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Incidence of General Sales Tax in Pakistan: Latest Estimates

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ABSTRACT

The study provides estimates of the 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 the national, regional and provincial levels, and separately for food, non-durable and durable expenditure items. Effective GST rate across deciles of per capita expenditure and the 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 the Kakwani index indicates regressivity and progressivity in GST on food items and items of durable expenditure respectively. A simulation exercise is also carried out to observe the impact of different GST rates for expenditure commodity groups on the distribution of the tax burden.

JEL Classification: H22, H31

Key Words: Tax Incidence, Progressivity, GST, Effective Tax Rate, Kakwani Index, Pakistan

1. PROLOGUE

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

The General Sales Tax (GST) dominates in the tax structure[1] of Pakistan with a 40 percent share in the total tax collection by the Federal Board of Revenue. The revenue collected from GST is roughly 4 per cent of Pakistan's GDP and is imposed[2] on goods sold (imported or manufactured) in Pakistan.

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

[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 from the Federal Board of Revenue (FBR), the Andrew Young School of Public Policy (AYSPS) at the Georgia State University, and the World Bank.

[2] GST in its present form was introduced in Pakistan at the standard rate of 12.5 per cent in 1992. However for reducing the 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 the small businessmen into the tax net. The said rate was, however, subsequently curtailed to 15 per cent due to the pressure from 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 percent in GST was approved by the National assembly. Thus, the GST rate of 17 percent is presently now applicable on the value of goods imported into Pakistan and taxable supplies. This rate is used in computing tax burden in this study.

Recently, the Pakistan Bureau of Statistics 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 a graphical presentation of the tax incidence through ETR, the Kakwani summary indices are also estimated to observe the intensity of GST progressivity. Moreover, a sensitivity analysis has also been attempted to observe the impact of a diverse GST rate for expenditure groups on the tax burden or the distribution of the tax incidence.

The paper is organised as follows. Data and methodological issues are briefly discussed in section 2, while the relevant evidence from earlier studies are provided in section 3. The next section furnishes empirical findings in terms of the overall incidence, distributional impact, inter-temporal comparison and Kakwani summary indices. The findings from the simulation exercise are also discussed in this section. The last section is reserved for some concluding remarks.

2. DATA AND METHODOLOGY

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

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

[3] It is worth to note that the year 2010-11 is characterised by a very low GDP growth rate, high inflation and worse macroeconomic indicators as compared with the year 2004-05. However, the trends in growth and macroeconomic indicators are fairly similar to the year 2000-01.

Despite the criticism by Kemal (2003), Gazdar (2000) and Zaidi (1992) that HIES understates the income accruing to the highest income group and also poorest households are inadequately represented or systematically excluded particularly those that are homeless, HIES data is used intensively by academia, foreign scholars, and the government to determine the welfare status of households, especially in terms of monetary and multidimensional poverty. Nonetheless, this issue is not just an issue pertaining 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 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) summarised the problems with income as:

- It is volatile and subject to temporary shocks. A survey conducted over a particular period ignores the position of the household relative to its life cycle. Ideally, the capacity to pay should be measured relative to permanent or lifetime income;
- Certain types of income tend to be under-represented in surveys, particularly income from agriculture, self-employment, professional services, and capital (interest, dividends);
- 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 salaried remuneration but are either self-employed or work in farms or other family businesses, the assessment of income in a single survey visit to households (like HIES) is not appropriate. 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 current income and might be taken as a

reasonable proxy for permanent income[4]. It is also less likely to be under-reported then income[5]. Thus, per capita household expenditure is preferred in this research as an indicator of household welfare.

Economic incidence model of tax studies analyses the distributional effect of the tax system to evaluate who ultimately bears the burden of taxes. Various incidence measures are suggested in the theoretical and empirical literature to evaluate the distributional impact of taxes. Most of these measures are derived from the social welfare function and assumptions about society's preference for income equity[6]. This paper, however, focuses on the two widely used measures.

One basic measure of economic incidence of tax is to evaluate the average rate of progression (ARP) -- the most common measure used to determine tax progressivity. ARP compares effective tax rates (ETR) across deciles or quintiles of welfare indicator. A tax structure is said to be progressive when effective tax rises when one moves up the scale of welfare; regressive when effective tax falls against the rise in the scale of welfare indicator; and proportional when effective tax rates remain constant across 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 ability-to-pay principle a progressive tax would be regarded as being equitable because those with a greater

[4] 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.

[5] Ercelawn (1991) however argued that similar understatements in expenditure are also possible and subsistence expenditure may well involve quasi-permanent indebtedness.

[6] 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).

ability to pay would pay a higher proportion of their income in the form of taxation[7]. 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 taxes than lower income taxpayers.

Tax progressivity through distribution of ETR is generally presented graphically to depict the departures from proportionality. Although it provides useful information, it cannot quantify the amount of redistribution that 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)[8] 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 reflect a proportional tax.

3. REVIEW OF PAKISTAN'S EMPIRICS

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 income groups. Findings of these studies with brief comments are summarised in Refaqat (2008) and are reproduced in the Appendix for the convenience of

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

[8] The Gini coefficient for a tax concentration curve is called quasi-Gini coefficient. Conceptually, a concentration curve and a Lorenz curve differ in 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*.

interested readers. This section briefly presents the evidence from pertinent studies conducted during the last decade.

A comprehensive study to measure the social incidence of indirect taxes in Pakistan was carried out by Refaqat (2008)[9] for the year 1990-91 and 2000-01. According to the author, the main objective of the study was to analyse how indirect tax reform reflects the policy parameters particularly in the light of equity and distributional considerations envisaged in the tax reform strategy.

Results at the national level for (1990-91) indicate clear progressivity of GST incidence with small (1.08 to 1.52 percent) 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 were quite different and large as compared with the year 1990-91.

The study inferred that the rural and urban GST incidence trend lies very close to each other. The regional incidence for the year 2000-01 averaged around 4.62 percent for rural areas compared with 4.80 percent for urban areas. It was also found that the overall incidence trend for the regional population appeared to be progressive for both urban (at least over the bottom six deciles) and rural areas.

Regarding disaggregated incidence at the commodity level for the year 2000-01, it was concluded that the GST on food items, clothing, fuel and utilities appears to be regressive. The author argues that this should not be a surprise given their underlying expenditure patterns 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 articles appeared to be proportional for a large segment of the population. From the detailed disaggregated analysis at commodity and regional levels, the author suggested that a separate analysis provides a very good opportunity to the

[9] Refaqat submitted this as a thesis for the degree of Doctor of Philosophy (University of Bath).

policymakers to fine- tune GST exemptions to safeguard the poor (and not necessary at too much cost to the exchequer).

Based on this work on social incidence of indirect taxation in Pakistan, Refaqat also derived two papers. In the 2003 IMF working paper, she provided a comprehensive incidence and distributional analysis of the GST in Pakistan (Refaqat, 2003) using data from HIES. She 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 percent. She also analysed detailed categories of consumption goods and found that the tax burden on some specific items including cigarettes, cooking oil, gas, kerosene and electricity is regressive.

Similarly, Refaqat (2005) assessed the welfare impact of GST reforms on Pakistani households using two HIES data sets of 1991 and 2001. She concluded "Even though we did not find GST incidence to be clearly regressive but our results show these reforms to be slightly welfare reducing during the period of (1990-2001). Our results using distributional characteristics approach show that taxation of items such as vegetable ghee, sugar and basic fuels is hurting the poor. We find poor households facing a very similar level of GST tax incidence compared to the richer households despite clear differences in consumption".

It is worth reproducing the crux of Refaqat's work (2003, 2005 and 2008) on social incidence in Pakistan. She concluded that a move from dependence on trade tax revenues to GST/VAT revenues has made the overall indirect tax system of Pakistan a little more progressive. Regarding GST incidence specifically, she asserts that "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 and due to the patterns of exemptions that clearly favored the poor. However, post-reform (2000-01) GST/VAT incidence, despite focus on 'equity' and 'distributional' considerations in the reform agenda, appears at best to be proportional". She has also carried out a high level of disaggregation of the incidence to reveal its sensitivity to key commodities. Her work concludes "it appears post- reform (2000-01) indirect tax incidence is sensitive to taxation of key commodities which include sugar, edible oils, and basic fuel/utilities. Incidentally, taxation of these commodities also appears to

have strong distributional effect on the poor and our results show that the 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 they estimated incidence distribution of all major taxes (direct and indirect) in Pakistan. With respect to GST incidence they deduced that the effective tax rate is proportional to slightly progressive. Interestingly, they found that the distribution of the overall tax burden in Pakistan is progressive. However, this progressivity, according to their study comes about almost exclusively because of the burden of the income tax falling on the top income group. Otherwise, over most households, both direct and indirect taxes are about proportional.

4. EMPIRICAL FINDINGS

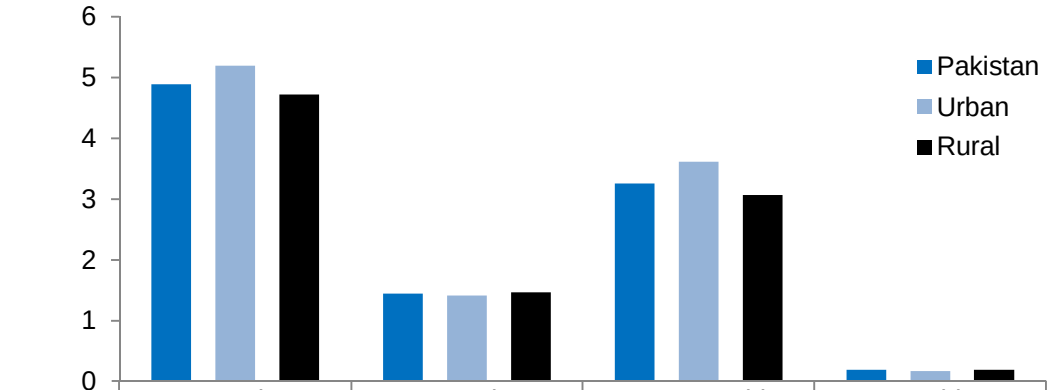
This section provides major findings of the study in terms of overall GST incidence as well as its distribution across deciles of expenditure for the year 2010-11. The distributional impact of GST is presented across regions, provinces and commodity groups as well. Besides furnishing a comparison of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

4.1. Estimates of Overall Incidence

Figure 1 displays estimated magnitudes of the average tax incidence across regions and commodity groups, while provincial incidences are portrayed in Figure 2. The overall incidence of GST is estimated at 4.9 percent. As expected the urban incidence is slightly higher (5.19 percent) as against rural incidence of GST which is estimated at 4.7 percent. Figure 1 also reveals GST incidences across food, non-durable and durable expenditures. Due to the exemption of main food items from the GST net, food incidences are the lowest. On the average, the burden of GST on non-durable expenditure items is 3 percent as against 0.19 percent on durable expenditure items. A sharp difference in terms of regional incidence is observed in non-durable expenditure, where urban incidence is 3.61 percent as against 3.06 in rural areas.

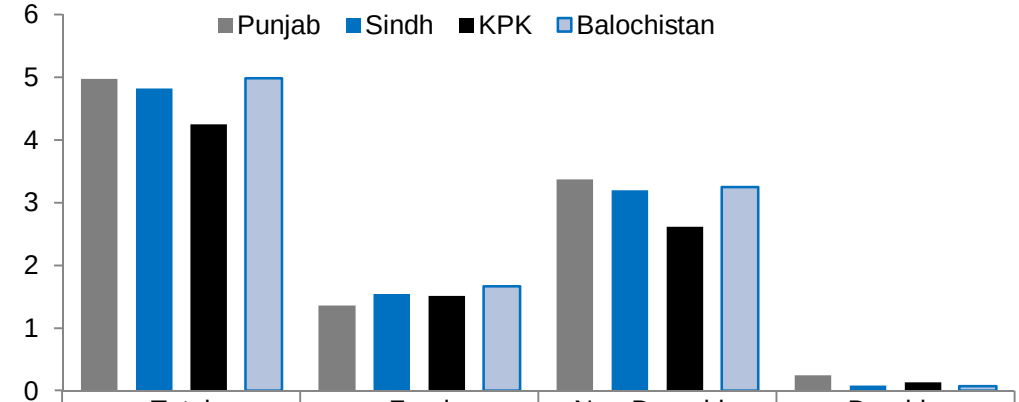
Provincial differences in GST incidences reveal an interesting phenomenon -- the overall lowest incidence is estimated for Khyber Pakhtunkhwa while the highest is observed in Balochistan. Also food incidences are relatively higher in both of these provinces contrary to Punjab and Sindh. GST incidence on durable expenditure is the highest and significantly different in Punjab province which is relatively more developed in comparison with other provinces.

Figure 1
Average Tax incidence across Regions and Commodity Groups



	Total	Food	Non-Duraable	Durable
Pakistan	4.88	1.45	3.25	0.19
Urban	5.19	1.41	3.61	0.17
Rural	4.72	1.46	3.06	0.19

Figure 2
Average Tax incidence across Provinces and Commodity Groups



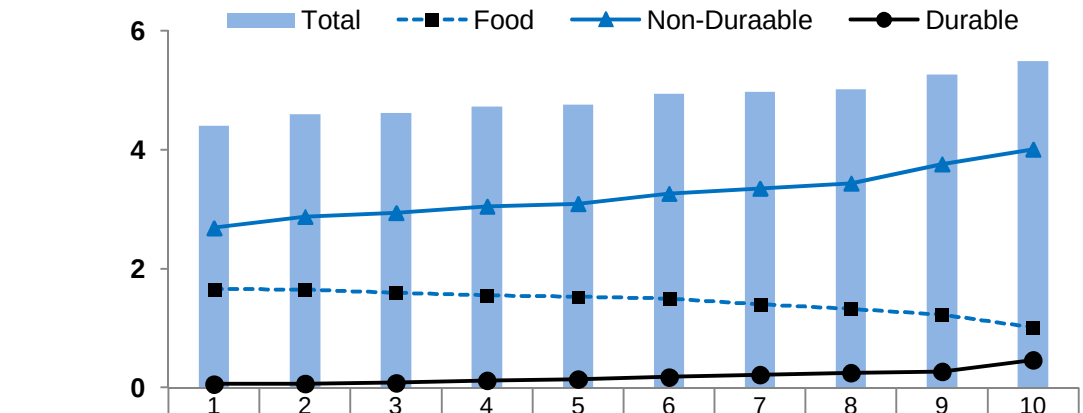
	Total	Food	Non-Duraable	Durable
Punjab	4.97	1.36	3.37	0.25
Sindh	4.82	1.54	3.20	0.08
KPK	4.25	1.51	2.61	0.13
Balochistan	4.98	1.67	3.25	0.07

4.2 Evaluation of Distributional Impact of GST

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

Figure 3
GST Incidence across Region – Per Capita Expenditure Deciles

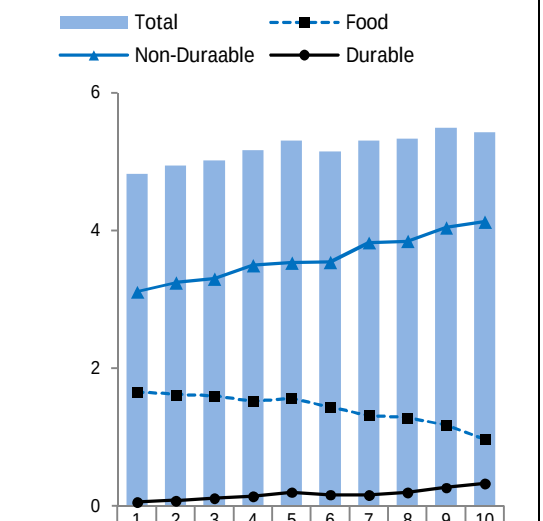
PAKISTAN



	1	2	3	4	5	6	7	8	9	10
Total	4.41	4.59	4.62	4.73	4.77	4.95	4.97	5.02	5.26	5.49
Food	1.66	1.65	1.60	1.56	1.53	1.50	1.41	1.33	1.23	1.02
Non-Duraable	2.69	2.88	2.94	3.05	3.10	3.26	3.35	3.44	3.76	4.01
Durable	0.06	0.07	0.08	0.12	0.14	0.18	0.22	0.25	0.27	0.47

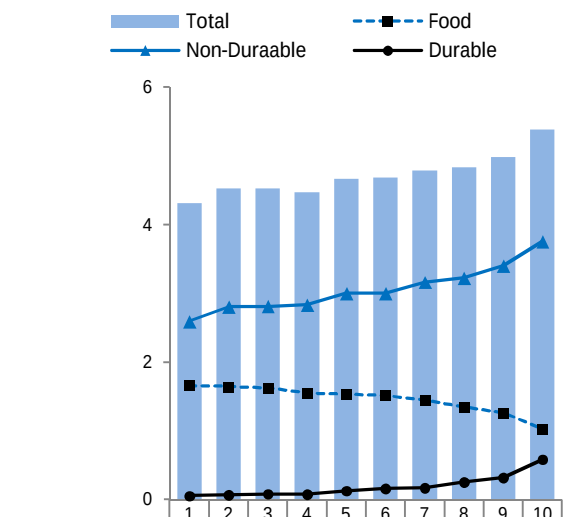
GST Incidence across Region – Per Capita Expenditure Deciles

URBAN



	1	2	3	4	5	6	7	8	9	10
Total	4.82	4.94	5.02	5.16	5.30	5.14	5.30	5.33	5.49	5.43
Food	1.65	1.62	1.60	1.52	1.57	1.44	1.32	1.29	1.17	0.97
Non-Duraable	3.11	3.24	3.30	3.50	3.53	3.54	3.83	3.85	4.05	4.13
Durable	0.06	0.08	0.12	0.15	0.20	0.17	0.16	0.20	0.27	0.33

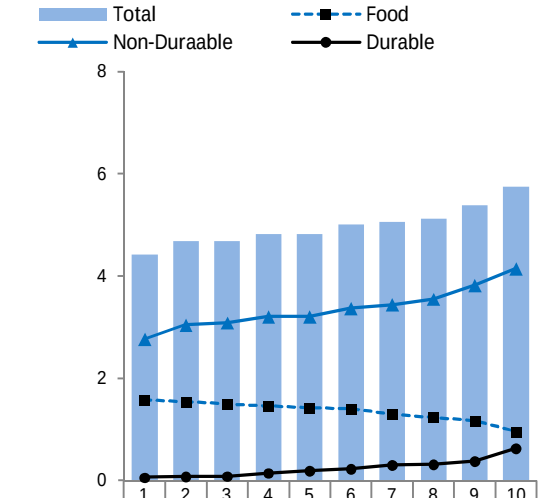
RURAL



	1	2	3	4	5	6	7	8	9	10
Total	4.31	4.52	4.52	4.47	4.67	4.69	4.78	4.84	4.99	5.38
Food	1.66	1.65	1.63	1.56	1.53	1.52	1.44	1.35	1.26	1.03
Non-Duraable	2.60	2.81	2.81	2.83	3.00	3.00	3.17	3.23	3.40	3.76
Durable	0.06	0.07	0.08	0.08	0.13	0.16	0.17	0.26	0.32	0.59

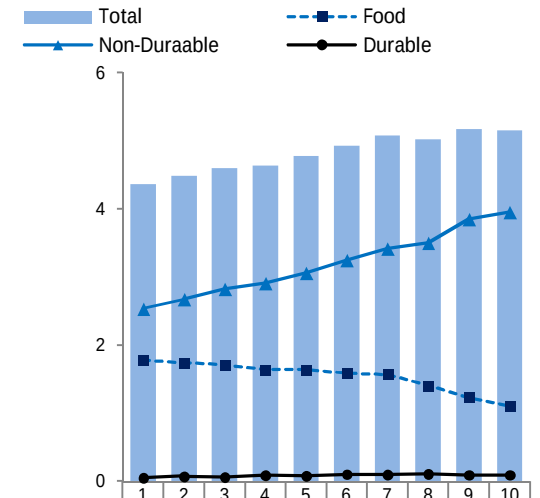
Figure 4
GST Incidence across Provinces – Per Capita Expenditure Deciles

PUNJAB



	1	2	3	4	5	6	7	8	9	10
Total	4.42	4.68	4.68	4.82	4.82	5.01	5.06	5.12	5.38	5.75
Food	1.59	1.55	1.50	1.47	1.42	1.41	1.30	1.24	1.17	0.96
Non-Duraable	2.77	3.05	3.09	3.21	3.21	3.37	3.45	3.56	3.83	4.15
Durable	0.06	0.08	0.09	0.15	0.20	0.23	0.31	0.32	0.39	0.64

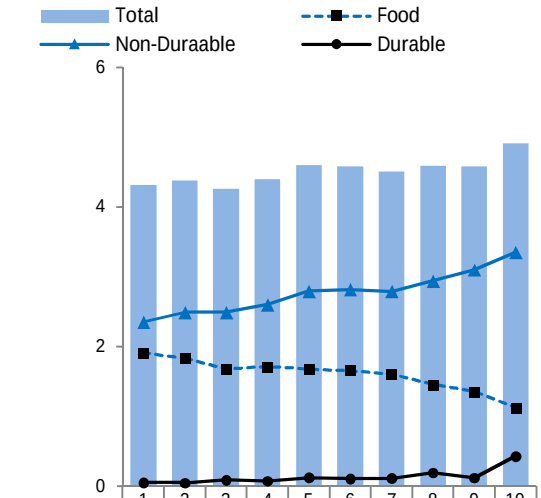
SINDH



	1	2	3	4	5	6	7	8	9	10
Total	4.36	4.49	4.60	4.63	4.78	4.93	5.08	5.02	5.17	5.15
Food	1.78	1.74	1.71	1.64	1.64	1.58	1.57	1.41	1.23	1.10
Non-Duraable	2.53	2.67	2.82	2.91	3.06	3.25	3.41	3.50	3.85	3.95
Durable	0.05	0.07	0.06	0.09	0.08	0.10	0.10	0.11	0.09	0.09

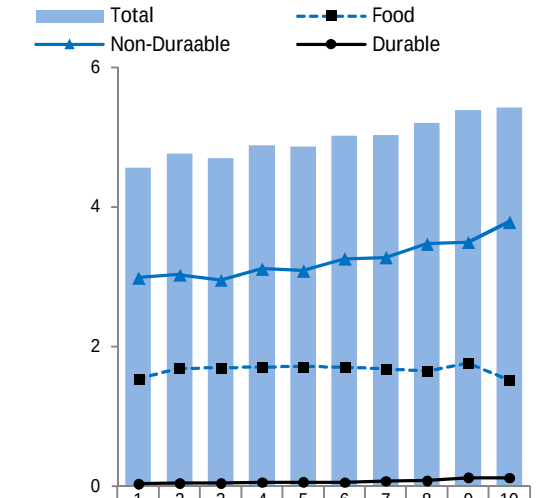
GST Incidence across Provinces – Per Capita Expenditure Deciles

KHYBER-PAKHTUNKHWA



	1	2	3	4	5	6	7	8	9	10
Total	4.32	4.37	4.26	4.39	4.60	4.58	4.51	4.59	4.58	4.91
Food	1.91	1.83	1.68	1.71	1.68	1.65	1.60	1.46	1.36	1.13
Non-Duraable	2.35	2.49	2.49	2.60	2.80	2.82	2.79	2.94	3.10	3.35
Durable	0.05	0.05	0.09	0.08	0.12	0.11	0.11	0.19	0.12	0.43

BALOCHISTAN



	1	2	3	4	5	6	7	8	9	10
Total	4.56	4.76	4.70	4.88	4.86	5.02	5.03	5.20	5.38	5.42
Food	1.54	1.69	1.70	1.71	1.71	1.71	1.68	1.65	1.76	1.52
Non-Duraable	2.99	3.03	2.95	3.12	3.09	3.26	3.28	3.47	3.50	3.78
Durable	0.04	0.05	0.05	0.06	0.06	0.06	0.07	0.08	0.12	0.12

It appears that the overall GST incidence is progressive as the incidence or tax proportion is increasing 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 items[10] 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 is depicting 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 the incidence on non-food items is slightly progressive. Nonetheless, the regressivity of tax in food items is more distinct in the rural context.

The provincial distributions of GST incidence are portrayed in Figure 4. In general, progressivity trends of commodity groups are similar with slight variations. Distributions of incidence on durable expenditure items are proportional in Sind, Khyber Pakhtunkhwa and Balochistan provinces. Nonetheless, a slight progression may be observed in the case of durable expenditure of Punjab. Incidence of food items is relatively proportional in the Balochistan province, while regressivity in the incidences of food 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.

4.3 Inter-Temporal Comparison of GST Incidence

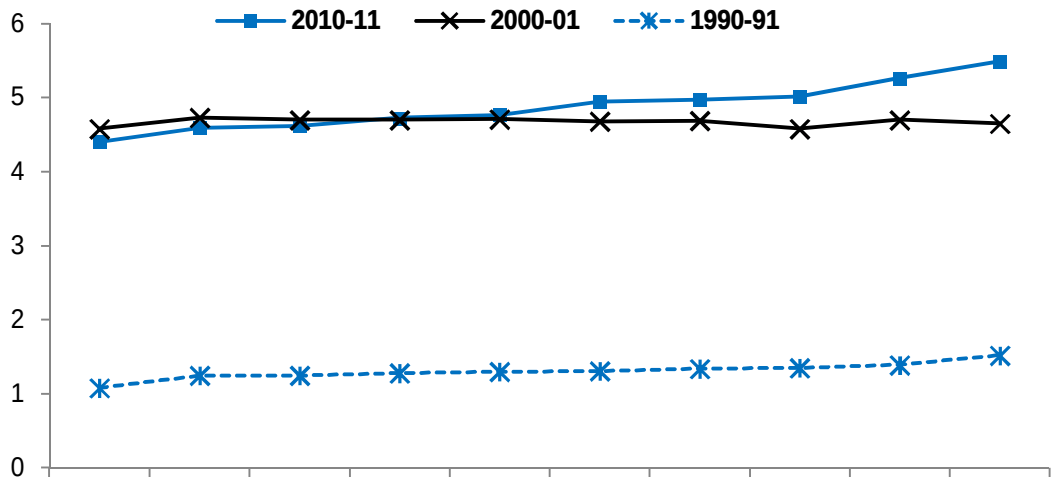
Figure 5 displays a comparative distribution of GST incidence across expenditure deciles in Pakistan. The figures for the years 1990-91 and 2000-01 were taken from earlier study by Refaqat (2008). The magnitudes of tax incidence for the year 2004-05, reported in Wahid and Wallace (2008) are not comparable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

One important observation that 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 in the year 2010-11. Moreover, the tax burden is

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

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.

Figure 5
Inter-Temporal Comparison of the GST Incidence
[By Expenditure Deciles]



	1	2	3	4	5	6	7	8	9	10
2010-11	4.41	4.59	4.62	4.73	4.77	4.95	4.97	5.02	5.26	5.49
2000-01	4.58	4.73	4.70	4.70	4.71	4.68	4.69	4.58	4.70	4.65
1990-91	1.08	1.25	1.25	1.28	1.30	1.31	1.34	1.35	1.39	1.52

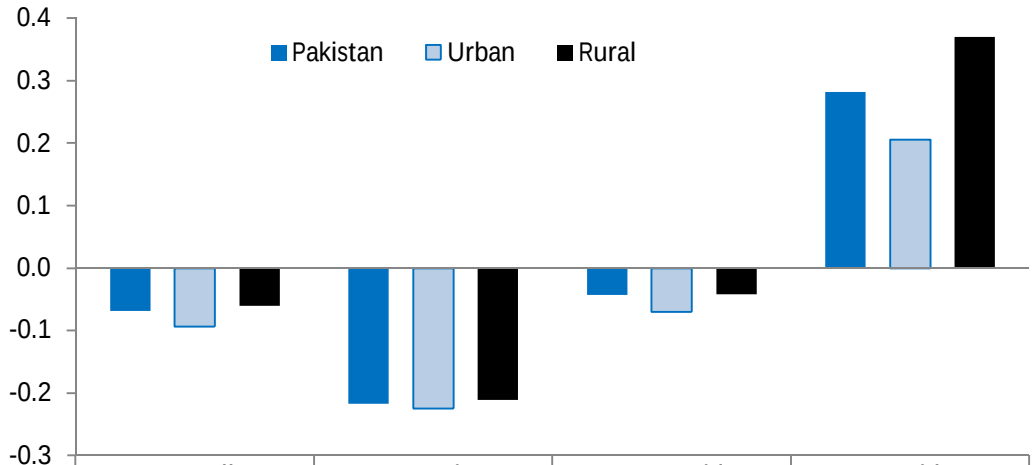
Source: [2010-11] – This study estimates | [2000-01] and 1990-91] – Rafaqat (2008)

4.4 Kakwani Summary Index of progressivity

As argued above that 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 the graphical presentation, the most widely used Kakwani summary indices of progressivity are developed across regions, provinces and commodity groups.

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.

Figure 6
Kakwani Index of Progressivity – National, Regional and Commodity Groups

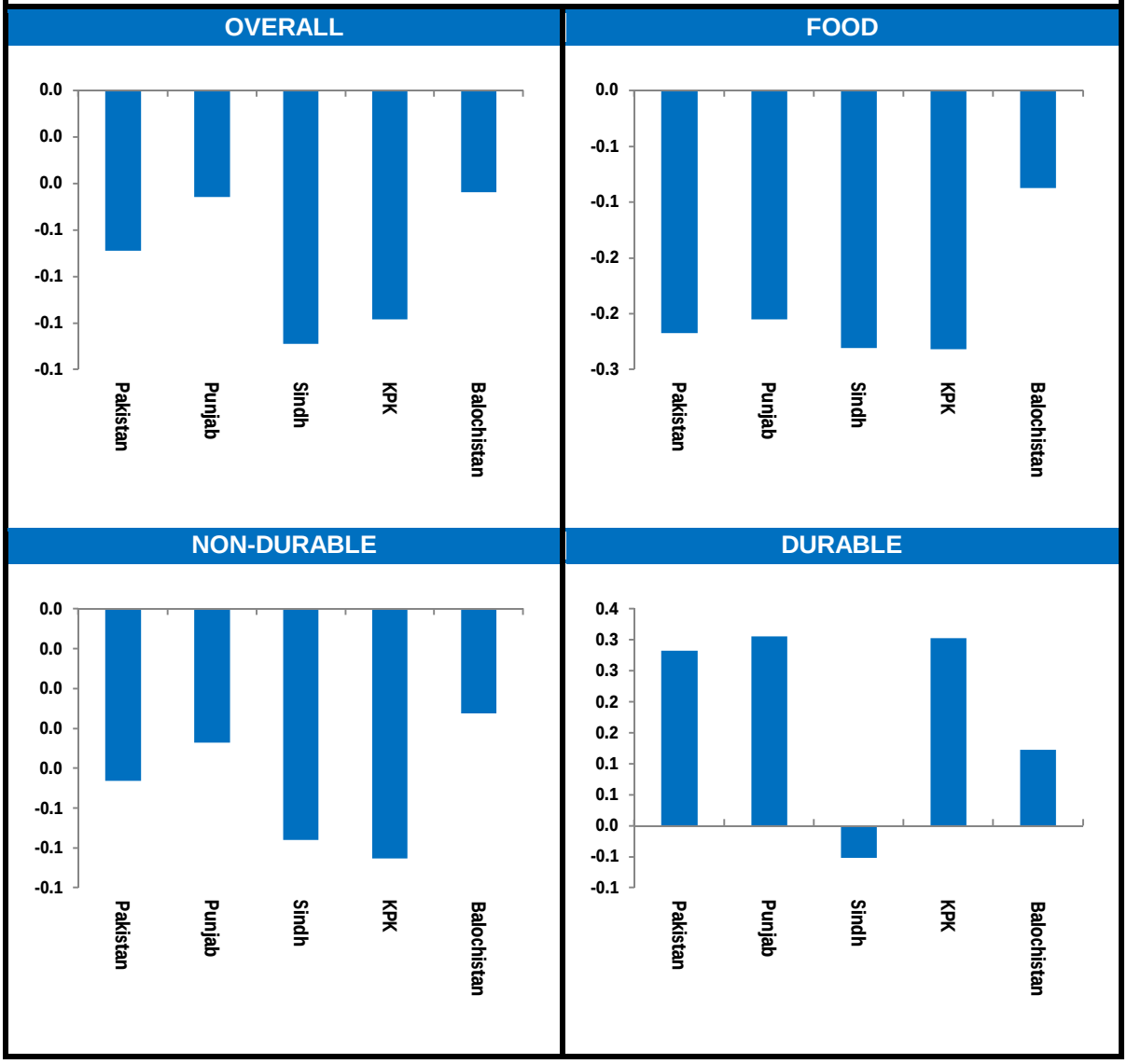


	Overall	Food	NonDurable	Durable
Pakistan	-0.07	-0.22	-0.04	0.28
Urban	-0.09	-0.22	-0.07	0.21
Rural	-0.06	-0.21	-0.04	0.37

Generally, magnitudes of Kakwani indices are not so large to make a case for strict regressivity or progressivity of the 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.

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 incidences of food expenditure seem regressive with high negative magnitudes of Kakwani indices. It is also worth noting that no regional differences exist in terms of the magnitudes associated with GST incidence on food expenditure. Contrary to food and non-durable groups, estimated Kakwani indices with respect to durable expenditures are positive with relatively higher magnitudes. Thus GST incidence on durable expenditure seems progressive with significant regional (urban/rural) differences.

Figure 7
Kakwani Index of Progressivity – Provincial and Commodity Groups



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 are relatively regressive as compared with Punjab and Balochistan. Baring Balochistan province, the magnitudes of Kakwani indices for food expenditure are not dissimilar across provinces. For durable expenditure the estimated Kakwani indices are positive and thus progressive in all provinces except Sind.

4.5 Sensitivity of GST Rate on Tax Progressivity

An indicative exercise is carried out to simulate Kakwani summary index of tax progressivity with diverse GST rates by applying HIES consumption data and distribution. Table 1 furnishes the simulated indices with respect to various scenarios.

Table 1
Sensitivity of Kakwani Summary Index of Tax Progressivity
[with respect to different tax scenarios]

	Simulation Scenarios	Kakwani Index [KI]	Rank Order [Lowest to Highest KI]	Revenue Impact
1	Existing GST Rate – 17 percent	-0.06888	9	1.00
2	GST – 16 percent	-0.06898	10	0.94
3	GST – 18 percent	-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

Few important findings emerge from the hypothetical simulations depicted in the table. 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 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 percent GST rates are proposed for food, non-durable and durable expenditure items. This scenario also suggests 9 percent rise in the current revenue level. Furthermore, with zero rates on food items, the current level of revenue may be maintained with 23 percent 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 the pros and cons of varying GST rate for equitable distribution of tax burden.

5. CONCLUDING REMARKS

The main purpose of this research was 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 graphical presentation of effective GST rate, Kakwani summary indices of tax progressivity are also estimated. Disaggregated results are furnished at the national, regional and provincial levels and also for three commodity groups (food, non-durable and durable expenditure items).

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 durable expenditure items. Regarding the comparison of research findings of this study with the 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. The results recommend the case of varying GST rates instead of uniform and single rate for improved distribution of tax burden. Nonetheless, additional intensive research is required in this regard to study the impact in the broader general equilibrium framework.

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APPENDIX

PAKISTAN TAX INCIDENCE STUDIES
[Reproduced from Refaqat (2008)]

One of the earliest studies of tax incidence for Pakistan is Jeetun (1978). This study was done following the Pechman and Okner (P&O) (1974) methodology and almost following the same set of assumptions for allocation of taxes. Jeetun's (1978) results showed that total tax incidence and total indirect tax burden exhibited either slight progressivity or a U-curve pattern (i.e. implying redistribution taking place from the very poor and the rich classes towards the middle income classes). He also found urban classes bearing a higher proportion of tax incidence than rural classes. The novelty of this study was that it was one of the first studies that covered the issue of tax incidence in Pakistan and also provided detailed disaggregated results based on incidence of components of tax system.

Kazi (1984) aimed at analysing inter-sectoral tax burden for Pakistan. For this reason, although the analysis is similar to conventional P&O type of methodology, the expenditure and taxes allocation takes place on the basis of sectoral expenditure shares and sectoral population. Their results showed over-taxation of agriculture when compared with the relative capacity of taxation in each sector. They also found that rich farmers in agriculture sector are under-taxed.

Malik and Saqib (1989), also employ P&O (1974) type of methodology to allocate the tax burden. However, tax burden allocation is further refined to take account of cascading effect of taxes by using the input output tables for (1975-76). They also explicitly address the question of redistribution of income due to taxes using the Suite index. Although they report the entire tax system to be regressive (pp.18), the results at best appear to be U-shaped particularly at national level.

Shirazi et al., (2001) is perhaps the only study that attempts to ascertain the fiscal incidence for Pakistan. They also use P&O methodology to allocate tax burdens and expenditure benefits. The shortcoming of this analysis is the arbitrary way the

expenditure and tax burden is distributed across the population. As a result the findings for the poorest cohort look particularly dubious.

Kemal (2001) reports the tax incidence results for the overall tax system for 13 years (1987-88 to 1999-00). However, this analysis can be only indicative because this study explicitly says nothing about the data, methodology and assumptions used in this tax incidence study.

The novelty of Refaqat's (2003) VAT analysis is that although it uses the conventional methodology it drops the assumption of proportionality between tax burden and tax revenues. This study shows that GST/VAT appears to be slightly regressive when income is used as a base but this regressivity disappears when expenditure is used as incidence base. The other important aspect of this study is that it provides a comprehensive breakdown of VAT incidence on main commodities including important items such as cooking oils, kerosene oils, electricity etc. It appears that disaggregated findings are not particularly sensitive to the choice of base. It appears tobacco tax, kerosene oil, gas-pipe and electricity consumption taxation under GST are highly regressive.

SPDC (2004) is another comprehensive look at federal taxation in Pakistan. This study also uses the conventional incidence approach but like Refaqat (2003) drops the proportionality assumption. This study finds all components of indirect tax system along with the overall tax system clearly regressive. The study finds if fertilisers and pesticides are exempted from GST net, it will make GST incidence slightly progressive. The novelty of the study is to attempt to measure effective taxation; however, this study uses 1989-90 input output tables for Pakistan and provides no information on how these tables were updated for 2001-02, which makes this study quite susceptible.

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