

INCIDENCE OF GENERAL SALES TAX IN PAKISTAN: Latest Estimates

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The study provides estimates of overall incidence, as well as, the distribution and burden of General Sales Tax across household welfare levels by applying the latest available household consumption data. The analysis is carried out at national, regional and provincial levels; separately for food, non-durable and durable expenditure items. Effective GST rate across deciles of per capita expenditure and Kakwani Summary Index of tax progressivity are estimated for the year 2010-11. Results in general, indicate proportionality of GST incidence associated with some progressivity at the upper part of income distribution. The relative intensity in terms of magnitudes of Kakwani Index indicates regressivity in GST on food and progressivity on durable expenditure items. A simulation exercise is also carried out to observe the impact of non-uniform GST rates for expenditure commodity groups on distribution of the tax burden.

I. Introduction

The tax system of Pakistan can be analyzed from different perspectives and in various dimensions. It may be evaluated in terms of economic or administrative efficiency or with respect to quest for revenue to finance government expenditures. Nonetheless, equity implication and redistribution aspect of a tax system remains an important and integral part for designing tax policies, especially, in countries where a high percentage of population lives below the poverty line. Therefore, the study of tax incidence and the resulting distribution of tax burden is an important policy issue in Pakistan.

General Sales Tax (GST) dominates the tax structure¹ of Pakistan with a 40 per cent share in the total tax collected by the Federal Board of Revenue. The revenue

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1 A detail and critical review of Pakistan tax structure, problems and policy guidelines for various taxes is provided in the World Bank (2008) report. This report is a joint product of a team of the Federal Board of Revenue (FBR), the Andrew Young School of Public Policy (AYSPS) at the Georgia State University, and the World Bank.

collected from GST is roughly 4 per cent of the Pakistan's GDP and is imposed² on goods sold (imported or manufactured) in Pakistan.

During the last decade two studies have been conducted to assess GST incidence in Pakistan. These studies used the detail Household Income and Expenditure Survey (HIES) data for the years 2000-01 and 2004-05 and analyzed the trends in distribution of GST burden across the tiers of income distribution. In the methodological perspective, results of these studies (in terms of tax progressivity) are based on an average rate of progression by comparing effective tax rate (ETR) for each income group.

Recently, the Pakistan Bureau of Statistics has released HIES data for the year 2010-11. Thus, the main purpose of this research is to update GST incidence by applying the latest household consumption data.³ The study also furnishes additional information by disaggregating results for regions, provinces and commodity groups. Besides providing graphical presentation of tax incidence through ETR, Kakwani Summary Indices are also estimated to observe the intensity of GST progressivity. Moreover, a sensitivity analysis is also attempted to observe the impact of diverse GST rate for expenditure groups on tax burden or distribution of the tax incidence.

The paper is organized as follows. Data and methodological issues are briefly discussed in Section II, while relevant evidence from the earlier studies is provided in Section III. Next, Section IV furnishes the empirical findings in terms of overall incidence, distributional impact, inter-temporal comparison and Kakwani Summary Indices. Findings from the simulation exercise are also discussed in this section. Finally, Section V provides some concluding remarks.

II. Data and Methodology

The tax incident analyses are concerned with the share of tax paid by different economic groups of the society. Therefore, the only data necessary is a variable which defines the economic groups and an estimate of tax paid on different commodities by each group. The most common source of data is a nationally representative household income and the expenditure survey.

- 2 GST in its present form was introduced in Pakistan at the standard rate of 12.5 per cent in 1992. However, for reducing budget deficit, the rate of GST was raised to 18 per cent in 1995 with a reduced rate of 2 per cent, introduced to bring small businessmen into the tax net. The said rate was, however, subsequently reduced to 15 per cent, due to the pressure of the taxpayers. In 1999, further tax of 3 per cent was introduced on supplies made by registered persons to unregistered persons. By 2004, GST was administered at the five different rates i.e., 2 per cent, 15 per cent, 18 per cent, 20 per cent and 23 per cent. Finally, the anomaly of different rates was removed by introducing a uniform rate of 15 per cent with effect from July 2004. The said rate was subsequently increased to 16 per cent in 2007 and 17 per cent in 2009. With effect from July 1, 2011, the rate of GST was again reduced to 16 per cent. However, in the Finance Bill 2013-14, an increase of one per cent in GST was approved by the National assembly. Thus, the GST rate of 17 per cent is presently applicable on the value of goods imported into Pakistan and taxable supplies. This rate is used in computing tax burden in this study.
- 3 It is worth to note that the year 2010-11 is characterized with very low GDP growth rate, high inflation and worst macroeconomic indicators as compared to the year 2004-05. However, the trends in growth and macroeconomic indicators are fairly similar to the year 2000-01.

The latest available Household Integrated Economic Survey (HIES) conducted during the year 2010-11 by the Pakistan Bureau of Statistics, was used in the study. It covers 16,341 households across the four provinces of Pakistan. HIES is the only national representative survey which contains detail data on household consumption and income together with the data on socio-economic and demographic variables. HIES data is employed in almost all empirical work on incidence of consumption tax in Pakistan.

Despite the criticism by Kemal (2003), Gazdar (2000) and Zaidi (1992) stating that HIES understates the income accrued to the highest income group and also that poorest households are inadequately represented or systematically excluded, particularly those which are homeless. HIES data is used intensively by academia, development partners, foreign scholars, and the government, to determine the welfare status of households, especially in terms of monetary and multidimensional poverty. Nonetheless, this issue does not just pertain to HIES but it is a common observation about large surveys in general [Refaqat (2008)]. It is also argued that the issue of understatement or underreporting at both tails is perhaps not so serious in the context of tax incidence study as against the studies on poverty and inequality.

Household welfare may be represented by the current income or expenditure, while the groups are defined by welfare levels (poor v/s. non-poor, quintiles or deciles of the welfare distribution, etc). Traditionally, current income per household or per capita is used in the majority of tax incidence studies as a welfare indicator. However, there are concerns for the use of income as a welfare indicator. Cubero and Hollar (2010) summarized the problems with income as:

1. It is volatile and subject to temporary shocks. A survey conducted over a particular period ignores position of the household relative to its life cycle. Ideally, the capacity to pay should be measured relative to permanent or lifetime income.
2. Certain type of income tends to be under-represented in surveys, particularly, income from agriculture, self-employment, professional services, and capital (interest, dividends).
3. Inheritances, transfers, and family remittances are often poorly captured in survey-based measures of household income.

More importantly, in an economy where most of the economically active population is not in a salaried remuneration class but is either self-employed or work in farms or other family business; the assessment of income in a single survey visit to household, like HIES is not appropriate. Further, in countries where the rate of tax evasion is very high, people in general have tendency to understate their income in fear of tax authorities.⁴

4 Authors are grateful to the anonymous referee for pointing out this reasoning against the use of income as a proxy of household welfare.

Due to these constraints, in using income as a proxy of household welfare, consumption is used by number of studies on tax incidence analysis. Consumption is less volatile than the current income and might be taken as a reasonable proxy for permanent income.⁵ It is also less likely to be under-reported than income.⁶ Thus, per capita household expenditure is preferred in this research as an indicator of the household welfare.

Economic incidence model of tax studies analyzes the distributional effect of tax system to evaluate who ultimately bears the burden of tax. Various measures are suggested in the theoretical and empirical literature to evaluate distributional impact of tax. Most of these measures are derived from the social welfare functions and assumptions about the society's preference for income equity.⁷ This paper, however, focus on the following two widely used measures.

One basic measure of economic incidence of tax is to evaluate average rate of progression (ARP) which is the most common measure used to determine tax progressivity. ARP compares effective tax rate (ETR) across deciles or quintiles of welfare indicators. A tax structure is said to be progressive when effective tax rises and moves up to the scale of welfare. It is regressive when effective tax falls against rise in the scale of welfare indicators; and it is proportional when effective tax rate remain constant across the welfare levels.

The effective tax rate for this study is the GST paid by a particular decile as a percentage of its total household expenditure. According to the ability-to-pay principle, a taxation scheme or tax structure is equitable if taxpayers are charged according to their ability to pay. Therefore, based on the principle of ability-to-pay, a progressive tax would be regarded as being equitable because those with a greater ability to pay would pay a higher proportion of their income in the form of taxation.⁸ A proportional tax may be regarded as equitable to the extent that all taxpayers would pay the same proportion of their income as tax. Thus, higher income taxpayers would be paying a higher absolute amount of tax than the lower income taxpayers.

5 Cubero and Hollar (2010) also noted that because consumption tends to be more evenly distributed than income in most countries, studies that use consumption as a welfare measure tend to find that overall taxation, and consumption-based taxes in particular, are more progressive than studies that use current income.

6 Ercelan (1991) however argued that similar understatements in expenditure are also possible and subsistence expenditure may well involve quasi-permanent indebtedness.

7 Most common measures are tax progressivity, Lorenz and Concentration curves, Quasi-Gini Coefficient, Kakwani Index, Suits index, Reynolds-Smolensky (RS) index etc. There are also other measures of progression. For a description and mathematical expression of these measures, see Gemmell and Morrissey (2002). For a comprehensive discussion regarding numerous structural and distributional measures of progressivity, see Kiefer (1984).

8 Alternatively, according to the benefit principle, a taxation scheme is fair if taxpayers are charged according to the benefit they receive from the government services. Even a regressive tax may be regarded as being fair to the extent that the distribution of benefit of government services may accrue more to the lower income taxpayers than to the higher income taxpayers.

Tax progressivity through distribution of ETR is generally presented graphically to depict the departures from proportionality. Although, it provides useful information but it cannot quantify the amount of redistribution which takes place through a tax system. Moreover, magnitudes associated with deciles or visual inspection of progressivity or regressivity (across regions, territories or type of expenditures) becomes difficult when there are a number of comparisons to be made. In such cases, summary indices of progressivity are useful. Of these, the most widely used is the Kakwani Index, which is directly related to the graphical method. The Kakwani Index (K) is defined as twice the area between a tax concentration curve (quasi-Gini coefficient)⁹ and the Lorenz curve and is calculated as $K = C - G$, where C is the tax payments' concentration index and G is the Gini coefficient for pre-tax income. The value of πK ranges from -2 to $+2$; the closer it is to those extremes, the more regressive or progressive a tax would be. A tax is progressive if the tax concentration curve lies below the income curve, in which case K would be positive. A negative value for K occurs when the tax curve lies above the pre-tax income concentration curve and reflects a regressive tax. If the tax and income curves coincide, K will be zero and reflects a proportional tax.

III. Review of the Pakistan's Empiric

A number of studies have been conducted in Pakistan within the framework of either the progressivity of tax incidence or the impact of government expenditure across the income groups. This section briefly presents the empirical evidences described in the selected studies.

To measure social incidence of indirect taxes in Pakistan, a comprehensive study was carried out by Refaat (2008)¹⁰ for the years 1990-91 and 2000-01. According to the author, the intention of the study was to analyze, as to how the indirect tax reforms reflect the policy objectives particularly in the light of equity and distributional consideration envisaged in the tax reforms strategy.

Results at the national level for (1990-91) indicate clear progressivity of GST incidence with small (1.08 to 1.52 per cent) magnitudes of incidence. However, the study reports that despite exemption of basic food items, GST incidence for 2000-01 appears to be at best proportional over majority of the population. Moreover, magnitudes of GST incidence differed at large as compared to the year 1990-91 which was mainly due to the limited scope of GST in this year, and also due to the pattern of exemptions that clearly favored the poor.

9 The Gini coefficient for a tax concentration curve is called quasi-Gini coefficient. Conceptually, a concentration curve and a Lorenz curve differ in a way that the former plots cumulative shares of X (e.g., tax payments) with respect to the deciles/quintiles distribution of Y (e.g., pre-tax income/expenditure), whereas, the latter represents the cumulative share of Y with respect to the deciles or quintiles distribution of Y.

10 Refaat submitted this as a thesis for the degree of Doctor of Philosophy, University of Bath.

The study inferred that the rural and urban GST incidence trend lie very close to each other. The regional incidence for the year 2000-01 averaged around 4.62 per cent for the rural areas when compared with 4.80 per cent for the urban areas. Thus, it appears that the tax burden or the level of average GST incidence faced in both regions was quite similar. On an average, approximately 5 per cent of the household's total expenditure was paid as GST, whereas, in rural areas only one per cent (4.62/4.8) less than their urban counterparts was paid. In addition, it was also found that an overall incidence trend for regional population appeared to be progressive, i.e., effective tax rose with level of welfare for both the urban (at least over the bottom six deciles) and the rural areas.

Regarding disaggregated incidence at commodity level for the year 2000-01, it was concluded that GST on food items, clothes, fuel and utilities appeared to be regressive. The author argues that this should not be a surprise; given their underlying expenditure patterns which show these to be necessities. On the other hand, GST incidence for durable items, and POL products, appeared to be progressive (as these are luxuries). Furthermore, the incidence trend for tobacco and personal care items appeared to be proportional for a large segment of population. From the detailed disaggregated analysis at commodity and regional levels, the author suggested that separate analysis provides a very good opportunity to the policymakers to fine-tune GST exemptions to safeguard the poor without too much cost to the exchequer.

Based on this work on social incidence of indirect taxation in Pakistan, Refaqt (2003) used data from the HIES and derived two IMF working papers and provided a comprehensive incidence and distributional analysis of GST in Pakistan. The author imputed effective tax rates for a detailed list of consumption items by expenditure deciles and deduced that GST is somewhat progressive with average effective rate around 3.49 to 4.19 per cent. Detail categories of consumption goods were analyzed and it was found that tax burden on some specific items including cigarettes, cooking oil, gas, kerosene and electricity is regressive.

Similarly, Refaqt (2005) assessed the welfare impact of GST reforms on Pakistani households using the two HIES data sets of 1991 and 2001. The author stated "even though we did not find the GST incidence to be clearly regressive but our result show these reforms to be slightly welfare reducing, during the period 1990-2001. Using the distributional characteristics approach it also show that taxation of items, such as, vegetable ghee, sugar and basic fuels, deprived poor people and their households face similar level of GST tax incidence as compared to the rich households, despite clear difference in consumption".

It is worth to reproduce the crux of Refaqt's work [(2003), (2005) and (2008)] on social incidence in Pakistan, wherein it is concluded that a move from dependence on trade tax revenue to GST/VAT revenue has made the overall indirect tax system of Pakistan, a little more progressive. Regarding GST incidence specifically, it was

asserted: "results have revealed that progressivity of GST pre-reform (1990-91) incidence was mainly due to the limited scope of GST/VAT at that time; due to patterns of exemptions which clearly favored the poor. However, the post-reform (2000-01) GST/VAT incidence, despite, focused on 'equity' and 'distributional' consideration in the reforms agenda, and it appeared at best to be proportional". A high level of disaggregation of incidence to reveal its sensitivity to key commodities was also carried out. The work indicates: "it appears that post-reforms (2000-01) indirect tax incidences were sensitive to taxation of key commodities and include sugar, edible oils, and basic fuel/utilities. Incidentally, taxation of these commodities also appeared to have a strong distributional effect on the poor. The results show that indirect tax system can be made strongly progressive by exempting these commodities".

Wahid and Wallace (2008) updated the incidence analysis using HIES data for the year 2004-05. Their work however was broad-based and estimated incidence distribution of all major taxes (direct and indirect) in Pakistan. With respect to GST incidence they deduced that the effective tax rate was proportional - slightly progressive, and interestingly, it was found that the distribution of overall tax burden was progressive. However, this progressivity, according to the study, was almost exclusive because of burden of the income tax falling on the top income group; otherwise, in most households, both direct and indirect taxes were nearly proportional.

The Social Policy and Development Centre (2004) analyzed the federal taxation in Pakistan and found that all components of indirect tax system along with the overall tax system was clearly regressive. Moreover, the study inferred that if fertilizers and pesticides are exempted from the GST net, it will make the GST incidence slightly progressive. However, contrary to the studies cited above, effective taxation was estimated by using 1989-90 input-output tables for Pakistan, after calibrating for the year 2001-02.

Shirazi et al. (2001) is perhaps the only study which was attempted to analyze redistribution effects of the government taxes as well as the expenditure across the income groups. They concluded that in absolute terms, the fiscal system redistributes small amount to the poor class, as compared to the rich class. In contrast, lower income groups received more benefits as compared to their contribution to the national income. The expenditure and tax burden however was distributed across the population in an arbitrary way. Thus, the findings were dubious, especially for the poorest income group.

Malik and Saqib (1989) used the input-output table of 1975-76 and the Household Income and Expenditure Survey 1979 to estimate the tax burden across income groups. For summarizing the nature of redistribution of income due to tax, they developed Suite Index which is similar to the Gini Index of income inequality. They concluded that over all, the tax system turns out to be slightly progressive for the country. However, for rural areas, the system is slightly regressive. Moreover, they concluded that indirect tax which is a major source of Government revenue is generally, slightly regressive.

Kazi (1984) analyzed the inter-sectoral tax burden for Pakistan. On the basis of sectoral expenditure and sectoral population, tax burden and tax allocation were estimated. The results showed the over-taxation of agriculture when compared to the relative capacity of taxation in each sector. It was also found that in agriculture sector rich farmers were under-taxed.

One of the study on tax incidence for Pakistan was conducted by Jeetun (1978), wherein the total tax incidence and total indirect tax burden exhibited either the slight progressivity or a U-curve pattern (i.e., implying redistribution by taking place from the very poor and the rich towards the middle income class). He also found that the urban class was burdened with higher proportion of tax incidence than the rural class. The study provides detailed disaggregated results based on incidence of components of the tax system.

To conclude, most studies cited above indicate that irrespective of the methodology, tax structure and governance, consumption tax in Pakistan was not regressive, i.e., effective tax rate did not fall against the rise in income. The tax rate remained more or less proportional, that is, constant across the welfare level. Some progressivity in the tax burden, however, is reported, especially in the disaggregated analysis in terms of regions or commodity. Another important observation highlighted by Refaqt (2008) and Wahid and Wallace (2008) is that most of the research in Pakistan remained preoccupied with the tax progression issues. As a result, issues such as tax evasion, distributional role of tax exemption of specific commodity, uniform versus non-uniform GST rate, etc., are not addressed at large in the context of Pakistan.

IV. Empirical Findings

This section provides major findings of the study in terms of the overall GST incidence as well as its distribution across deciles of per capita expenditure for the year 2010-11. The distributional impact of GST is presented across regions, provinces and commodity groups, as well. Besides, furnishing a comparison of most recent tax burden with earlier studies of tax incidence, an attempt is also made to observe sensitivity of the Kawani Summary Index of tax progression with non-uniform rate of GST across the commodity groups.

1 Estimates of the Overall Incidence

Figure 1 displays the estimated magnitudes of average tax incidence across regions (urban/rural) and commodity groups (food, non-durable and durable items), while provincial incidence are portrayed in Figure 2.

The overall incidence of GST is estimated at 4.9 per cent, i.e., on an average, consumers paid 4.9 per cent of their total household expenditure as GST during 2010-11. The urban incidence is higher (5.19 per cent) as against rural incidence

FIGURE 1

Average Tax Incidence across
Regions and Commodity Groups

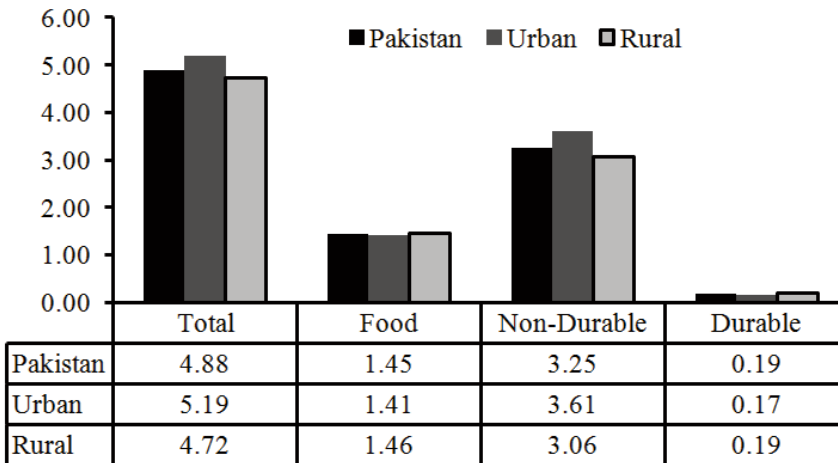
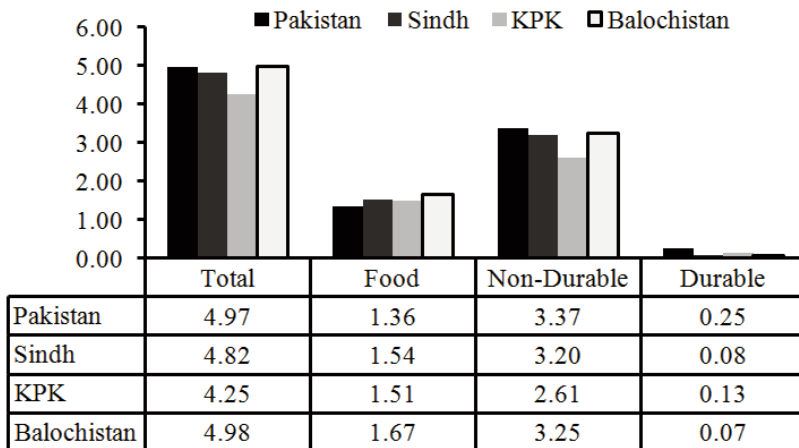


FIGURE 2

Average Tax Incidence across
Provinces and Commodity Groups



of GST which is estimated at 4.7 per cent. A look at the figure reveals that the higher incidence in urban area is mainly due to sharp difference in terms of regional tax burden in non-durable expenditure, where urban residence face an incidence of 3.61 per cent as against 3.06 in rural areas. The phenomenon indicates the higher level of consumption of non-durable items (cloths, footwear, jewelry, crockery, plastic-items, etc.) by urban residence as compared to rural counterpart.

Due to exemption of main food items from GST net, the magnitudes of food incidence are relatively low and interestingly depict no significant regional difference. On an average, both urban and rural consumers pay 1.4 per cent of their total expenditure as GST on food items.

Provincial differences in GST incidences reveal interesting phenomenon. The lowest incidence is estimated for Khyber Pakhtunkhwa province, while the highest incidence is observed in Balochistan. This finding may also be explained with the help of disaggregated incidence analysis with respect to commodity groups. As the uniform GST rate is applied across all commodities, the relative provincial share of consumption in a particular commodity group affect magnitude of the tax incidence. The lowest GST incidence in KPK is mainly due to relatively the low share of non-durable taxable items. Population in KPK faces an incidence of 2.61 per cent for expenditure on non-durable items as against population of the Punjab province which pays 3.37 per cent tax on non-durable items. In contrast, the highest tax incidence on food items in the province of Balochistan resulted the highest overall GST incidence. The phenomenon indicates that the relative share of Balochistan in consumption of taxable food items (especially, cooking oil, sugar and tea) is higher as compared with other provinces.

GST incidence on durable expenditure is highest and significantly different in the Punjab province which is relatively more developed and economically prosperous than other provinces. Thus, the analysis as expected reveals that relative share of expenditure on durable items is high in Punjab in comparison with other provinces.

Besides the relative share in expenditure, the distributional impact of GST also has an affect on the magnitude of average tax incidence across regions and commodity groups. For instance, proportionality in the tax burden in one province and regressivity in the other may change the average incidence substantially. These distributional aspects are described in the following section.

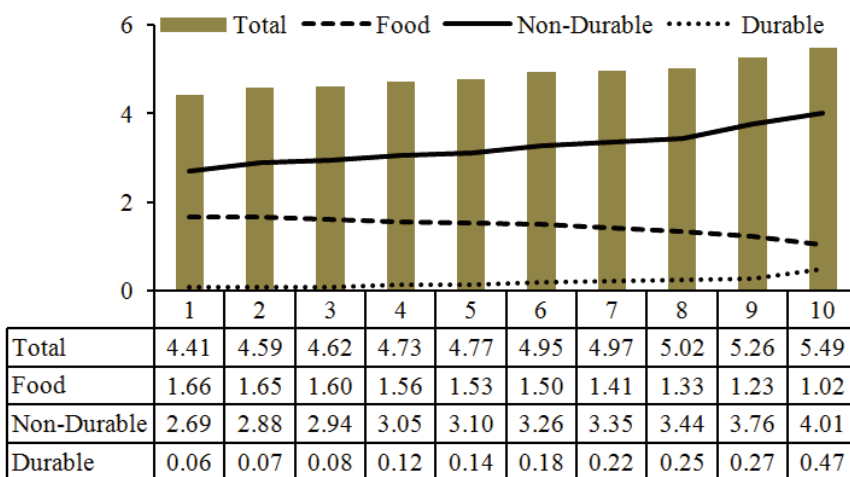
2. Evaluation of Distributional Impact of GST

The distribution of GST incidence across per capita expenditure deciles is presented in figures below. Regional picture is portrayed in Figure 3, while distribution across provinces is plotted in Figure 4. Both these figures also reveal distribution of incidences across the commodity groups.

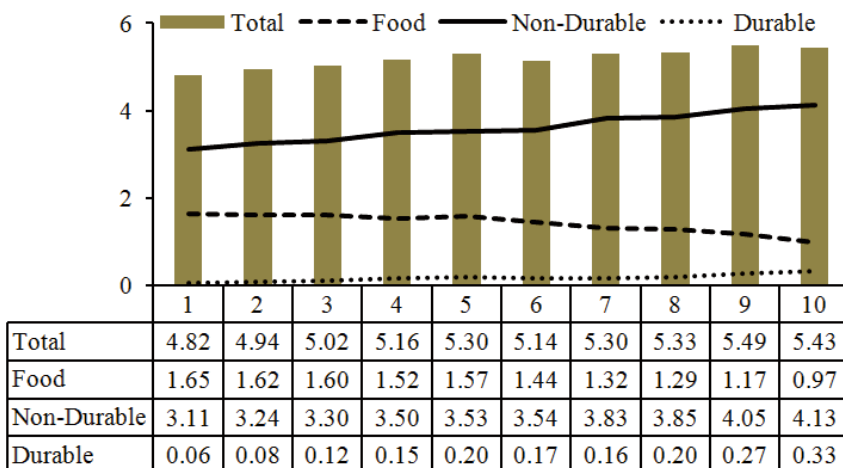
FIGURE 3

GST Incidence across Region
per Capita Expenditure Deciles

PAKISTAN



URBAN



RURAL

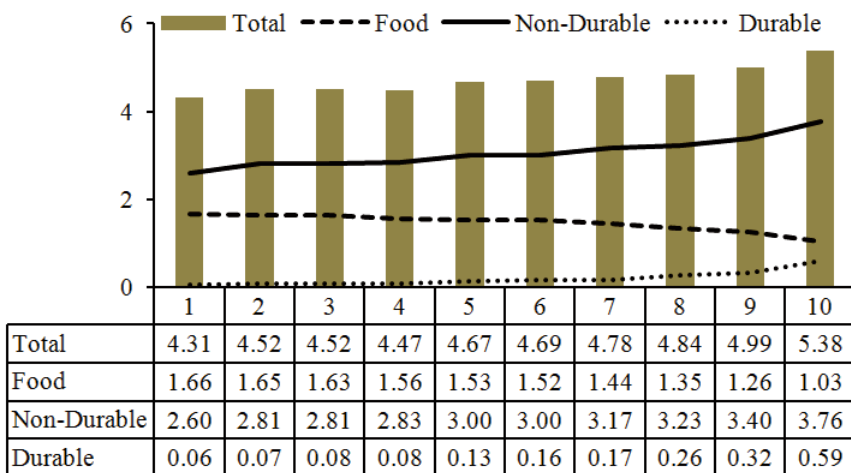
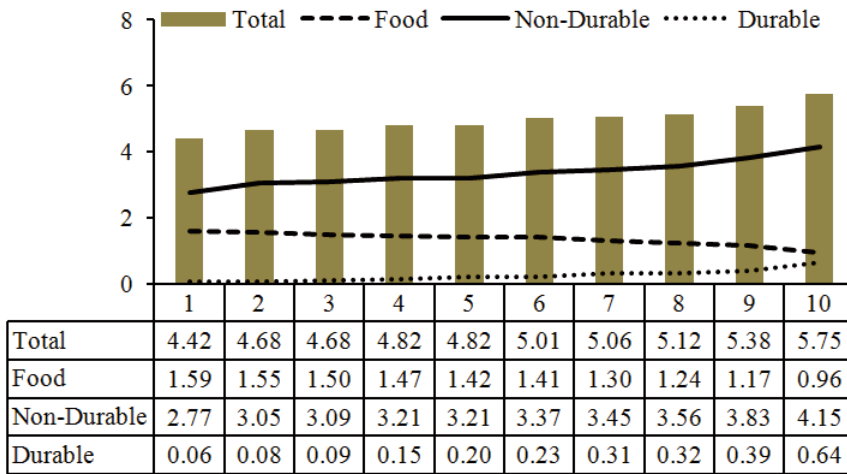


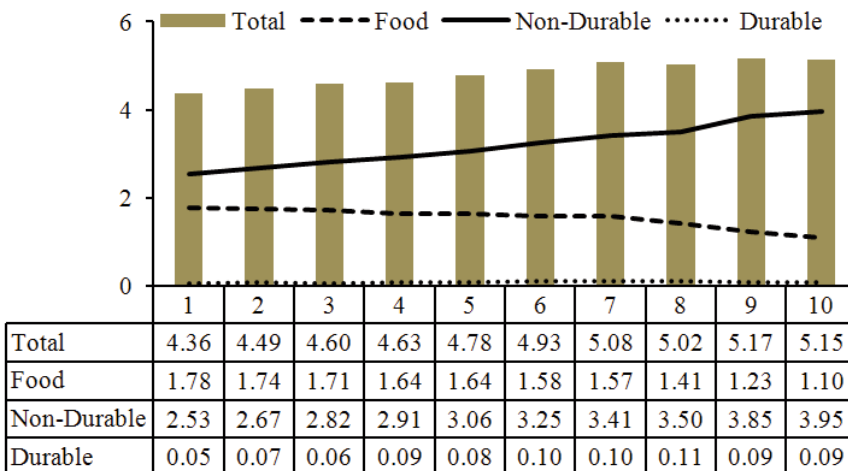
FIGURE 4

GST Incidence across Region
per Capita Expenditure Deciles

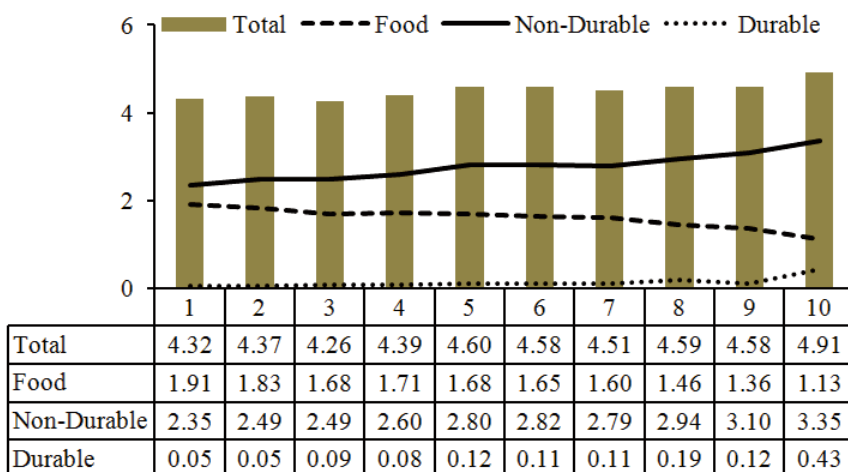
PUNJAB



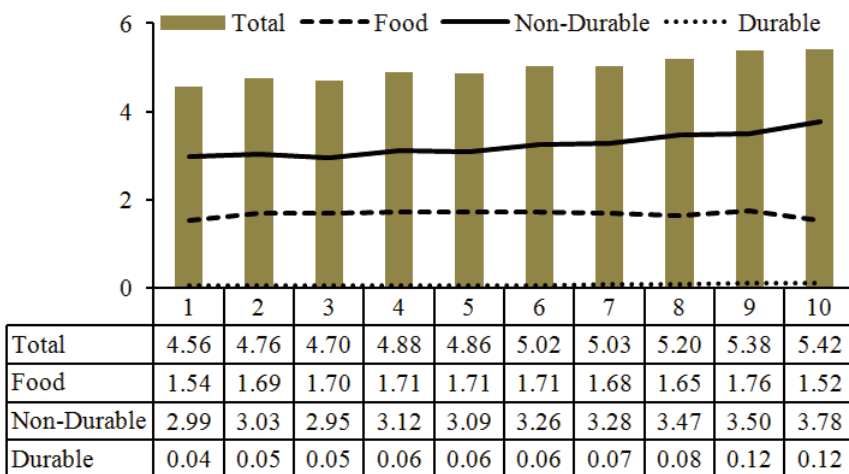
SINDH



KHYBER PAKHTUNKHWA



BALOCHISTAN



It appears that overall, GST incidence is progressive as the incidence or tax proportion increases with the higher deciles of per capita expenditure (Figure 3). However, the phenomenon is not similar across regions and commodity groups. GST incidence on food items¹¹ is somewhat regressive, especially after the 6th decile, while incidence on durable items is fairly progressive. In general, incidence on non-durable items is dominant in the overall GST net and its distribution depicts a progressive trend across deciles of per capita expenditure.

Barring the relatively higher magnitudes of GST incidences in urban areas, the regional trend in the distribution of tax incidence is more or less similar in all commodity groups. Incidence on food items is regressive, while incidence on non-food items is little bit progressive. Nonetheless, the regressivity of tax in the food items is more distinct in the rural context.

Provincial distribution of GST incidence is portrayed in Figure 4. In general, progressivity trends of commodity groups are similar with slight variation. Distribution of incidence on durable expenditure items is proportional in Sindh, Khyber Pakhtunkhwa and Balochistan provinces. Nonetheless, a slight progression may be observed in case of durable expenditure of Punjab. Incidence of food items is relatively proportional in the Balochistan province, while its regressivity is apparent in the other three provinces. In contrast, the progressivity is observed with varying degree for the tax incidence of non-durable items, almost in all provinces.

3. Inter-Temporal Comparison of GST Incidence

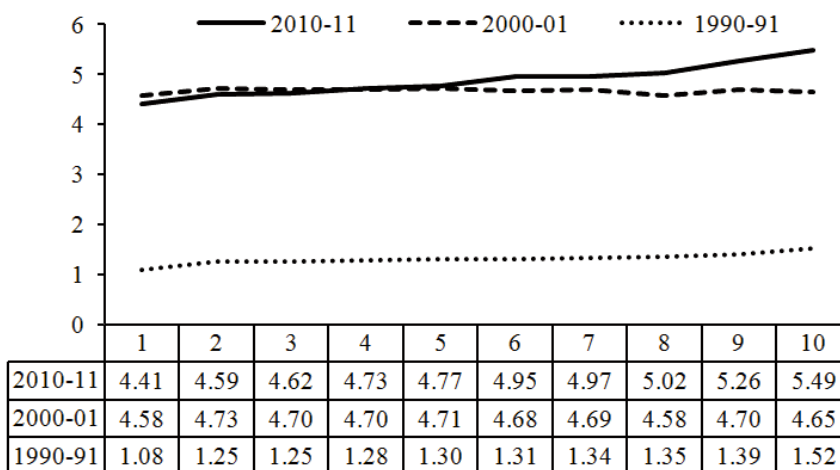
Figure 5 displays a comparative distribution of GST incidence across expenditure deciles in Pakistan. The figures for the years 1990-91 and 2000-01 were taken from the earlier study by Refaat (2008). The magnitude of tax incidence for the year 2004-05, reported in Wahid and Wallace (2008) are not comparable due to the fact that these are derived on total household expenditure rather than the per capita expenditure.

One important observation which emerges from the figure is that the distribution of GST incidence for the year 2000-01 and 1990-91 appears proportional, while slight progressivity is evident for the year 2010-11. Moreover, the tax burden is considerably low for the year 2010-11 upto the 5th decile, while the comparative burden is quite high after the 8th decile. This phenomenon clearly indicates a relative progressivity for the latest distribution (2010-11) as compared with the earlier distribution of GST incidence for the year 2000-01.

11 Major food items which are in GST net are: cooking oil, vegetable ghee, sugar, butter and margarine, biscuits, tea, squashes and beverages.

FIGURE 5

Inter-Temporal Comparison of the GST Incidence
(by Expenditure Deciles)



Sources: For (2010-11) author's estimation, for (2000-01) and (1990-91), Refaat (2008).

4. Kakwani Summary Index of Progressivity

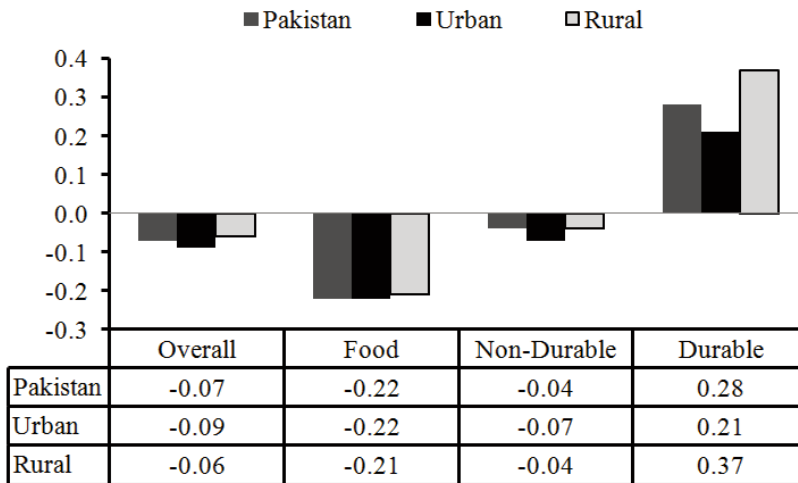
As argued above the graphic presentation of tax progression provides useful information regarding the departure of tax incidence from proportionality; visual inspection becomes difficult when there are a number of comparisons to be made. Therefore, to supplement graphical presentation, most widely used Kakwani Summary Indices of progressivity are developed across regions, provinces and commodity group.

Figure 6 displays magnitudes of Kakwani indices across regions and commodity groups. The negative number of Kakwani Index indicates regressivity in the tax structure while a positive value represents progressivity. In case of proportionality, the value of index is zero. The index ranges from -2 to $+2$; the closer it is to those extremes, the more regressive or progressive a tax would be.

Generally, magnitudes of Kakwani indices are not so large as to make a case of strict regressivity or progressivity of tax structure. It may be deduced that GST incidences in general are proportional. Nonetheless, the comparative magnitudes and signs of indices provide an opportunity to highlight regional and provincial differences with respect to overall incidence as well as incidence with respect to commodity groups.

FIGURE 6

**Kakwani Index of Progressivity
National, Regional and Commodity Groups**

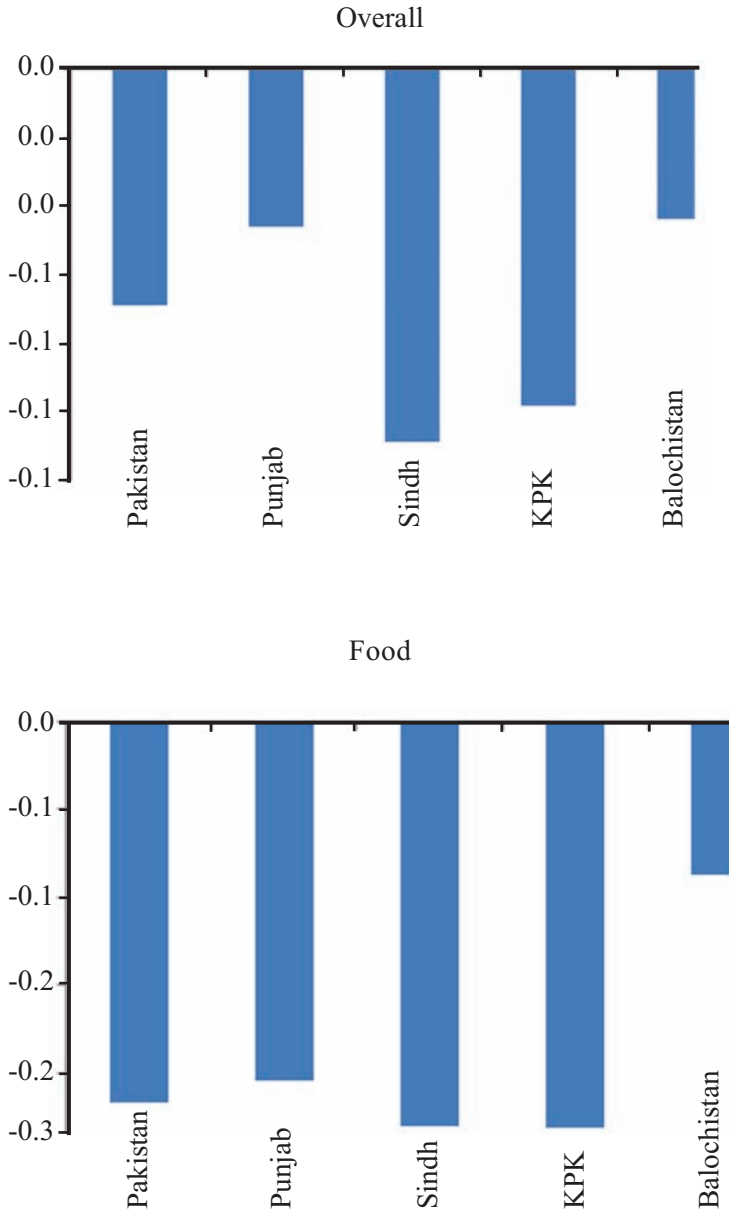


According to the figure, relatively overall GST incidence and incidence of non-durable items are proportional. Although the coefficients of these indices are negative, the magnitude is close to zero. GST incidence of food expenditure seems regressive with relatively high negative magnitudes of Kakwani indices. It is also worth noting that no regional difference exists in terms of magnitudes associated with the GST incidence on food expenditure. Contrary to food and non-durable groups, Kakwani indices with respect to durable expenditures are positive with relatively higher magnitudes. Thus, the GST incidence on durable expenditure seems progressive with significant regional (urban/rural) differences.

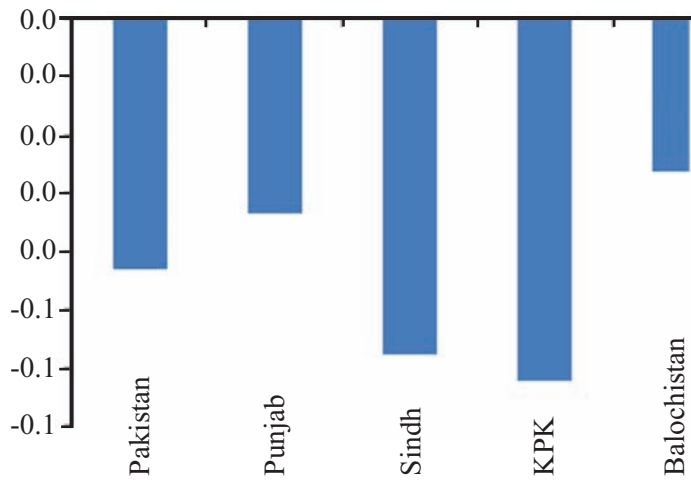
The provincial scenarios in term of Kakwani summary GST incidences are plotted in Figure 7. The GST incidence on overall expenditure, as well as, expenditure on non-durable items in Sindh and Khyber Pakhtunkhwa provinces is relatively regressive as compared with Punjab and Balochistan. Baring Balochistan province, the magnitudes of Kakwani indices for food expenditure is not dissimilar across all provinces. For durable expenditure, the estimated Kakwani indices are positive and thus progressive in the other three provinces, except Sindh. Although, in case of durable items in Sindh the magnitude of regressivity is very small - almost insignificant and possible explanation of this unexpected result would be worthwhile. Apparently, reason for this result is the regressivity after the 8th decile [see Figure 4, (Graph of Sindh)]. Households in Sindh at the 8th decile pay 0.11 per cent of their total expenditure as GST, while the higher income deciles (9th and 10th) pay 0.09 per cent. This may perhaps be due to underreporting of expenditures on durable items by the rich in Sindh.

FIGURE 7

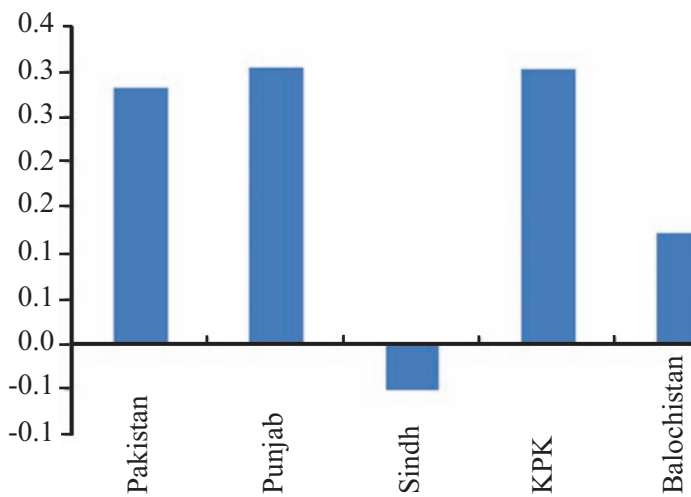
Kakwani Index of Progressivity – Provincial and Commodity Groups



Non Durable



Durable



5. Sensitivity of GST Rate on Tax Progressivity

An indicative exercise is carried out to simulate Kakwani summary index of tax progressivity with non-uniform GST rates by utilizing HIES consumption data and its distribution.

Table 1 furnishes the simulated indices with respect to various scenarios. Some important findings emerge from the hypothetical simulations depicted therein. First, the decrease (increase) in GST with uniform rate will only drop (raise) the revenue from GST leaving the Kakwani Index almost unchanged. This implies that varied GST rate for commodity groups will have to be applied to improve the overall tax progressivity. Second, only the increase in the GST rate for durable expenditure items positively affects the index vis-à-vis increase in revenue. Third, the GST on food plays an important role in the distributional aspect of tax incidence. The lowest (among the proposed scenarios) Kakwani index which indicates relatively more proportional distribution is observed in scenario 9; where zero, 25 and 25 per cent GST rates are proposed for food, non-durable and durable expenditure items, respectively. This scenario also suggests 9 per cent rise in the current revenue level. Furthermore, with zero rates on food items, the current level of revenue may be maintained with 23 per cent GST rates on non-durable and durable items, though the magnitude of Kawwani Index is slightly higher (0.01698 v/s 0.01689) in this simulation (Scenario 10).

This simple and unsophisticated simulation exercise suggests a case of varying rate for different commodities instead of uniform GST rate. Additional research, however, is required to study pros and cons of varying GST rate for equitable distribution of tax burden.

V. Concluding Remarks

The main purpose of this study is to evaluate GST incidence and progressivity by applying the latest available household consumption data which is traditionally used in Pakistan to assess the nature of consumption tax structure. Besides providing the graphical presentation of effective GST rate, Kakwani Summary Indices of tax progressivity are also estimated. Disaggregated results are furnished at national, regional and provincial levels and also for three commodity groups (food, non-durable and durable expenditure items).

TABLE 1

Sensitivity of Kakwani Summary Index of Tax Progressivity
[with respect to different tax scenarios]

Simulation Scenario	Kakwani Index [KI]	Rank Order [Lowest to Highest KI]	Revenue Impact
1. Existing GST Rate – 17%	-0.06888	9	1.00
2. GST – 16%	-0.06898	10	0.94
3. GST – 18%	-0.06879	8	1.06
4. Food (17%) non-durable (17%) and durable (20%)	-0.06519	7	1.01
5. Food (10%), non-durable (17%) and durable (20%)	-0.04760	6	0.90
6. Food (10%), non-durable (20%) and durable (20%)	-0.04703	5	1.02
7. Food (5%), non-durable (20%) and durable (20%)	-0.03339	4	0.95
8. Food (5%), non-durable (25%) and durable (25%)	-0.03010	3	1.16
9. Food (0%), non-durable (25%) and durable (25%)	-0.01689	1	1.09
10. Food (0%), non-durable (23%) and durable (23%)	-0.01698	2	1.00

The findings of the study suggest no strict regressivity or progressivity in GST incidence across regions, provinces and commodity groups for the year 2010-11. In general, graphs of Effective Tax Rate indicate proportionality of tax structure associated with progressivity at upper end of deciles of per capita expenditure. However, the relative intensity in terms of magnitudes of Kakwani Index indicates regressivity in GST on food items and progressivity on items on durable expendi-

ture. Regarding comparison of the research findings of this study with earlier study for the year 2000-01, it may be deduced that the latest incidence of overall expenditure is relatively progressive; contrary to the earlier one which was proportional.

A simulation exercise, in terms of different GST rates for expenditure commodity groups is also carried out and the potential redistributive abilities of non-uniform indirect tax rates are examined. Apparently, the exemption of food items from the GST has a noteworthy effect on equity and progression of the overall tax burden. Approximately, 25 per cent of inequality aversion in terms of Kakwani Summary Index of progressivity was found to generate support for reduction in tax rates on food commodity group.

For policy perspectives, this study proposes reforms in GST to make the tax strictly progressive. One of the directions in tax reform is the application of non-uniform GST rate. To introduce progressivity, tax reforms in terms of exemption or tax reduction are designed by taxing less heavily, those goods for which the total expenditure elasticity is less than unity; so that the budget shares falls, as the total expenditure increase. However, to minimize the efficiency cost of redistribution, higher tax rate is imposed on other goods. Thus, tax reforms in this direction necessitate non-uniformity of tax structure. The paper provides an indicative simulation to observe changes in welfare due to varying rate of GST. Although, the results recommend the case of varying GST rates instead of uniform and single rate for commodity groups for improved distributional equity, nonetheless, additional intensive research is required in this regard, to study the welfare effects of non-uniform tax rate in the broader general equilibrium framework.

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