochastic dominance rules for ranking taxes on different commodities, expenditure on which is a component of total income (Yitzhaki and Slemrod, wp2451, 1987). This is done by

comparing concentration curves. If the concentration curve of one commodity is above the concentration curve of another commodity, then the first commodity dominates the second. However, if the concentration curves intersect, then it is impossible to show dominance.

Although conclusions about the welfare dominance typically relate to the whole income distribution, if we are more interested in the welfare of the poorest, we'll focus on the impact on the poorest (e.g. x%) of the population, simply by examining the behaviour of Lorenz or concentration curves in the region of the left-hand axis. For example, where concentration curves for different taxes cross but that crossing point occurs relatively high up in the population ranking, one tax may still be judged to be unambiguously preferred if it is clearly superior for the poorest 20%, say, of the population.

(4) Lorenz Curve

The Lorenz curve is one of the most popular graphical tools for illustrating and comparing income inequality. It provides complete information on the whole distribution of income relative to the mean, and therefore gives a more comprehensive description of the relative standards of living than any of the traditional summary statistics of dispersion pertaining to income distribution. The Lorenz curve has the advantage of being able to establish orderings of distributions in terms of inequality.

The Lorenz curve is defined as follows:

$$L_{(p)} = \frac{\int_0^p Q(q)d(q)}{\int_0^1 Q(q)d(q)}$$

$$= \frac{1}{\mu} \int_0^p Q(q)d(q)$$

The numerator $\int_0^p Q(q)dq$ sums the incomes of the bottom p proportion (the poorest 100p%) of the population. The denominator sums the incomes of all. Since population size is normalized to 1, the denominator gives average income μ . $L(p)$ thus indicates the cumulative percentage of total income held

by a cumulative proportion p of the population, when individuals are ordered in increasing values of their income. For instance, if $L(0.5) = 0.3$, then we know that the 50% poorest individuals hold 30% of the total income in a population.

Interpretation of graphs:

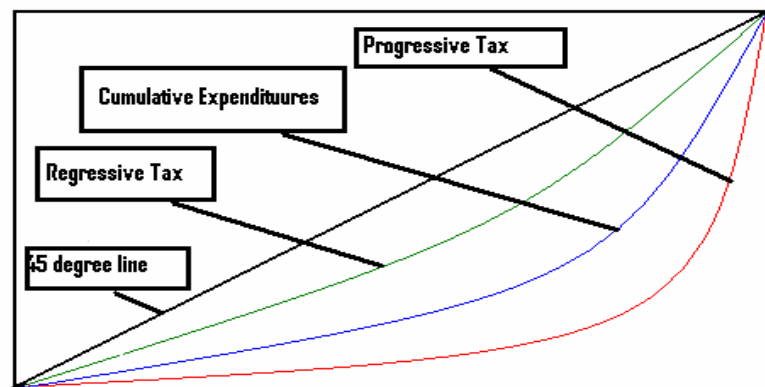


FIGURE - 1

Figure 1 provides a guideline for interpretation of the graphical results of the concentration curve analysis. The 45 degree line is the line of perfect equity, that is, if for every household had identical income or expenditure this line would represent the distribution of the variable across the population. Any disparity in the distribution of income/expenditure would result in the cumulative income/distribution curve caving downwards from the 45-degree line. The curve titled “ cumulative expenditure” represents the cumulative expenditure curve as in the case in this particular study for the NSS data on consumer expenditure (55th round) for India. This serves as the benchmark for comparing different concentration curves and determining the level of regressivity or progressivity of the tax. The cumulative expenditure curve is represented by the Lorenz curve for the total expenditures in this study.

If the concentration curve is above the Lorenz curve and below the 45-degree curve, the tax instrument is classified as regressive, i.e., the impact of taxed consumption of the particular item concerned is concentrated more on the lower income classes. Alternatively, if the concentration curve for the commodity falls below the Lorenz curve, this indicates that a larger component of the taxed consumption falls on the higher income classes. If the concentration curve crosses the Lorenz curve, the share of the tax burden borne by both rich and poor groups is either higher than their share of income or lower. The foremost difference of a curve in this nature compared to curves described above is that the incidence of a tax instrument is same for both groups.

(5) **Consumption Dominance Curve:**

The concept of the Consumption Dominance Curve or CD-Curve or order- s is really useful to understand socially improving tax reform (Makdissi & Wodon, 2002). CD-curves display cumulative consumption shares when these are weighted by powers of poverty gaps. Conditions for which a tax reform is socially improving can be checked from the stochastic dominance curves (Duclos, Makdissi and Wodon, 2005). The dominance curves of order $s=1,2,3,\dots$ are defined as

$$D^s(z) = \frac{1}{(s-1)!} \int_0^z [z-y]^{(s-1)} dF(y)$$

where z : poverty line, s : order of dominance, y : income

Thus dominance curves are therefore sums of powers of poverty gaps. Dominance curves can be interpreted as the ethically weighted sums of individual deprivation. As value of s increases it means that more weights are attached on the largest poverty.

Consumption dominance curves are defined as the change in dominance for changes in prices. Thus

$$CD_k^s(z) = \frac{\partial D^s(z)}{\partial t_k}, s = 1,2,3,\dots$$

CD curves describe the ethically weighted sums of deprivation. Thus the vertical axis of the CD curves measure the ethically weighted cost of taxing k . The CD curve of order s is the FGT index of order $s-1$.

The normalized CD curves are defined as

$$\overline{CD}_k^s(z) = \frac{CD_k^s(z)}{X_k(q)} \text{ where, } X_k(q) \text{ is the average consumption of good } k, \text{ which}$$

is also interpreted as average welfare cost of consumption of k .

These curves thus can be interpreted as the ethically weighted (or social) cost of taxing k as a proportion to the average welfare cost. Thus in drawing the normalized CD curves we also consider the revenue neutrality condition.

Let us define the concept of MECF which is the marginal efficiency cost of funds. In other words, this is the cost in terms of social welfare for raising one unit of revenue through rise in tax of the corresponding good. Thus it is defined for commodity k as:

$$MECF_k = \frac{X_k(p)}{\frac{\partial R(t)}{\partial t_k}}, \text{ where, } X_k(p) \text{ is the per capita consumption of commodity}$$

k , and $R(t)$ is the government revenue.

A necessary and sufficient condition for a tax reform to be s -order pareto improving (condition 1) and social welfare improving (condition 2) can be represented by

$$(1) \overline{CD}^s(y) - \gamma \overline{CD}_j^s(y) \geq 0 \quad \forall y[0, z]$$

$$(2) \overline{CD}^s(y) - \gamma \overline{CD}_j^s(y) \geq 0 \quad \forall y[0, \infty)$$

The social welfare test extends over the entire space $\forall y[0, \infty)$ while the poverty test is limited to the range of potential poverty line $\forall y[0, z^1]$. Here γ is the ratio of MECF of commodity 1 to MECF of commodity j .

A tax reform will reduce poverty if \overline{CD}_i multiplied by its MECF lies above the \overline{CD}_j multiplied by its MECF for every poverty line under z^1 . The multiplied \overline{CD}_j values are really poverty cost per marginal dollar of tax

raised from increasing tax on commodity j (Bibi and Duclos, 2004). When the range is unbounded and the normalized CD curves adjusted by its own MECF lies above that of another commodity then the poverty improvement extends over global welfare improvement.

At any $z=z^*$ the height of the normalized CD curve for commodity l measure how much poverty falls per rupee of welfare benefit if tax on l is reduced. Similarly height of the normalized CD curve of commodity j measures the increase in poverty due to increase in tax on j . The difference between the two measures the net fall in poverty per rupee of welfare benefit.

Thus the normalized CD curves gives the distributional impact of tax reform along with the objective of revenue neutrality where as the CD curves measure the distributional impact of tax reform. Ordinary CD curves do not take into account whether revenue neutrality is maintained or not.

MECF is calculated using the Quadratic Almost Identical Demand System (QAIDS)².

(6) **Data set**

Commodities were chosen based on three criteria (details are given below in the descriptive statistics section) -

First, The weight of the commodity in the basket of consumption in the aggregate across income groups gives an idea about the importance of the commodity in the consumption in a particular region. The rice, spice and milk are the major food item across states in India. Cloth is the major non-food item.

Second, those commodities were chosen for which we can compare a rise in tax on commodity j along with a fall in tax on commodity k . This helps us to stay close to the theoretical hypotheses in the consumption dominance literature which always assumes poverty reduction with revenue neutrality. Tea, detergent and bidi are the major beverage, sundry and smoking items in India. Major fuel items that are consumed by the poorer and richer households are kerosene and LPG

² The same method is used as in Bibi, S and J. Duclos (2004)

respectively. Taxes on these commodities along with tax on rice and spice decreased.

Third, we have also taken at least one exempt commodity for which data of consumption and tax are clearly available, namely Public Distribution System (PDS) rice.

Regarding choice of states, we have somewhat arbitrarily chosen one state in the East coast of India, namely, West Bengal and the other on the West coast, namely, Maharashtra. Some stylized facts are presented, again in the descriptive statistics section.

All the consumption data are taken from Unit level dataset obtained from the National Sample Survey Organisation (NSSO) of India. The household-wise data available in India from the National Sample Survey (NSS) on consumption expenditure for the 55th round (1999-2000) is used here for the study. The data have all the details about household size, monthly per capita expenditure, details about per head consumption of goods both in value and if available, in physical units terms. Note that the latest household level consumer expenditure data is available for different states in India only for the year 1999-2000 (NSS - 55th Round Data), although Data for aggregative All-India level is available for 2003-04. However, for measuring the poverty and social impact analysis (PSIA) of transition to VAT we are considering the Sales Tax rates as applicable up to 31st March 2005 and current VAT rates effective from April 1, 2005. All Tax data are taken from INSTAVAT Data bank.

We are assuming that the consumption pattern remained more or less the same over the period 1999-2000 and 2004-2005 during the Sales Tax regime in India. Thus it is truly an analysis of Marginal Tax Reform.

i. Descriptive statistics, Results and its interpretations

Descriptive Statistics

Our analysis is based on fifteen selected commodities. We concentrate on two major states in India, Maharashtra and West Bengal. The two states stand as follows in terms of tax collection and Net State Domestic Product (NSDP) –

Comparative figures for West Bengal and Maharashtra

	West Bengal	Maharashtra
1. NSDP (at current prices)(02-03)	Rs. 89792 Crore	Rs. 153429 Crore
2. Population (2001 census)	80 million	96 million
3. Per Capita NSDP (current prices)	Rs. 11,224	Rs. 15,982
4. Total Tax Revenue (2002-03)	Rs. 8399.60 Crore	Rs. 28576.30 Crore
5. TAX/NSDP Ratio (2002-03)	9.35	18.63

Note: 1 crore = 10 million

Thus the above picture clearly shows that Maharashtra is a richer state than West Bengal and also, West Bengal's Tax collection, heavily dependent on Sales tax, did not perform that well as Maharashtra.

The average shares of expenditure on a particular good in total expenditure of the household are an important indicator of the importance of the commodity.

Following table shows the average commodity wise expenditure shares for both the states along with the rate of taxes in the pre and the post reform period.

Table1: Average Expenditure on Good, Share of Expenditure on Good and Tax Rates

Sl. No	Commodity	Average Expenditure on Good (in Rupees)		Share of Expenditure on Good*		Sales tax Rate (%)	VAT Rate (%)	Sales tax Rate (%)	VAT Rate (%)
		WB	MAH	WB	MAH	WB	WB	MAH	MAH
1	Rice (non-PDS)	517.23	169.51	0.2087 [1]	.04760 [3]	2	0	1	0
2	Rice(PDS)	5.74	10.02	0.0028 [13]	.00351 [12]	0	0	0	0
3	Spice	58.01	71.18	0.0206 [4]	.02153 [4]	8.05	4	4.4	4
4	Kerosene	24.48	24.84	0.0079 [6]	.00736 [8]	20	12.5	14.3	
5	Kerosene(PDS)	12.94	12.63	0.0048 [11]	.00384 [10]	4.55	4	4.4	4
6	LPG	37.98	53.13	0.0078 [7]	0.0125 [6]	17	4	8.8	4
7	Cloth***	190.07	226.17	0.0626 [2]	0.0635 [2]	4.6	4	4.4	4
8	Detergent	23.12	40.10	0.0078 [8]	0.01153 [7]	17.25	12.5		
9	Tea	24.64	52.78	0.0076 [9]	0.01521 [5]	8	4	8.8	4
10	Biscuits	23.03	15.03	0.0068 [10]	0.00392 [9]	10	12.5	8.8	12.5
11	Bidi	24.68	8.69	0.0109 [5]	0.00295[13]	4	4		
12	Sandal	9.27	12.04	0.0033 [12]	0.00362[11]	3.45	4	0	4
13	Stove**	0.1943	2.20	0.00004[15]	0.00059[15]	7	12.5	14.3	12.5
14	Milk	133.78	266.15	0.0371 [3]	.06817 [1]	8	12.5	8.8	12.5
15	Bulb	3.19	5.23	0.0012 [14]	.00144 [14]	8	12.5	8.8	12.5
16	Total (1-15)	1088.35	969.7	0.3899	0.2673				

Note:

- *Figures in the brackets in the second and third columns are rankings of commodities in terms of their weights in consumer's basket of consumption.
- **Gas Stove in Maharashtra and kerosene stove in West Bengal
- ***readymade garment's tax is taken as the average tax rate of cloth
- WB=West Bengal, MAH =Maharashtra
- Shaded Rates indicate increase in tax rate under VAT

We observe that rice (non-PDS) in West Bengal and milk in Maharashtra are the major food items. Cloth is the major non-food item in both the states. The share of expenditure on rice (non-PDS) (20.87 percent) is very high in West Bengal but it is

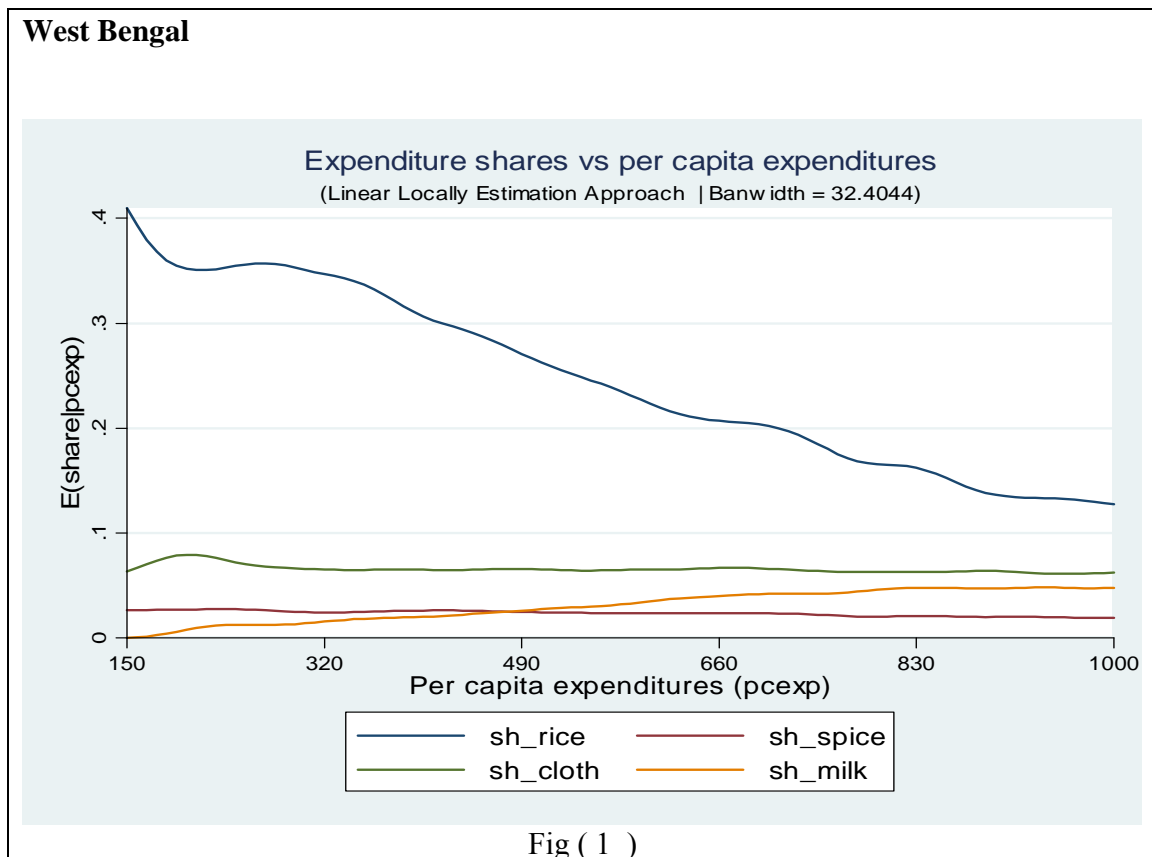
only 4.76 percent in Maharashtra. In Maharashtra rice, wheat and jowar are the three major cereal items and shares of expenditure on these three cereal items are very close. The expenditure on rice (non-PDS) is highest out of these three cereal expenditures in Maharashtra. Expenditure on cloth is more or less same in both the states (6.26 percent in West Bengal and 6.35 percent in Maharashtra). Out of other selected commodities we observe that spice's share in total expenditure in West Bengal and Maharashtra are 2.06 percent and 2.15 percent respectively. Ratios of expenditure on a commodity to total expenditure are less than one for other commodities in West Bengal. In Maharashtra also expenditure shares of all other commodities except that of LPG, detergent and tea are less than one percent. Shares of expenditure on LPG, detergent and tea in Maharashtra are found to be more than one percent but less than 2 percent.

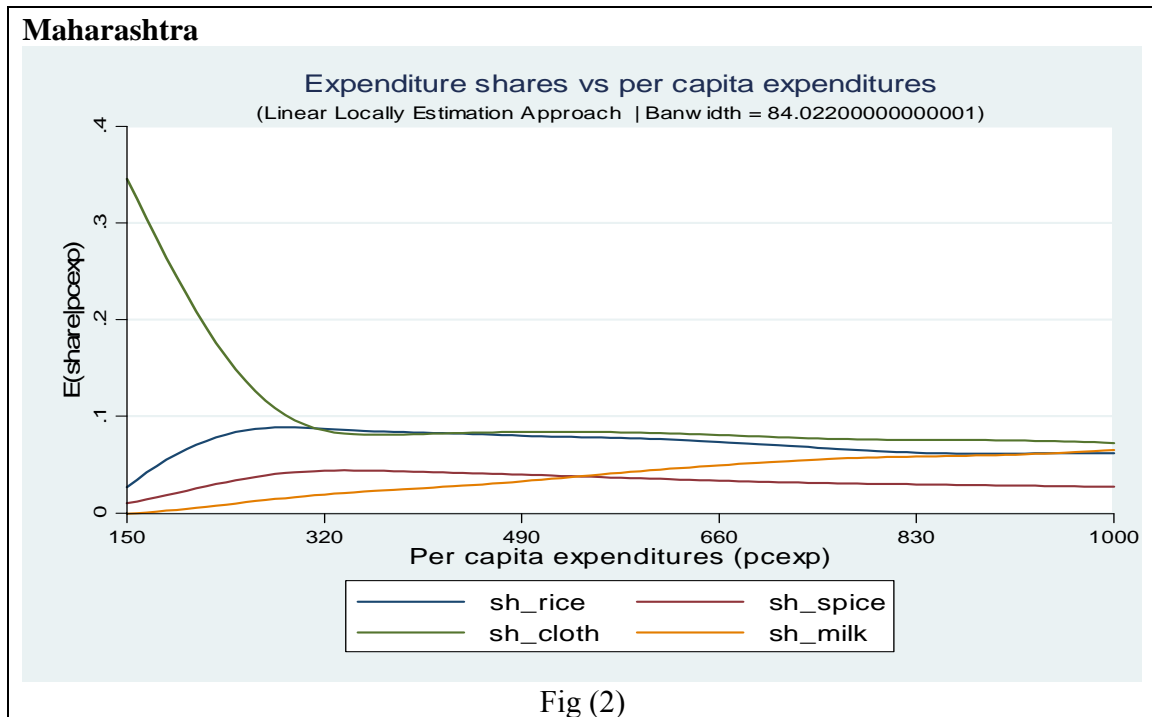
Engel and Normalised Engel Curves

Having identified the importance of the commodity in total budget it is important to know what is the expenditure share of the commodity is in total budget of the household with various levels of income. This will also help us to find whether the commodity is more consumed by the poorer households or the richer households. For this we draw the Engel curve and the Normalised Engel curve. Engel curve shows the shares of expenditure on a particular item as the income of the households increases. Similarly normalized Engel curves measure share of expenditure on a particular commodity relative to the average share of expenditure on that commodity as the income level increases. We have presented the Engel curves of four major items as plotted below for both the states. The normalized curves also exhibit the same trend.

We observe that

- Engel curve for sandal (means rubber footwear/Hawai/Chappals) is negatively sloped in both Maharashtra and West Bengal. That is sandal is more consumed by the poor households than the rich households.
- In West Bengal shares of expenditure in total consumer expenditure for rice (PDS), kerosene (PDS), detergent, rice (non-PDS), bidi, and sandal are negatively sloped. This indicates that poorer households spend on an average more out of its total expenditure than the richer household. Indicating any increase in tax on these commodities is expected to fall more on the poor than the rich.





- Engel curves for LPG, milk and bulb are rising in both the states and that of stove is also rising for Maharashtra. The expenditure share of tea is rising in West Bengal but remains constant after certain level of income in Maharashtra. On the other hand, stove's expenditure share remains constant up to a certain level of income then starts rising.
- Though kerosene exhibits a rising trend in Maharashtra but the share declines first and then starts rising after a certain level of income in West Bengal.
- The share of expenditure on cloth remains more or less same with the change in income in both the states.
- The Engel curves remain more or less stable up to a certain level of income then start rising for stove in West Bengal.

- For kerosene (PDS), tea and detergent in Maharashtra shares rise initially but remain stable there after.

It is clear from the above discussion that richer households spend more on LPG, milk, bulb, biscuits than the poorer households. On the other hand sandal is more consumed by the poor relative to the rich people in both the states.

Progressiveness of Tax or Expenditure

In this section we will check whether the increase in tax on a particular commodity makes the tax system progressive or not. For this we will use the expenditure concentration curve and the Lorenz curve.

- In both Maharashtra and West Bengal the expenditure concentration curve for rice (non-PDS), cloth, spice, rice (PDS), kerosene (PDS), detergent, sandal and bidi lie above the Lorenz curve. The expenditure concentration curve for tea also lies above the Lorenz curve in Maharashtra. Thus any increase in tax on these commodities will make the tax system regressive. Except for sandal (plastic) we find that tax on all the above mentioned goods falls under VAT compared to the sales tax rate. For sandal there is an increase in tax rate from 3.45 percent to 4 percent in West Bengal and in Maharashtra it was under exempted commodity list but now tax has increased to 4 percent which will impose more tax on the poorer households than on the relatively richer households in both the states.
- The expenditure concentration curves for LPG, milk, bulb and biscuits lie below the Lorenz curve in West Bengal but cuts from below at around 0.95 percentile

point in Maharashtra. The concentration curve of bulb cuts from below the Lorenz curve at around 0.50 percentile point in Maharashtra.

- This implies that the tax system will be progressive if there is increase in taxes on these commodities.
- For kerosene we find that any increase in tax will make the tax system progressive for bottom 40 percent (approx) of the population in Maharashtra and for bottom 80 percent (approx) in West Bengal. Tea's concentration curve cuts the Lorenz curve at around 0.95 percentile point in West Bengal and the concentration curve of stove cuts at around 0.70 percentile and 0.65 percentile (approx) points in West Bengal and Maharashtra respectively.
- In reality we observe that there is a fall in tax on kerosene, LPG and tea and rise in tax on biscuits, milk, bulb in both the states. The increase in tax on milk, biscuits, bulb in both the states will make the tax system progressive but fall in taxes on LPG is not in the right direction. The fall in tax on tea in West Bengal helps the top most 5 percent of the population only.

Commodity wise concentration and Lorenz curves are presented below for both the states (Fig (3) – Fig (6)) below.

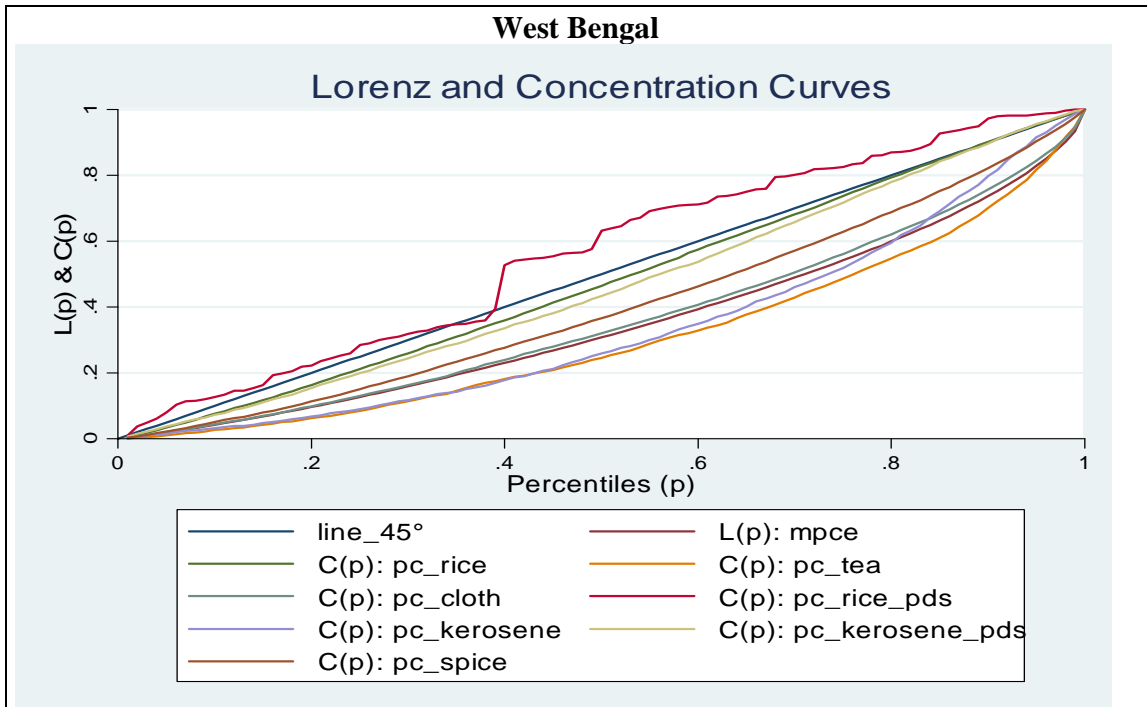


Fig (3)

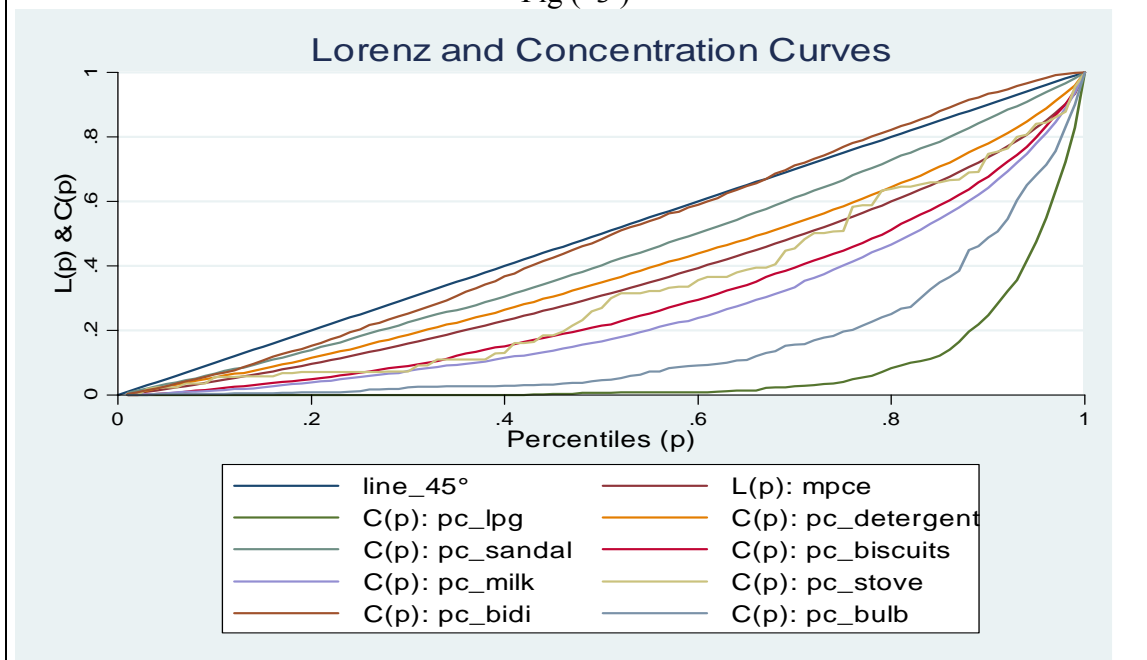


Fig (4)

Maharashtra

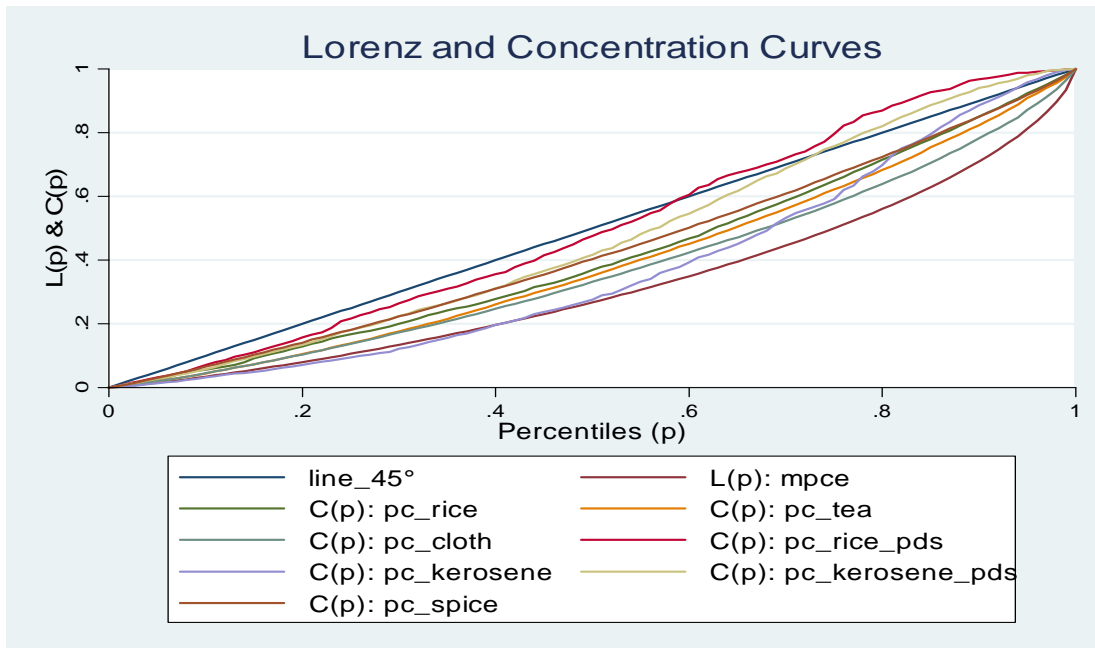


Fig (5)

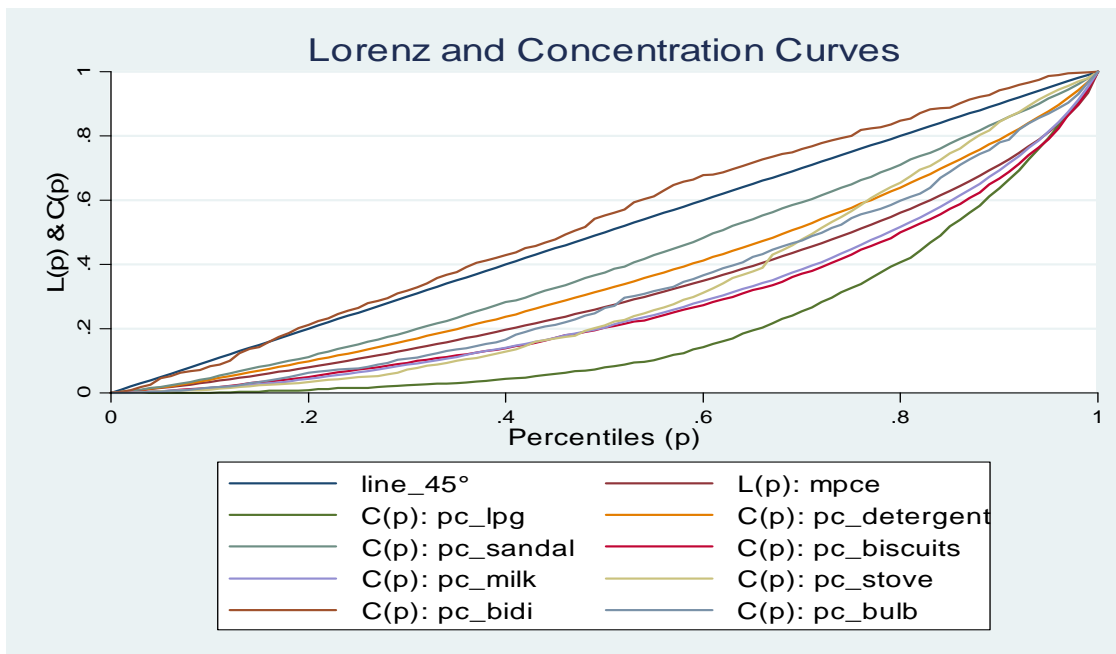


Fig (6)

Impact of Reform on Poor

We will now discuss the impact of tax reform on poverty alleviation with the help of consumption dominance curves normalized by mean and adjusted by the marginal efficiency cost of public fund (MECF). This will help us to check the impact of reform on poor when the budget of the government remains neutral. To link the tax policy to poverty reduction we have considered a few major commodities such as rice, cloth, tea, kerosene and LPG for which there is a fall in tax rate as we move from the sales tax regime to VAT regime. On the other hand, for sandal, biscuits, bulb and milk we find an increase in tax rate. Here we will discuss whether the direction of reform in terms of poverty alleviation is in the right direction or not first. If it is, then we will find what is the level of poverty line up to which such a reform is poverty reducing. In this section first we will evaluate the tax policy of the government of West Bengal in terms of poverty alleviation first and then we will consider the case of Maharashtra.

The normalized CD curve for good j is drawn dividing the CD curves by the average consumption of that good. When we multiply the normalized CD curve of good j by the λ_j^3 of good j we not only consider the impact of reform on equity but also how efficient are the reform in maintaining the revenue neutrality. The ultimate impact of tax reform on poverty and welfare depends on the trade off between equity and efficiency. Throughout the analysis in the following section we have maintained the assumption of revenue neutrality of the government budget.

³ λ_j indicates the MECF of taxing j .

West Bengal

Following are the major findings for West Bengal, based on Consumption Dominance Curves in figures 7-12:

- If we compare kerosene for which tax has been decreased with any one of the commodities such as sandal, milk, stove, biscuits and bulb for which there is a rise in tax rate then we find that there will be a decrease in poverty for wide range of poverty lines⁴.
- If we compare again rice (non-PDS) which after VAT is an exempted commodity with those for which tax has been increased then we find that $\lambda_{Rice} \overline{CD}_{Rice}^1$ and $\lambda_{Stove} \overline{CD}_{stove}^1$ intersect at poverty line $z =$ Rs. 213.82. This implies that this increase in tax on stove and reduction in tax on rice (non-PDS) will improve the condition only of those whose income is below Rs. 213.82. The CD curves of order two cuts each other at $z =$ Rs. 244.17. Thus, any increase in tax on stove in order to give subsidy to rice (non-PDS) will reduce poverty at order two for people below income Rs. 244.17.
- The $\lambda_{Rice} \overline{CD}_{Rice}^1$ and $\lambda_{Sandal} \overline{CD}_{Sandal}^1$ intersect at $z =$ Rs. 218.47. But the adjusted normalized CD curve of sandal cuts that of rice (non-PDS) curve from above. Thus the increase in tax on sandal and decrease in tax on rice (non-PDS) is not pro-poor. The reform has occurred in the opposite direction. There is no intersection of the $\lambda_{Rice} \overline{CD}_{Rice}^1$ curve with the other CD curves for which there is an increase in tax rate. Thus if we combine rice (non-PDS) with any one of the

⁴ Maximum poverty line that is considered is Rs. 1600.

commodities for which there is a rise in tax then we will find that the reduction in tax on rice (non-PDS) and the increase in tax on that commodity will reduce poverty along with neutrality of the government's budget.

- The $\lambda_{Sandal} \overline{CD}_{Sandal}^1$ curve cuts the $\lambda_{Tea} \overline{CD}_{Tea}^1$ from above at $z = \text{Rs. } 594.74$. This indicates that there should be a decrease in tax on sandal and increase in tax on tea or the decrease in tax on sandal must be greater than the decrease in tax on tea so that on the one hand the revenue neutrality is maintained and on the other, poverty among the people who are below the official poverty line⁵ (Rs. 409.22) decreases. But under VAT we observe that there is rise in tax on sandal (plastic) which is mainly consumed by the poorer households from 3.45 percent to 4 percent and fall in tax on tea from 8 percent to 4 percent.
- If we consider the cloth-stove combination where there is a rise in tax on stove and fall in tax on cloth⁶ we again find that the stove's adjusted normalized⁷ CD curve of order one cuts that of cloth at $z = \text{Rs. } 201.07$ implying again an increase in poverty for those whose income is below this critical level. The CD curves of higher orders also intersect implying the reduction in poverty for the people with income less than the income at the point of intersection (see **Table 2**).
- Again if we consider the stove-tea combination then again we find that the adjusted normalized CD curve of order one cuts that of tea from above at $z = \text{Rs. } 165.35$ indicating that the increase in tax on stove along with a reduction of tax on tea is not the right kind of reform in terms of poverty alleviation.

⁵ We have expressed our data in terms of urban poverty line for west Bengal = Rs. 409.22.

⁶ Tax on cloth is approximated by the tax on ready made garments.

⁷ Normalized by mean of the variable.

- Again we find that the adjusted normalized CD curve of order one, two and three for LPG lie below all the curves. This also indicate that the reduction in tax on LPG from 17 percent to 4 percent will improve only condition of those whose income is relatively high as we see that the CD curve for LPG starts at a high level of income. If the only objective was to improve the condition of those whose income is below the official poverty line then tax on LPG should have been increased instead of reduction in tax.
- **The revenue from the increase in tax on LPG could have been used to reduce the tax on other commodities such as rice, sandal etc. This would have reduced poverty with government's budget remaining unchanged.**

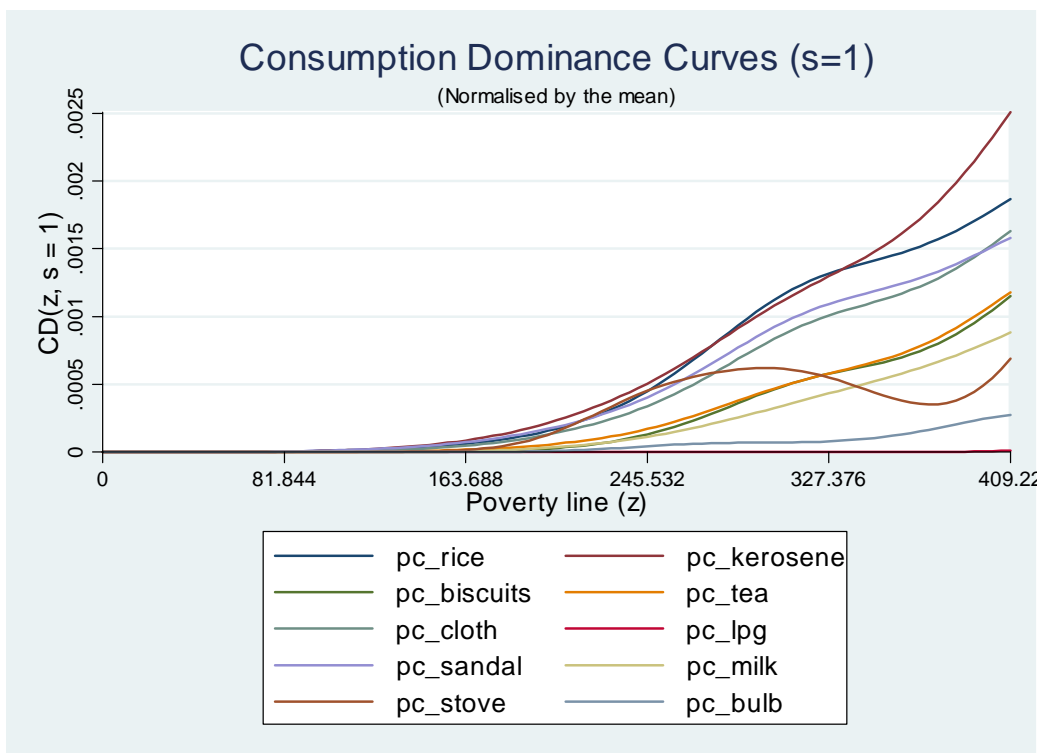


Fig (7)

- If we compare biscuits and stove then we find an increase in tax on stove from 7 percent to 12.5 percent and that on biscuits from 10 percent to 12.5 percent. Thus tax increase on stove is greater than the tax increase on biscuits. But from the adjusted normalized CD curves we find that the CD curve of stove cuts that of biscuits from above at $z = \text{Rs. } 323.93$ indicating again that tax on stove should not have been increased more than the increase in tax on biscuits to make the reform pro poor.
- If we consider the major food item (rice) and the major non-food item (cloth) then we find that the $\lambda_{Rice} \overline{CD}_{Rice}^1$ curve cuts the $\lambda_{Cloth} \overline{CD}_{Cloth}^1$ curve at $z = 523.94$ (Rupees). Thus if the objective is to reduce poverty of those whose income is below the official poverty line Rs. 409.22 then any increase in tax on cloth and fall in tax on rice with balanced budget will improve the welfare of those whose income is below Rs 409.22.
- The tax reform that has increased the tax on sandal and stove and reduced tax on tea and LPG cannot be said to be pro-poor reform.
- The direction of reform for other commodities that we have considered is found to be pro poor in West Bengal.

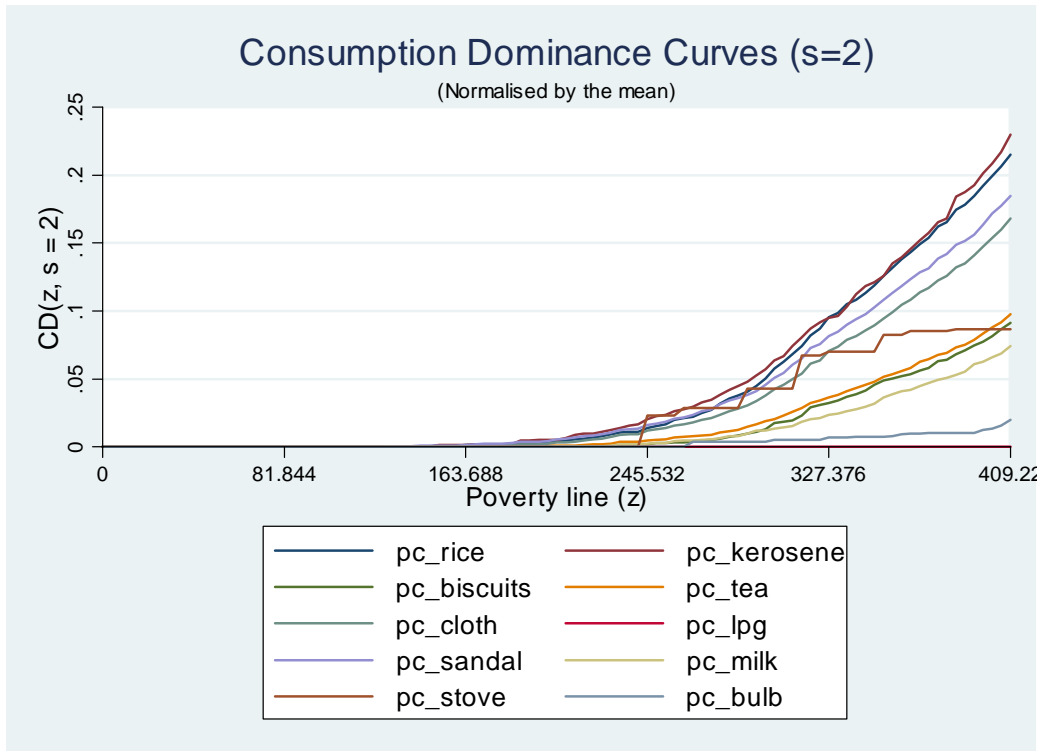


Fig (8)

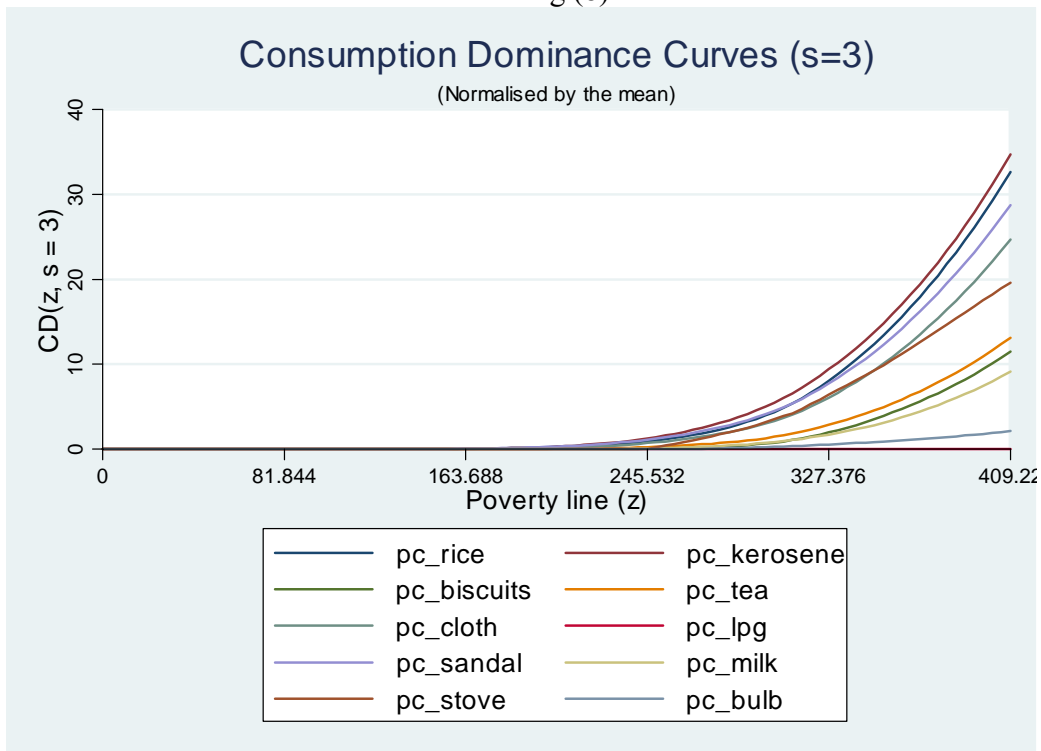


Fig (9)

Table 2: Critical Poverty Line⁸ for different levels of dominance (in Rupees)

	S=1	S=2	S=3
Rice (non-PDS) -Stove	213.82	244.17	1564.02
Rice (non-PDS)-Sandal	218.47	124.68	127.89
Sandal-Cloth	396.24	472.07	673.57
Tea-Sandal	594.74	1528.72	-
Tea-Biscuits	421.06	472.05	617.51
Biscuits-Stove	323.93	206.21	236.44
Cloth-Stove	201.07	244.17	290.29
Rice (non-PDS)- Cloth	523.94	799.85	1202.79

Note : S: order of dominance

Table 3: State-wise Calculated Marginal Efficiency Cost of Public Fund

	Maharashtra	West Bengal
Rice (non-PDS)	0.96049	0.95504
Rice (PDS)	1.00000	1.20928
Kerosene	1.03233	2.37371
Kerosene (PDS)	1.12052	0.91002
Tea	1.12225	1.04784
Biscuits	1.03420	1.21211
Stove	1.08246	1.20676
Sandal	1.06259	0.95084
Cloth	1.08249	1.20676
Bulb	1.08249	1.20676

PDS Commodities:

In this section we will check the importance of co-existence of PDS and non-PDS commodities. We will also check whether there should be rise in tax on PDS commodities compared to the non-PDS commodity. For this analysis we have considered rice through public distribution system (PDS) and kerosene through PDS which are sold

⁸ Below this line the reduction in tax on first commodity and increase in tax on second commodity will reduce poverty.

at the lower rate than the market rate. Both in Maharashtra and West Bengal rice (PDS) is an exempted commodity but the state governments impose tax on kerosene (PDS). The tax on kerosene (PDS) is much lower than the tax rate on non-PDS kerosene. We will first check the progressivity of the tax system if there is any increase in tax on PDS commodities with the help of Lorenz and concentration curves.

- Expenditure concentration curves for rice (PDS), kerosene (PDS) lie above the Lorenz curve in both the states considered. It indicates that any increase in tax on PDS commodity will make the tax system regressive. (see fig (3) and fig (5)).

Table 4: Critical Poverty Lines (in Rupees)

	S=1	S=2	S=3
Rice(PDS) – Non-PDS Rice	567.87	-	-
Kerosene (PDS) – Non-PDS Kerosene	128.99	150.09	214.21

- Thus any subsidy to rice (PDS) and increase in tax on rice (non-PDS) in such a way that the revenue of the government remains neutral will decrease poverty at order one for those whose income is below Rs. 567.87. Any increase in tax on any one of the commodities, namely, biscuits, bulb, milk, LPG or tea to give subsidy to rice (PDS) will reduce poverty.
- The intersection of kerosene (PDS) and non-PDS kerosene at a very low level of poverty line $z =$ Rs. 128.99 indicates that the practice of high tax on non-PDS kerosene and low tax on PDS kerosene in West Bengal improves the condition of

the poor with income below Rs. 128.99 only.

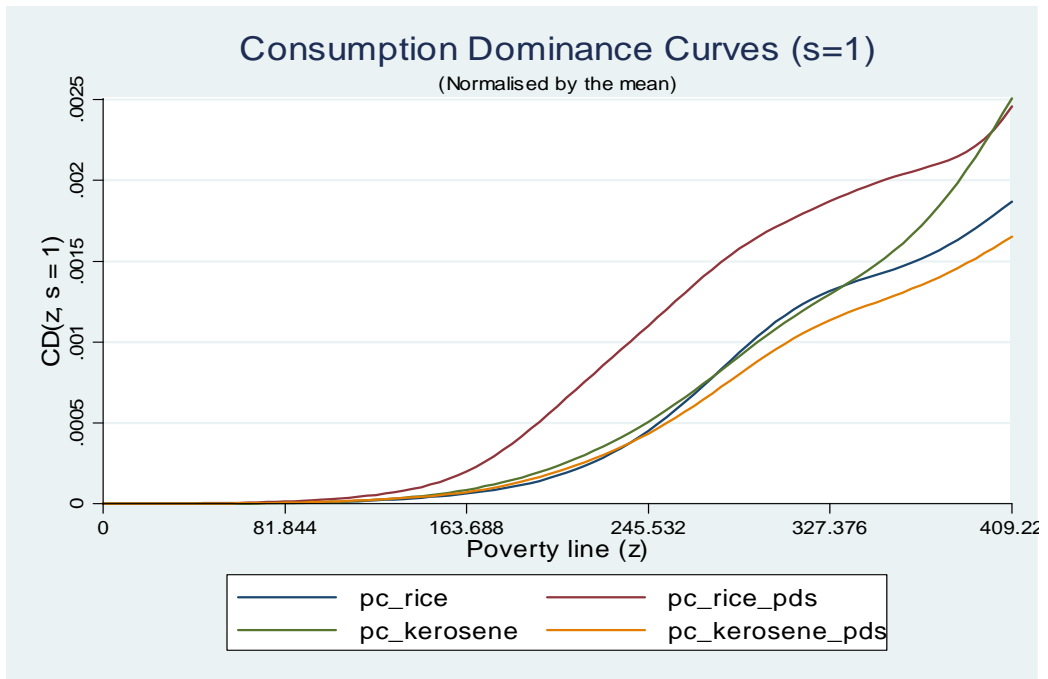


Fig (10)

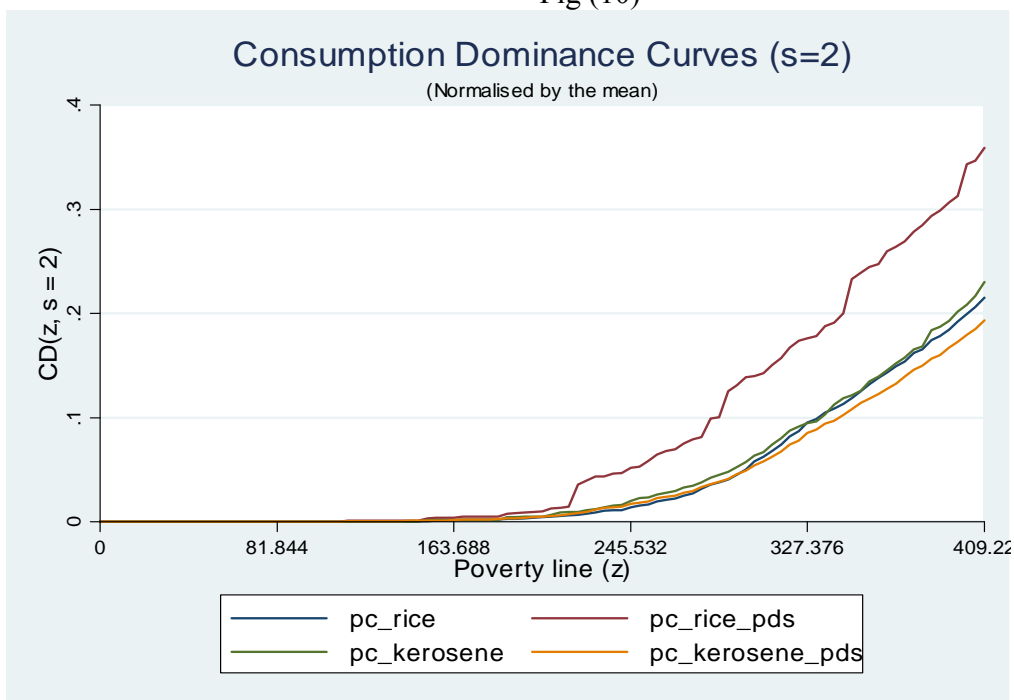
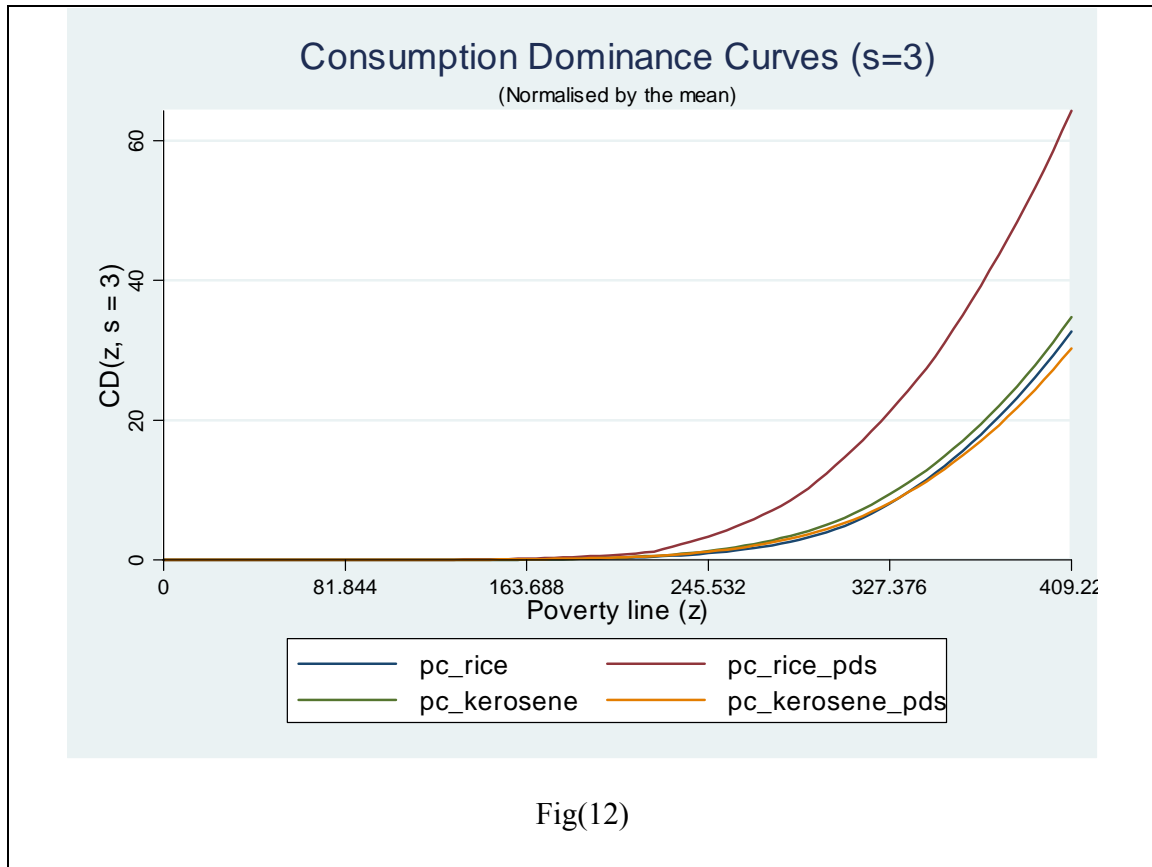


Fig (11)



Fig(12)

Maharashtra

Following are the major findings for Maharashtra, based on Consumption Dominance Curves in figures 13-19:

- Adjusted normalised CD curves of rice, tea, cloth and sandal are found to be very close to each other and lie above the adjusted normalised CD curves of other commodities that we have considered. Thus the decrease in tax on tea, rice, cloth makes the reform pro-poor. But even though we find the adjusted normalised CD curve for sandal lies above all the CD curves but the decision of the government to increase tax on sandal from 0 percent to 4 percent is not pro-poor.

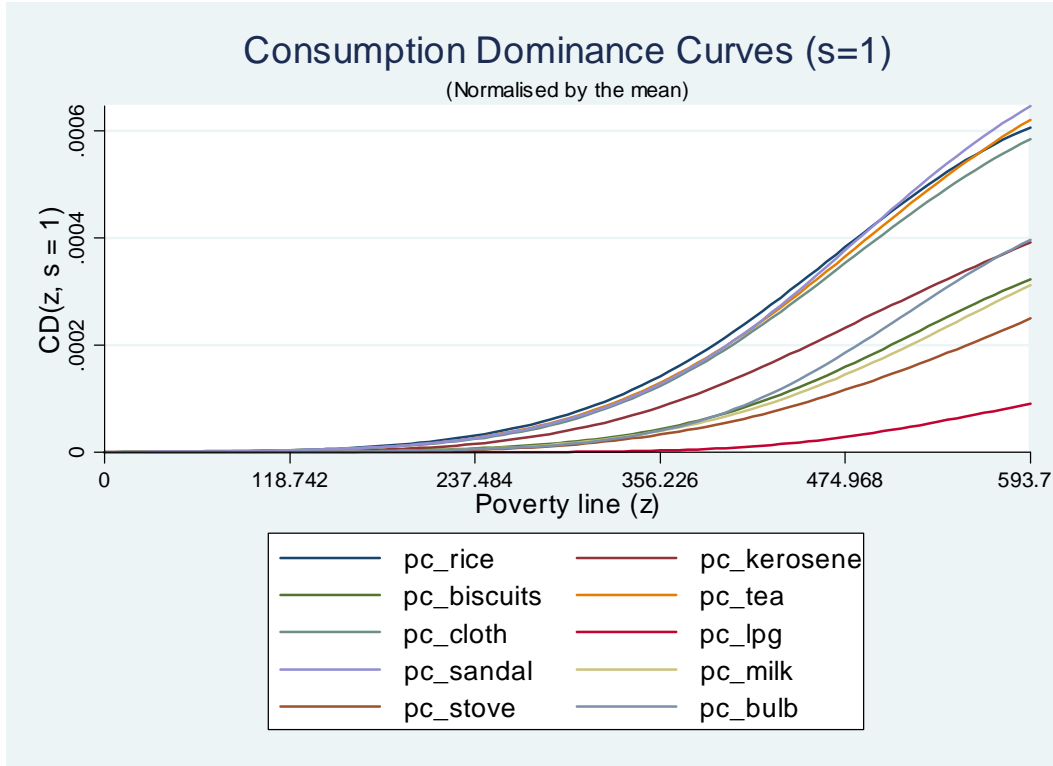


Fig (13)

- If we consider the kerosene – bulb combination then we find that there is an increase in tax on bulb and decrease in tax on kerosene. Now if we consider the adjusted normalised CD curves of order one of kerosene and bulb we find that the two curves intersect at $z= 573.03$ (Rupees). The CD curves of higher order for these two commodities also intersect. This implies that this increase in tax on bulb and decrease in tax on kerosene that maintains the revenue neutrality condition reduces poverty for those whose income is below Rs. 573.03.
- We observe that there is a decrease in tax on stove and LPG and increase in tax on biscuits, milk and bulb. But the adjusted normalised CD curves of biscuits, bulb and milk lie above the $\lambda_{Stove} \overline{CD}_{Stove}^1$ over the range $z=[0,600]$. Thus if the objective is to reduce the poverty among the people below the official urban

(reference) poverty line there should be increase in tax on stove and decrease in tax on biscuits, bulb and milk but we find that the direction of tax change of these commodities occurred just in the opposite direction. Same thing happens if we consider LPG and any one of the commodities for which there is an increase in tax.

- $\lambda_{Stove} \overline{CD}_{Stove}^2$ intersects the $\lambda_{Biscuits} \overline{CD}_{Biscuits}^2$ curve at $z = 438.12$ (Rupees) indicating that the a reform that increases tax on stove and decreases tax on biscuits to maintain the revenue neutrality of the budget decreases the poverty of order two for the people below income Rs. 438.12. The third order CD curves of these two goods intersect at Rs. 1082.78. In reality there is decrease in tax on stove and increase in tax on biscuits. These two indicate that direction of tax change is not pro-poor.
- The increase in taxes on bulb, milk, biscuits and decrease in taxes on rice, cloth, tea are pro-poor in the sense that it would help to reduce poverty in Maharashtra.
- The decrease in tax on stove and LPG appeared to be not pro-poor if the revenue neutrality is to be maintained.
- The increase in tax on sandal will not make the reform pro-poor.

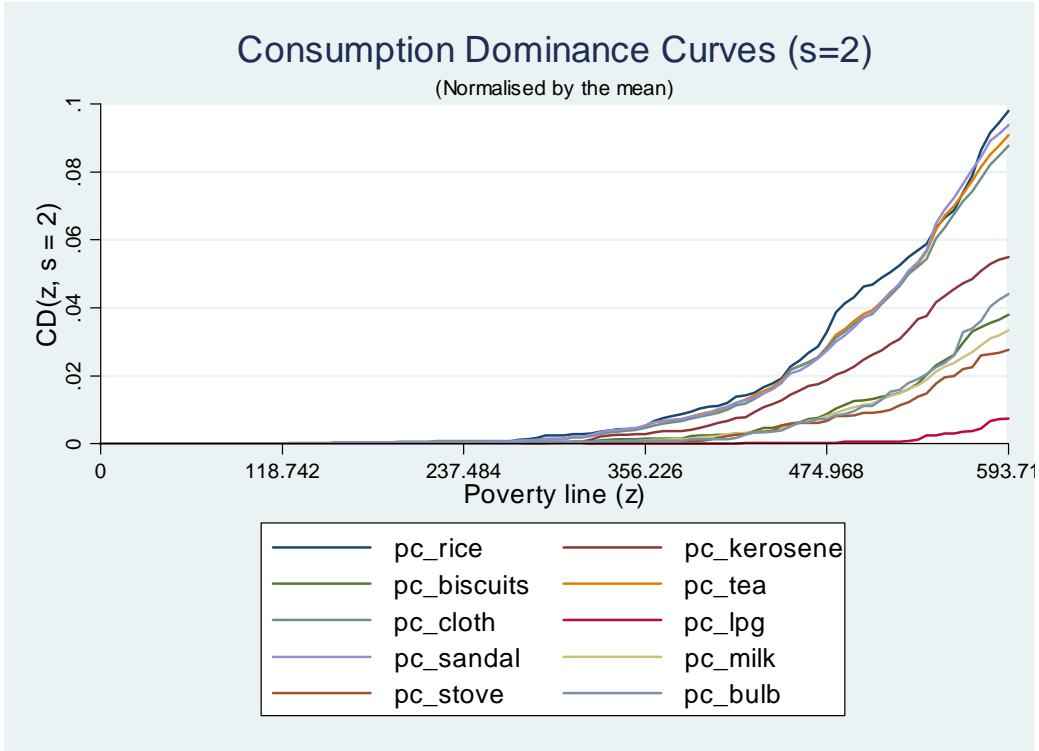


Fig (14)

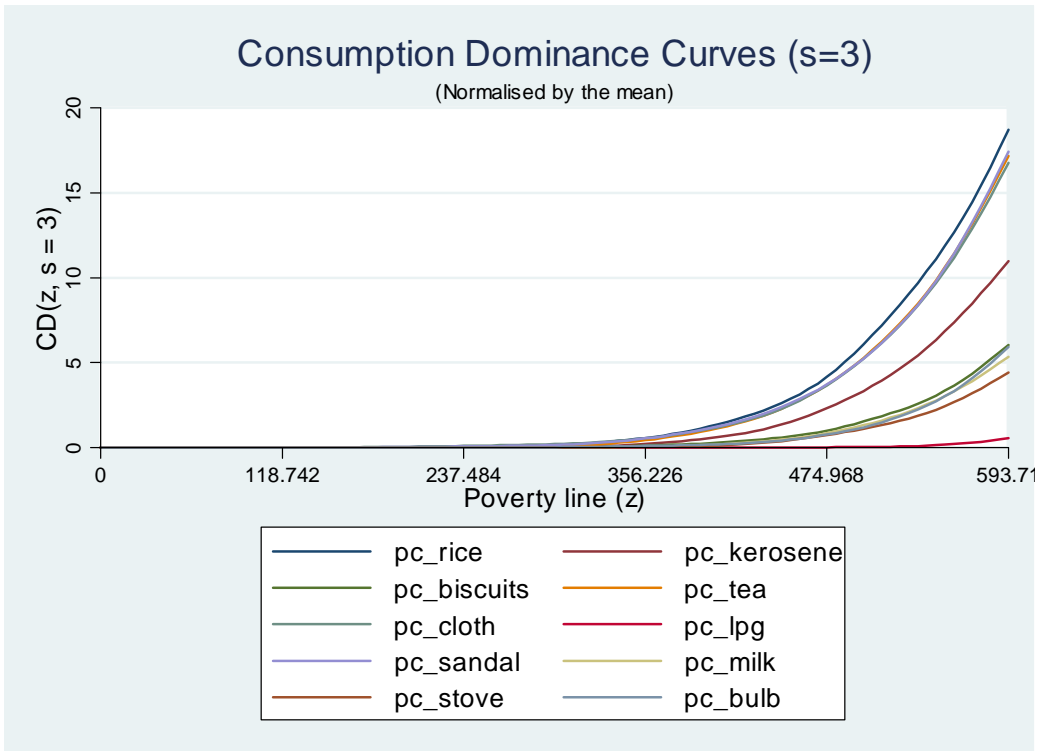


Fig (15)

Table 5: Critical Poverty Line⁹ based on consumption dominance curves (in Rupees)

	S=1	S=2	S=3
Rice (non-PDS) -Stove	1326.0	1489.34	-
Cloth-Sandal	163.05	151.02	362.91
Tea-Biscuits	1563.31	-	-
Biscuits-Stove	692.83	438.11	1082.78
Cloth-Stove	959.59	1492.75	-

Note : S: order of dominance

PDS Commodities

To check the importance of PDS commodities we have considered rice (PDS), rice (non-PDS), kerosene (PDS), kerosene (non-PDS) along with sandal. The Lorenz and concentration curves for these commodities are drawn first to check the progressivity.

- The expenditure concentration curve of PDS commodities lie above of their corresponding non-PDS expenditure concentration curve. This implies that PDS commodities are more consumed by the poor households. Any increase in tax on PDS commodity compared to corresponding non-PDS commodity will make the tax system regressive.

⁹ Below this line the reduction in tax on first commodity and increase in tax on second commodity will reduce poverty.

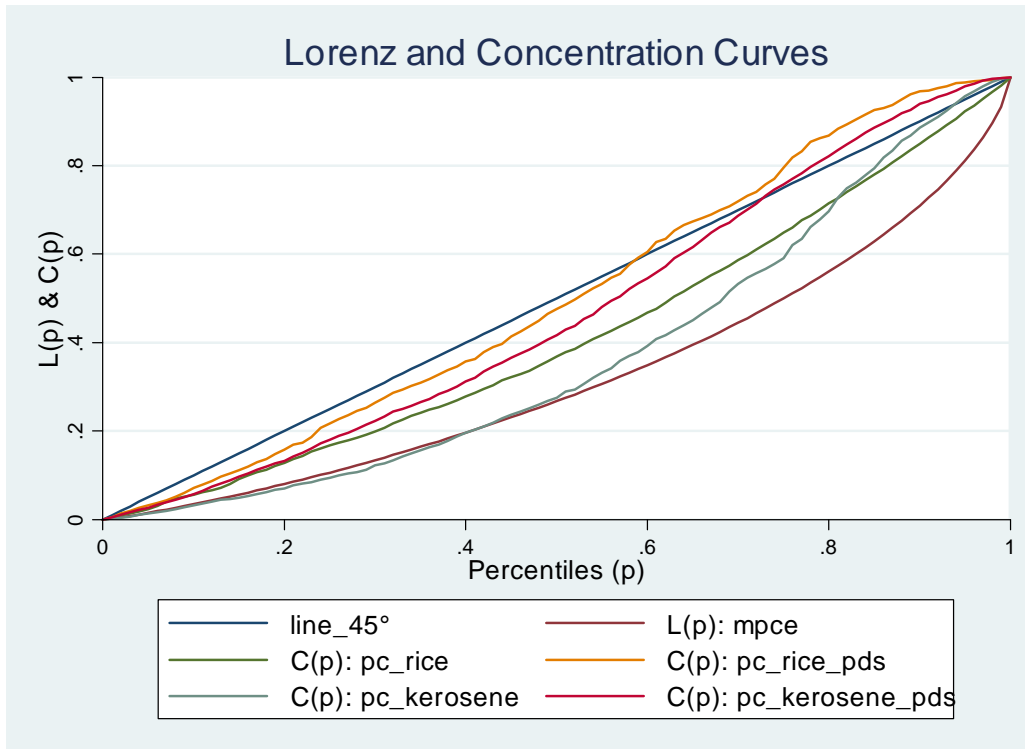


Fig (16)

- The adjusted normalized CD curve of order one of rice (PDS) lies above all the CD curves followed by the that of kerosene (PDS). Thus we observe that government is doing the right thing by giving the subsidy to rice through PDS and kerosene through PDS.
- It should be mentioned here that if government wants to give subsidy at the cost of an increase in tax on rice (non-PDS) so that the revenue neutrality is maintained even then the poverty will be reduced at order one for those who are below the official urban poverty line¹⁰ that is, 593.71 (Rupees).

¹⁰ This is our reference poverty line.

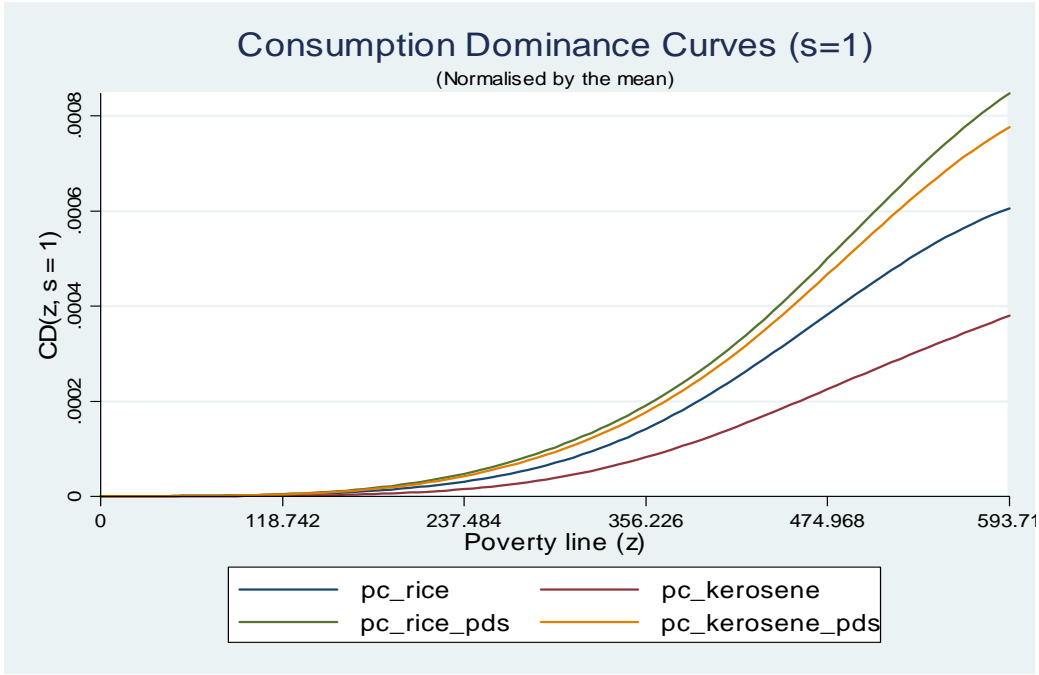


Fig (17)

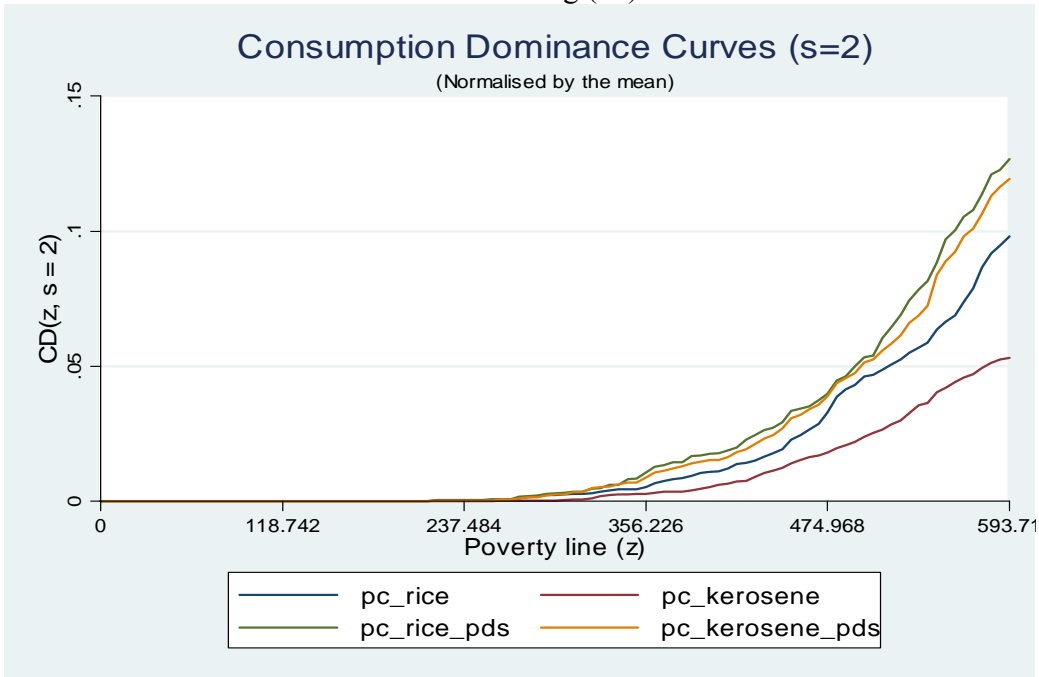


Fig (18)

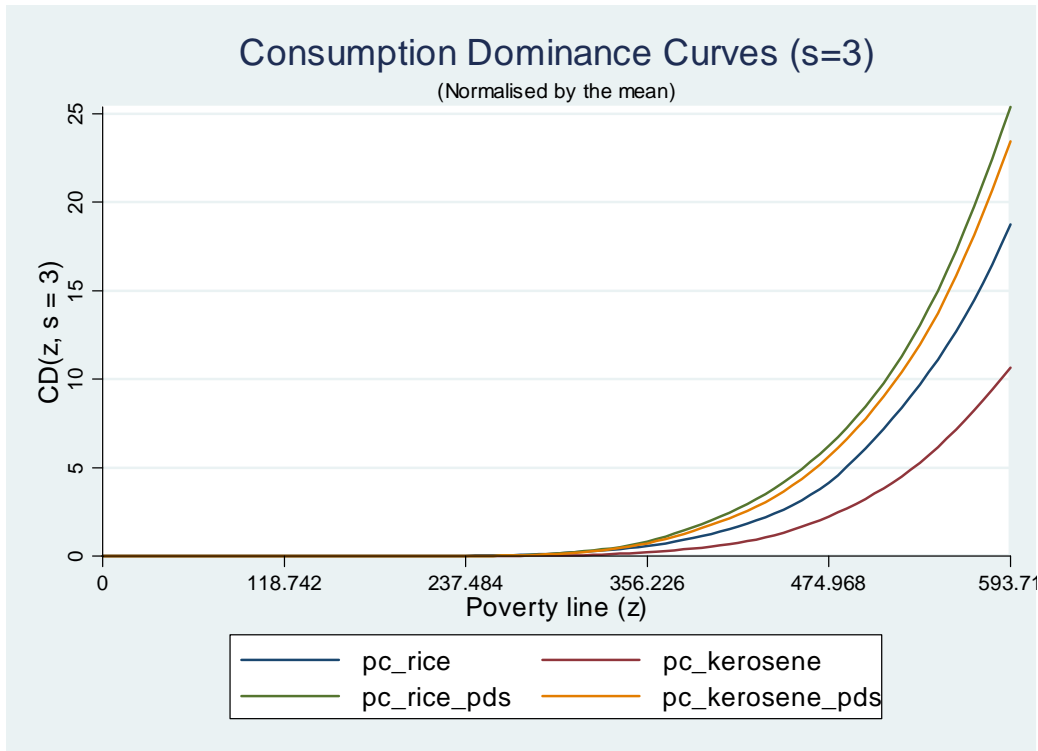


Fig (19)

Comparative Study:

If we compare the two states then we find that the reform is more or less in the right direction in both the states. The VAT that was introduced in the states in India on 1st April,2005 is found to be pro poor in nature. Our study suggests that instead of same rates of taxes for different commodities it would be better to charge different tax rate in different states for the same commodity. Thus uniformity of taxes is not desired for pro-poor reform of taxes. We find that tax on tea should be reduced in Maharashtra but reduction of tax on tea in West Bengal is not desirable to make the reform to be pro-poor. The increase in tax on sandal in both the states is not right in terms of impact of reform in reducing poverty in a state. LPG could have been used as the source of revenue by the

government instead of reducing tax on LPG as poor households below poverty line do not consume much of LPG.

Our study identifies that the tax on PDS commodities should not be increased and the zero rate of tax on rice (PDS) and marginal reduction in tax on kerosene (PDS) definitely make the tax system pro-poor. The rate of subsidy given by both the states on rice (PDS) and kerosene (PDS) are presented below

	West Bengal	Maharashtra
Rice (PDS)	55.79	91.03
Kerosene (PDS)	64.26	45.74

Thus Maharashtra gives more subsidy to PDS rice compared to West Bengal. On the other hand rate of subsidy in Kerosene (PDS) is much higher in West Bengal compared to Maharashtra.

Conclusion

The present work is an effort to understand the nature of marginal tax reform undertaken by different state governments in India, when they switched over to VAT from sales tax regime. Although VAT is known to be a better tax regime in general since it avoids cascading, does it benefit the poor more than the rich? The present paper has specifically addressed this question with two important states in India, namely, West Bengal and Maharashtra. This study finds that the design of the VAT in these states are generally pro-poor since those commodities are taxed less which are consumed more by people under certain poverty line. The poverty lines differ from commodity to commodity, but pair-wise comparison of taxes with the help of normalized consumption dominance

curves give an unambiguous answer regarding who benefits from increase and decrease in tax rates if the government wants to maintain its revenue target.

In order to answer the question of progressivity of taxes we have used the Lorenz and expenditure concentration curves. We have identified LPG, milk, bulb and biscuits as the item tax on which will make the tax system progressive. Though there was an increase in tax on milk, bulb and biscuits in both the states but tax on LPG has been reduced. This reduction in tax on LPG definitely will improve the condition of the richer households than poorer households. The observed rise in tax on sandal on the other hand will make the tax system regressive in nature. The fall in tax on rice (non-PDS), kerosene, kerosene (PDS), cloth (ready made garments), spice and detergent appeared to be good step as the expenditure on these commodities are more concentrated among the poor than the rich.

With the consideration of revenue neutrality we have tried to analyse the impact of reform on poverty when there is an increase in tax on one commodity and decrease in tax on another commodity. For this purpose we have considered the different combinations of two commodities and checked whether the direction of reform is pro-poor, by using consumption dominance curves of various orders. There is a rise in tax rate of bulb, biscuits, milk and sandal and decrease in tax rate of rice (non-PDS), kerosene (non-PDS), LPG and tea. If we consider rice (non-PDS) and kerosene (non-PDS) with any one of the commodities (bulb, biscuits or milk) on which tax is increased then we find that there is a fall in poverty at least up to certain levels of poverty lines. The rise in tax on sandal in both the states contradicts the direction of pro-poor nature of reform. We found that the direction of change in tax on LPG in both the states is also inconsistent with pro-poor reform. Again decrease in tax on tea in West Bengal and decrease in tax on stove in Maharashtra are found to be somewhat beneficial to comparatively richer households more. The examination of role of PDS commodities in poverty alleviation is also done. It emerged that it is very much necessary to give subsidy to rice through PDS and kerosene through PDS in order to reduce poverty.

The analysis here fulfils a gap in the literature on taxes like VAT in India, but the analysis is in partial equilibrium framework. In many cases revenue neutrality is maintained by increase in taxes on products which are finished products but are used by industries and not consumed. Thus many of the tax reductions are not pair-wise truly comparable for revenue neutrality. However, the analysis done here gives some indications about the design of VAT in India. The political economy factor clearly shows up in case of petroleum products like LPG and kerosene. LPG is a rich man's item but its tax is reduced, while kerosene is taxed more despite being consumed more by the relatively poorer groups. In the latter case, the poorest benefit from a higher tax, but not the other in the 'poor' class. Hopefully, more such comparative studies among more states in India, along with additional dimensions like gender, region and castes will throw more information on the pro-poor dimensions in the design of VAT.

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