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by Household Consumption  
Expenditure Class: A Study  
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# **Burden of Uniform Tax Rate by Household Consumption Expenditure Class: A Study of GST in India**

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# **Burden of Uniform Tax Rate by Household Consumption Expenditure Class: A Study of GST in India**

## **Abstract**

GST has been implemented in India with broader objectives of simplifying the indirect tax system, increase compliance of tax payers, reduce cascading effect of taxes and promote ease of doing business. To increase the revenue collection of the country the tax base has got expanded under the GST system. An important challenge for any tax system is to balance between efficiency and equity. The objectives of the GST reflect more on the efficiency principle of taxation and relatively less on the equity. The present study examines the equity issue by looking at the incidence of different GST slabs on household consumption expenditure in India. With GST having a uniform tax structure is likely to adversely affect the equity principle of taxation, given the heterogeneous distribution of consumption expenditure of goods and services across the country. The study uses NSS household consumption expenditure survey and finds that the consequences of uniform GST across quintile and across states will be unequal leading to vertical and horizontal inequity.

**Keywords** Incidence. Indirect tax . Goods and Service Tax . Inequality . Consumption Expenditure. Fiscal Policy

**JEL Classification** H22. H2. H29. D63. H31. H3

## Introduction

Indirect taxes represent an important source of revenue in India. Approximately 50 per cent of the revenue comes from indirect taxes for the central government and it is more than 80 per cent for the state governments (Indian public finance statistics, various years). However, indirect taxes are often criticized for being regressive and therefore, unfair to the lower income class.

The indirect tax system in India has undergone a major reform by introducing goods and service tax (GST) from 1<sup>st</sup> July, 2017. GST replaced various central and state taxes with a uniform tax across the country. Almost all the central and state indirect taxes are subsumed under a single tax structure called GST except alcohol for human consumption, petroleum products<sup>1</sup>. Uniform tax structure implies same rate for similar goods and services across the country. Prior to GST, there were multiple taxes, like central excise, state value added tax (VAT), service tax, central sales taxes, etc. existing at multiple rates across the country for similar goods and services<sup>2</sup> with state having the autonomy in fixation of

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<sup>1</sup>The central taxes subsumed under GST are Central Excise Duty, Duties of Excise (Medicinal and Toilet Preparations), Additional Duties of Excise (Goods of Special Importance), Additional Duties of Excise (Textiles and Textile Products), Additional Duties of Customs (commonly known as CVD), Special Additional Duty of Customs (SAD) Service Tax and Cesses and surcharge in so far as they relate to supply of goods and services. The state taxes subsumed under GST are State VAT, Central Sales Tax, Purchase Tax, Luxury Tax, Entry Tax (All forms), Entertainment Tax and Amusement Tax (except those levied by the local bodies), Taxes on advertisements, Taxes on lotteries, betting and gambling and State cesses and surcharges in so far as they relate to supply of goods and services.

<sup>2</sup> The VAT on LPG for domestic use was 5% in Kerala, 1% in Bihar and 0% for West Bengal during pre-GST VAT period. It varied across states for other items as well.

indirect tax rates on its goods. This autonomy enabled the state governments often in adjusting the rates based on distributional concerns, moral judgments and also based on interest group (Singhal, 2013).

The present indirect tax structure, GST has a uniform tax rate and is a value added tax<sup>3</sup>. GST is levied on the value added at every stage of production until it reaches the final destination of the supply chain which is the consumer. Since VAT or GST is a tax on value added and not on value of output, the inputs used in the supply chain already taxed once will not be taxed again. This eliminates the problem of cascading effect of taxes by providing input tax credit to the supplier who has already paid taxes for purchasing inputs for production. The proponents of GST are of the view that the overall burden of taxes on goods would go down below the existing estimated burden of 25 per cent to 30 per cent (GST council, 2021) since the cascading effect of taxes will be reduced under the GST regime. Therefore, it is worth researching if the burden of indirect taxes on households have reduced post the implementation of GST and if the burden is actually reduced whether the benefits of this reduced burden is equally distributed between different income classes.

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<sup>3</sup> The VAT in the pre-GST tax system differed from the GST system for having different tax rates across states for similar goods and services. Also, input tax credit mechanism or setting-off taxes on input purchases was not available for the entire supply chain. Since, the supplier was paying taxes separately to states and Centre, the taxes like CENVAT or service tax wherever applicable for certain commodities, the input tax credit was not available under state VAT and these components were added in the value of output under state VAT (Chakravarty and Sen, 2018). Some taxes in pre-GST system were VAT with the provision of input tax credit and there also existed other taxes without the provision for input tax credit as the taxes were levied on the value of output.

Lack of availability of present data on household consumption expenditure restricts us to conduct this study. However, this paper attempts to estimate the incidence of GST on different expenditure classes considering the household consumption expenditure, NSS 68<sup>th</sup> round and hence addresses the equity effect of GST at national and sub-national level. Since, one of the objectives of GST is to increase the compliance, it may not be wrong to claim that GST is addressing the efficiency problem. GST having a uniform tax rate structure across the country are expected to violate the principal of horizontal equity since household consumption expenditure pattern is not homogeneous for the states. The poorer of poorer states and richer of richer states are taxed at a same rate. Hence, this paper concentrates on finding the equity effect of GST.

The way government raises revenue to finance public spending has an impact on equity and efficiency. Taxes affect the economic efficiency if it distorts the efficient allocation of resources by distorting the behavior of a consumer or a producer. An effective tax system also has an impact on equity principle. If higher tax burden is on higher income class and less on the bottom income class and where individuals or firms of similar circumstances are treated similarly, then the tax system can be represented as fair. The former is known as vertical equity and the latter is known as horizontal equity (Stiglitz, 1999). Indirect taxes like VAT which are consumption based taxes are highly criticized for being unfair to lower income individuals and households, thus violating the equity principle and resulting in regressive taxation (Singhal(2013), Creedy(2001), Chernick and Reschovsky (2000), Cline and Wilson (1995), Carlson and Patrick (1989)). When taxes are regressive, it means that larger burden of tax is on the lower income class than on the higher income class contributing to increased income inequality (Chernick and Reschovsky (2000),

Carlson and Patrick (1989)). However, the degree of regressivity can be reduced by taxing the necessities at lower or zero rates and luxuries at higher rates (Carlson and Patrick, 1989). According to Deaton (1977) commodity taxes are likely to generate trade-off between equity and efficiency. Efficiency demands to tax goods having few substitutes and inelastic demand. Therefore, necessities would be taxed more compared to the luxuries, opposing the equity principle of taxation.

The current study is interested in finding if the equity principle of taxation is compromised in India in achieving an efficient tax system by broadening the base of goods and services. In doing so, the paper strives to study the GST structure in India and its consequences on equity at national and sub-national level. Two most important concerns arising from uniform GST, the vertical and horizontal equity are being addressed in this paper.

Briefly this paper aims to evaluate the burden of uniform GST on different expenditure class across country and does not take into account the benefits of government's social security spending, like subsidy benefit accrued to different households.

## **Methodology and Data**

The study uses the unit level data on item-wise consumption expenditure by households across states and sector from National Sample Survey (NSS) on the *Level and Pattern of Consumer Expenditure for 68<sup>th</sup> Round*, 2011-12. Goods and service tax rates which include both Centre GST and State GST on various items as on 27<sup>th</sup> July 2018 are compiled from GST Council.

There are 348 items listed in NSSO household consumption expenditure as per 68<sup>th</sup> round. There are five tax slabs for services, 0 per cent, 5 per cent, 12 per cent, 18 per cent and 28

per cent and six slabs for goods, 0 per cent, 3 per cent, 5 per cent, 12 per cent, 18 per cent and 28 per cent under GST. Each GST slab consists of several bundle of goods and services. These bundle of goods and services are mapped with the consumption expenditure items as given in NSSO 68<sup>th</sup> round to form expenditure slabs corresponding to that of GST slabs. Six expenditure slabs are created by summing all the expenditure falling under each GST tax slab as expressed in equation 1.

$$CE^s = \sum_{i=1}^n CE_i^s \text{ -----(1)}$$

$CE^s$  is the consumption expenditure for a particular tax slab s, where s varies from 1 to 6.

$\sum_{i=1}^n CE_i^s$  is the total consumption expenditure under respective tax slabs, where i refers to various goods and services on that slab.

We then calculate the share of expenditure on particular tax slab in total expenditure ( $Z_{CE}^s | q_j$ ) for different quintiles of household consumption expenditure ( $q_j, j= 1$  to 5)

$$Z_{CE}^s | q_j = \frac{CE_{qj}^s}{\sum_{s=1}^6 CE_{qj}^s}$$

$CE_{qj}^s$  is the consumption expenditure on a particular slab for quintile,  $q_j$ .

$\sum_{s=1}^6 CE_{qj}^s$  is the total consumption expenditure of  $j^{\text{th}}$  quintile on all slabs.

Comparing the share of expenditure between quintile on each GST slab we measure the incidence of GST and hence we estimate the vertical equity. Higher the share of expenditure of

poorest quintile on goods and services having high tax rate, the tax slab is regressive and it has an impact on **vertical equity**.

Then, the paper traces the effect of GST on horizontal equity by comparing the share of burden of bottom quintile between poorer and a richer state. If the burden is similar between the states, then horizontal equity is maintained or else it is violated.

This paper estimates the effect of GST on equity for a consumption expenditure pattern given in NSSO, 86<sup>th</sup> round. We acknowledge the fact that the actual impact of GST on consumption expenditure might be very different. The limitation of this paper is its use of dated data on household consumer expenditure which is based on 68<sup>th</sup> NSSO round. Another limitation of this study is that all the items of NSSO and GST council could not be matched together since some items which are listed in GST was not covered under NSSO. Since all the items listed in GST council could not be covered in this study, the results might be slightly underestimated. The list of items to be covered under upcoming household consumption expenditure survey needs to be expanded and must involve the current GST list for better understanding of the impact of GST on household consumption expenditure.

## **Findings**

When the household consumption expenditure slab is ranked in a descending order we find highest expenditure is incurred on the tax slab 0 per cent, then on 5 per cent, 18 percent, 12 per cent, 28 per cent and least on the items with 3 per cent. The broad categories of consumption expenditure items under each tax slab are given below in table 2.

**Table 2:** Household Consumer Expenditure Slab and Its Rank in India

Rank	GST Rates	Types of goods and services <sup>4</sup>
1	0	Food items, water, electricity, residential rents, PDS goods (Rice, Wheat and Sugar) and local conveyance
2	5	Cooking Oil, LPG, Kerosene (PDS) Clothing, beverages, baby food , dry fruits, air and railway fare
3	18	Computer system, electronic items, biscuits, cable TV, internet, cable connection, household goods of daily use like, washing powder, mosquito repellent, gas burner, stove, shaving blades, razor, footwear, soaps, refrigerator, washing machine
4	12	Furniture, medicine, packed food, household utensils, tooth paste, tooth brush, books, journals, bicycle
5	28	Car, motor cycle, air conditioner, air cooler, camera, Cigarettes, hotel lodging
6	3	Jewellery (Gold, Silver, pearl ornaments)

Source: Computed from NSSO household consumption expenditure survey and GST Council

From table 2 we find that goods that are likely to have inelastic demands, i.e., necessities like LPG, cooking essentials, medicine, utensils, soaps, washing powder, books are associated to the tax rates of 5, 12 and 18 per cent. The tax slab of 5, 12 and 18 per cents taken together consists of 159 items out of total items of 348 as per NSSO survey and this comprises of necessities as well.

<sup>4</sup> Details are given in Table A3, Appendix A.

Therefore, it would be interesting to find out the distribution of expenditure according to each tax slab across different consumption expenditure class which would reflect on the effect on vertical equity.

### **Vertical Equity**

Table 3 presents the sector-wise incidence of GST for each tax slab by quintile along with an aggregate affect at national level. The result shows that the incidence of 5 per cent and 18 per cent GST are more on bottom quintile at national level as compared to the top quintiles. The burden of 5 per cent GST is much higher for bottom quintile compared to the same quintile for other slabs. The incidence within 12 per cent slab is also relatively higher on the bottom quintile with respect to other quintiles. The tax slabs 5 per cent, 12 per cent and 18 per cent represents a regressive taxation implying vertical inequity within these slabs. For rural India, the tax slabs that indicate vertical inequity are 5 per cent and 18 per cent and that for urban India are the tax slabs 5 per cent, 12 per cent and 18 per cent which is similar to the effect at national level.

**Table 3: Incidence of GST by Quintile Classification in India**

Quintile	Expenditure Classification					
	0	3	5	12	18	28
National Level						
Q1	62.92	0.03	20.62	6.43	9.83	0.17
Q2	66.11	0.05	17.98	6.27	9.22	0.37
Q3	69.04	0.06	15.61	6.10	8.64	0.54
Q4	71.93	0.11	13.09	5.78	8.25	0.84
Q5	75.25	0.32	8.80	6.23	7.26	2.14
Rural						
Q1	57.63	0.03	24.19	6.99	11.05	0.11
Q2	59.28	0.04	22.03	7.36	11.08	0.21
Q3	62.25	0.06	19.68	7.12	10.54	0.35
Q4	64.94	0.12	16.83	7.18	10.25	0.68
Q5	71.32	0.43	10.39	8.00	7.86	2.00
Urban						
Q1	68.52	0.03	16.84	5.83	8.53	0.24
Q2	72.30	0.05	14.32	5.29	7.53	0.51
Q3	74.79	0.06	12.17	5.24	7.04	0.70
Q4	77.67	0.10	10.02	4.63	6.61	0.97
Q5	78.54	0.23	7.46	4.75	6.77	2.26

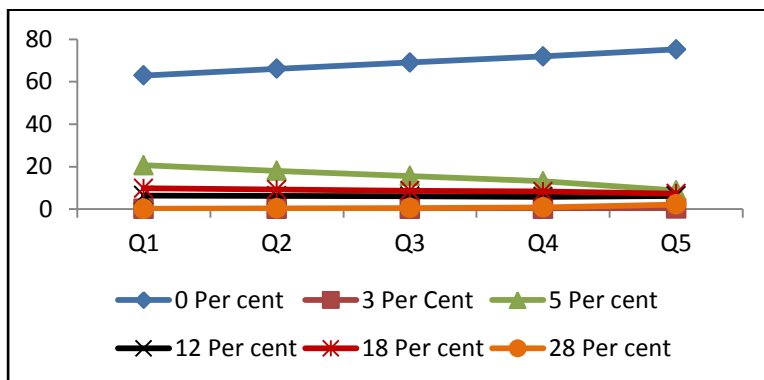
Source: Computed from NSSO household consumption expenditure survey and GST Council

The graphical representation of incidence of GST slabs by different quintiles for India is given in figure 1. It shows the incidence on bottom quintile is higher for all the slabs except 28 per cent and 3 per cent slabs. Bottom quintile spends 62.92 per cent, 20.62 per cent, 9.83 per cent, 6.43 per cent, 0.17 per cent and 0.03 per cent on GST slabs, 0 per cent, 5 per cent, 18 per cent, 12 per cent, 28 per cent and 3 per cent, respectively of its

total expenditure. On contrary, the top quintile spends 75 per cent of total expenditure on tax free goods and services, 8.8 per cent on 5 per cent slab, 7.26 per cent on 18 per cent, 6.23 per cent is on the 12 per cent, 2.14 per cent on 28 per cent and 0.32 per cent is on 3 per cent slab The analysis based on figure 1 and table 3 suggests that the incidence of GST for 5, 12 and 18 per cent are higher on bottom quintile as compared to top quintiles representing vertical inequity within these slabs.

One, distribution of consumption expenditure across GST slabs for each quintile and second, distribution of consumption expenditure across quintile for each GST slab. Table 4 and figure 1 concern the former distribution and the figure 2 represents the latter distribution.

**Figure 1:** Distribution of the burden of GST by Quintiles and GST slab in India



Source: Computed from NSSO household consumption expenditure survey and GST Council

This study proposes that the vertical inequity may be reduced by levying higher tax rates on goods and services having unequal

consumption expenditure distribution between quintiles and vice a versa.

**Proposition:** If consumption expenditure is more equally distributed across quintiles for a particular tax slab, the share of consumption expenditure in total expenditure within that tax slab is more by the lowest quintile compared to the top quintile.

We consider a two class, two GST slab model to explain this proposition.

Let  $m_A$  and  $m_B$  be two expenditure classes, where  $m_A$  represents the expenditure for class A and  $m_B$  represents the expenditure for class B. Let there be two GST slabs, X and Y, each representing an aggregate of various items of goods and services under each category of GST slab. Let  $E_X^A$  and  $E_X^B$  be the expenditure on GST slab X by two classes A and B. Let  $E_Y^A$  and  $E_Y^B$  be the expenditure on GST slab Y by two classes A and B.

We assume  $m_A < m_B \quad \forall$  GST slab ----- (1)

Now, if the expenditure is distributed between two GST slab then the total expenditure by each class would be

$$m_A = E_X^A + E_Y^A$$

$$m_B = E_X^B + E_Y^B$$

Total Expenditure on each GST slab is

$$TE_X = E_X^A + E_X^B$$

$$TE_Y = E_Y^A + E_Y^B$$

If X is the GST slab with equal consumption expenditure distribution, then

$$\frac{E_X^A}{TE_X} = \frac{E_X^B}{TE_X}$$

Or,

$$\frac{E_X^A}{m_A} \cdot \frac{m_A}{TE_X} = \frac{E_X^B}{m_B} \cdot \frac{m_B}{TE_X}$$

Or,

$$\frac{\frac{E_X^A}{m_A}}{\frac{E_X^B}{m_B}} = \frac{m_B}{m_A}$$

Since  $\frac{m_B}{m_A} > 1$  (by assumption)

Therefore,  $\frac{\frac{E_X^A}{m_A}}{\frac{E_X^B}{m_B}} > 1$

This implies that the share of expenditure for slab X is more for class A than B i.e.,

$$\frac{E_X^A}{m_A} > \frac{E_X^B}{m_B}$$

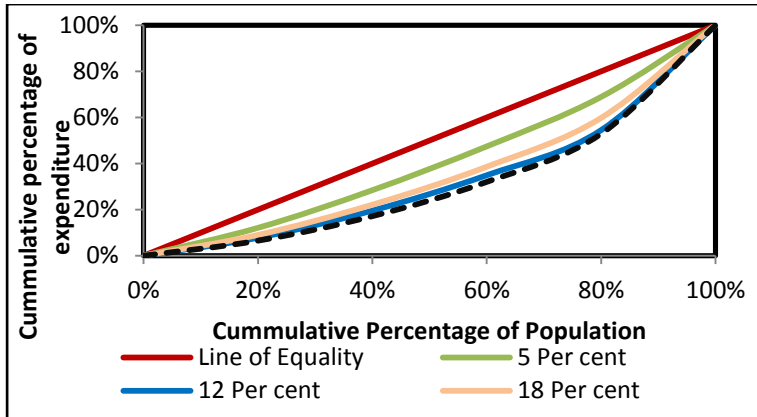
Hence, we get that more equally the consumption expenditure is distributed across quintile for a particular tax slab, more the share of consumption expenditure in total expenditure within that tax slab by the lowest quintile compared to the top quintile.

Therefore, it may be recommended that the GST slab representing more equal distribution should be taxed at a reduced rate. To have a progressive GST system, it is preferred to consider the consumption expenditure inequality and keep the slab at high rate for more unequal distribution and vice a versa.

Accepting this proposition implies that the expenditure slab having 18 per cent GST should have been less than 12 per cent slab or tax slabs should have been interchanged for these expenditure slabs at all India level, since the share of expenditure in total expenditure is more on 18 per cent slab compared to 12

per cent slab by bottom quintile as per the Lorenz curve drawn in figure 2.

**Figure 2:** Lorenz Curve for Various GST Slab in India



Source: Computed from NSSO household consumption expenditure survey and GST Council

Figure 2 represents the Lorenz curve with cumulative percentage of population in the horizontal axis and cumulative share of consumption expenditure in the vertical axis. When we go from left to right in the horizontal axis in figure 2, we see the cumulative expenditure on 5 per cent slab is more equally distributed among each quintile. 0 per cent and 12 per cent represent most unequal distribution. 18 per cent slab represents less unequal distribution compared to 12 per cent. Correlating table 3 with figure 2, we see that the GST slab having more equal consumption expenditure across quintile (Figure 2) represents the GST slab (Table 3) with more share of expenditure in total expenditure by bottom quintile (Q1) than the top quintile, like GST slabs 5 per cent and 18 per cent. 0 per cent slab (figure 2) having most unequal consumption expenditure distribution is

associated with highest share of expenditure by the top quintile than the bottom quintile. This represents a complete regressive tax system within 0 per cent and 18 per cent GST slabs. This is because the share of consumption expenditure by top quintile is more for 0 per cent tax slab allowing them to enjoy more taxed free goods. At the same time, a higher tax slab is levied to the goods and services whose share of consumption expenditure by bottom quintile is the highest among the other quintile, hence, burdening the lowest quintile the most for this slab.

The vertical inequity may be reduced by levying taxes at a reduced rate for the items having more equal consumption expenditure distribution between quintiles and vice-versa, since it is proposed by this study that more equally the consumption expenditure is distributed across quintile for a particular tax slab, more will be the share of consumption expenditure in total expenditure by the lowest quintile compared to the top quintile.

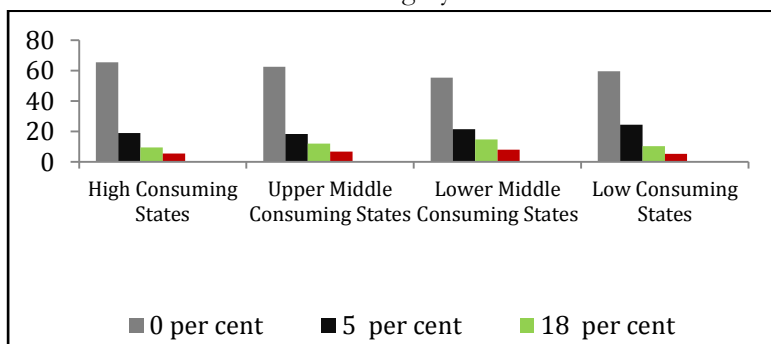
The next section attempts to see the effect of GST on horizontal equity.

### **Horizontal Equity**

Horizontal equity refers to equal burden of taxes for similar income class or individuals. As GST is a uniform tax for similar goods and services across states, it is expected that this characteristics of GST will violate the horizontal equity principle across the country, given the states have heterogeneous PCGSDP and per capita consumption expenditure (PCCE). For this analysis the states are categorized into four groups; high consuming, upper middle consuming, lower middle consuming and low consuming states after arranging in a descending order of per capita aggregate consumption expenditure. Kerala, Goa, Maharashtra, Punjab, Haryana, Karnataka and Tamil Nadu belong

to the high consuming states. Gujarat, Andhra Pradesh, Uttarakhand, Himachal Pradesh, Nagaland, West Bengal and Rajasthan belong to upper middle consuming states. Meghalaya, Mizoram, Sikkim, Uttar Pradesh, Manipur, Tripura and Arunachal Pradesh are the lower middle consuming states and low consuming states are Madhya Pradesh, Jharkhand, Chhattisgarh, Assam, Odisha and Bihar. Kerala has the highest and Bihar has the lowest per capita household consumption expenditure. The states with both high PCGSP and PCCE are Goa, Haryana, Maharashtra and Kerala and states with low PCGSDP and low PCCE are Assam, Jharkhand, Madhya Pradesh and Bihar.

**Figure 3:** Incidence of Individual GST slab on Q1 for different category of States



Source: Computed from NSSO household consumption expenditure survey and GST Council

Figure 3 represents incidence of various GST slab on different category of states on bottom quintile. It can be observed from figure 3 that the incidence of GST slabs, 5 per cent and 18 per cent to be more on the bottom quintile (Q1) in low consuming states like Bihar, Madhya Pradesh, Jharkhand and Assam as compared with the high consuming states. Hence, the bottom

quintile of the low consuming states having low PCGSDP will have much higher burden of 5 per cent and 18 per cent slabs than the high consuming states having high PCGSDP.

Therefore, we observed that GST violates the notion of horizontal equity for the reason that the incidence of GST is more on bottom quintile in the poorer state than in the richer state. This horizontal inequity is the result of a uniform GST rate for all the states for similar goods irrespective of their heterogeneous consumption expenditure share for these goods.

### **Conclusion and Policy Recommendations**

GST has been implemented in India with broader objectives of simplifying the indirect tax system, increase compliance of tax payers, reduce cascading effect of taxes and promote ease of doing business. To increase the revenue collection of the country the tax base has got expanded under the GST system. An important challenge for any tax system is to balance between efficiency and equity. The objectives of the GST reflect more on the efficiency principle of taxation and relatively less on the equity. The present study analyzes the incidence of GST across quintiles for different GST slabs and validates the GST rates 5 per cent, 12 per cent and 18 per cent having an adverse effect on vertical equity and the tax rates 5 per cent and 18 per cent affecting the horizontal equity. This issue of inequity seems to be correlated with the inappropriate classification of goods and services under each tax slabs. The GST slabs 5 per cent, 12 per cent and 18 per cent comprises of certain goods and services which are likely to have inelastic demand. We have a mixed of household essentials along with air and railway fair under 5 per cent slab. The items under 18 per cent slab include computer system, internet on the one hand and washing powder, soaps,

stove and other household goods on the other hand. For 12 per cent we have goods like, furniture, medicine, packed food, household utensils, tooth paste, tooth brush, books, journals, bicycle, sanitary napkins, etc. The household essentials having inelastic demand are recommended to have a much reduced rate to lessen the inequity and are presently assigned a much higher rate.

This paper also finds that, if consumption expenditure is more equally distributed across quintile for a particular tax slab, the share of consumption expenditure in total expenditure within that tax slab is more by the lowest quintile compared to the top quintile. Therefore, it may be recommended that the GST slab representing more equal distribution should be taxed at a reduced rate.

We recommend revisiting the uniform taxation approach for India given the vast disparity between distributions of consumption expenditure across the country. We also suggest to put an emphasis on equity aspects which has been compromised to achieve the efficiency parameter of increasing tax compliance and raising revenue collection.

This study will be better positioned to address the objective of equity with the availability of new data on household consumption expenditure survey.

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