Estimating the Distributional Burden of General Sales Tax in Pakistan

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Pakistan's tax regime heavily relies on indirect taxes, constituting 60 percent of total tax receipts, of which general sales tax (GST) is a major component. This paper assessed who bears how much burden of GST levied on domestic production and sales by examining its incidence and distributional burden across household deciles for the year 2018-19. The paper maintained that even if the final product is exempted from tax, it incorporates the impact of taxes levied on intermediate inputs it uses. In order to trace these cascading effects of taxes, the paper used an input-output model-based approach. The results showed that the overall incidence of GST was, on average, 6.7 percent. The distribution of incidence was found to be regressive across the board as well as in rural and urban areas. Analysis by commodity groups indicated that basic food items bore the highest incidence and displayed the highest extent of regressivity across all deciles. This suggests that the poorer segments of society bear a relatively greater burden of GST in Pakistan.

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1. INTRODUCTION

The literature suggests that the burden of indirect taxes often is not evenly distributed. Who bears a higher and who bears a lower burden in proportion to their income depends on the design of the tax regime. Investigating who actually bears the burden of a tax requires studying the incidence of taxation across different tiers of economic groups. This paper is an attempt in this direction.

The structure of federal taxes in Pakistan heavily relies on indirect taxes, which constituted 63 percent of total tax receipts in 2021-22, whereas direct taxes constituted 37 percent (Table 1). Of the 63 per cent of indirect taxes, general sales tax (GST) dominated with a share of 41 percent, whereas customs duties (CD) and federal excise duty (FED) constituted 16 percent and 5 percent, respectively.

Table 1

Composition of Federal Taxes (% Share)

Tax Head	2000-01	2004-05	2009-10	2014-15	2018-19	2021-22
A. Direct Taxes	**31.8**	**31.1**	**39.6**	**39.9**	**37.8**	**37.2**
B. Indirect Taxes	**68.2**	**68.9**	**60.4**	**60.1**	**62.2**	**62.8**
General Sales Tax (GST)	39.1	40.4	38.9	42.0	38.1	41.2
Customs Duty (CD)	16.6	19.5	12.1	11.8	17.9	16.4
Federal Excise Duty (FED)	12.5	9	9.4	6.3	6.2	5.2
Total (A+B)	**100**	**100**	**100**	**100**	**100.0**	**100**

Source: Federal Board of Revenue (FBR) Annual Report (Various Issues).

Since indirect taxes are levied on goods and services that are (ultimately) consumed, they can be shifted forward (to consumers). Hence, they place an economic burden on taxpayers. Incidence analyses generally focus on economic incidence as it tells who bears the final burden of taxes that are shifted forward. A tax is progressive if the final tax burden as a percentage of income is higher on high-income individuals relative to low-income individuals, regressive if it is higher on low-income individuals relative to high-income individuals, and it is proportional if the burden is the same percentage on all individuals relative to their income. [1]

The literature on the incidence of taxation advocates that direct taxes (such as income tax) impose a relatively greater burden on the richer segments and, hence, are generally considered progressive. On the other hand, indirect taxes (such as taxes levied on goods and services) impose a relatively greater burden on the poorer segments of society as a large part of the income of the poor is spent on consumption, particularly food, hence, are generally considered regressive.

Studies, generally, have examined the distribution of incidence of taxes or the distributional burden of taxation by employing the approach of average rate of progression. This approach uses a priori assumptions from economic theory to ascertain who bears the final burden of taxes and employs household survey data to compute average tax rates (ATRs) for each household (total tax liability of each household as a proportion of its total income/expenditures). It then compares the ATRs across households based on a welfare scale (income or expenditures) to examine the progressivity, regressivity or proportionality of a tax.

The work by Pechman & Okner (1974) is considered the standard analysis of computing ATRs using microdata to assess the burden of taxation on the US economy. Their result showed that the US tax system was nearly proportional. Later studies followed the same approach to examine the distribution of tax burden for the US economy, such as Musgrave, et al. (1974) & Browning (1978, 1985).

Lovejoy (1963); McLure (1977); Wasylenko (1986); Sjoquist & Green (1992); Alleyne (1999); Alleyne, et al. (2004) assessed the incidence of direct and indirect taxes

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[1]A progressive tax is considered equitable because those with a greater ability to pay would pay a higher proportion of their income in the form of taxation. However, a proportional tax may also be viewed as equitable to the extent that all taxpayers would pay the same proportion of their income as tax. Consequently, higher-income taxpayers would be paying a higher absolute amount of tax than lower-income taxpayers (Jamal & Javed, 2013).

in Jamaica using average rate of progression. All these studies found indirect taxes to be proportional. Some studies found taxes to be slightly progressive for the lower-income groups and slightly regressive for the upper-income groups, while some found the opposite results. Kaplanoglou & Newbery (2003) studied the distributional impact of indirect taxation in Greece. They found that poorer households paid a higher proportion of their total expenditure in indirect taxes, while richer households paid a lower proportion.

Studies undertaken in Pakistan have also considered average rate of progression approach to examine the distributional burden of indirect taxes. One of the earliest studies was conducted by Jeetun (1978), who estimated the distribution of tax burden across different income groups by rural and urban areas for the year 1972-73. His results showed that the total incidence of all taxes exhibited slight progressivity. Rural-urban comparison indicated that higher-income groups in rural areas were greatly undertaxed compared to their urban counterparts.[2]

Malik & Saqib (1989) showed a regressive tax system in rural areas, where all components of indirect taxes (import duties, sales taxes, and excise duties) exhibited a regressive pattern. However, in urban areas, import duties and excise duties were regressive, while sales tax was slightly positive. SPDC (2004) also showed that all components of the indirect tax system along with the overall system of indirect taxes portrayed regressive patterns.

Refaqat (2008) while analysing the distributional considerations of the GST as a result of tax reforms initiated in the 1990s, illustrated that the progressivity of GST in 1990-91 (pre-reform era) turned to proportionality in 2001-02 (post-reform era), despite exemptions for basic food items. Commodity-wise results showed the regressivity of GST on food items, clothes, fuel and utilities, progressivity on durable items, and POL products, and proportionality on tobacco and personal care items. Ara (2022) found that the pattern of incidence of indirect taxes on essential food items, which cover a large share of the expenditures of poor households, was regressive across all household deciles. On the other hand, the pattern of incidence on non-essential food items, which constitute a larger share in the expenditures of the rich segment, is proportional for the bottom 40 percent household and progressive for the top 60 percent.

Wahid & Wallace (2008) indicated that the incidence of all indirect taxes combined was relatively proportional. Individually, the results suggested that the incidence of the GST and customs were proportional for the lower deciles and progressive for the upper deciles, while excise duty was regressive. Jamal & Javed (2013) indicated the proportionality of the GST structure, which was associated with progressivity for the upper end of deciles of per capita expenditure. The urban incidence of the GST was higher than the rural incidence.

Refaqat (2008) and Jamal & Javed (2013) while estimating the incidence of the GST considered taxes levied on final consumption only and did not incorporate taxes levied on intermediate inputs used in the production of the final output, which constitutes

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[2]All studies discussed here considered households as a unit of analysis. They have analysed the distributional aspect of indirect taxes by estimating incidence across households belonging to different income groups by assuming that indirect taxes were to be borne, i.e., full forward shifting of indirect taxes by consumers who consume taxable commodities.

a substantial part of total tax revenue. Furthermore, since they did not consider the taxes on intermediate inputs, they did not account for the items that are exempted from tax in their analysis. It is argued that even if the final output is exempted from tax, its price includes an implicit tax, which is transferred through taxes levied on inputs that were used to produce it. Estimating the incidence of indirect taxes without capturing the impact of taxes on inputs is likely to produce misleading results.

Studies have incorporated taxes on inputs while assessing the incidence of taxes on final goods. In such cases, their analyses were not based on nominal tax but on tax rates computed by using the input-output framework. These include Ahmad & Stern (1989); Malik & Saqib (1989); Bahl (1991); Alleyne, et al. (2004); SPDC (2004); Wahid & Wallace (2008), among others.

Though Wahid & Wallace (2008) and SPDC (2004) accommodated the taxes levied on intermediate inputs, they did not estimate the incidence at a disaggregated level, i.e. by considering different consumption items such as food, utilities, etc. Analysing the distribution of incidence by item or commodity group helps understand the tax burden according to the consumption patterns of the poor and rich.

This paper has estimated the incidence and the distributional burden of GST levied at domestic production and sales in Pakistan as it the largest component of indirect taxes. For this, it has employed the average rate of progression approach. It has addressed the limitations of the studies discussed in the preceding paragraphs, i.e., it has taken into account the cascading effect of implicit taxes (indirect taxes levied on inputs) by using the latest available Input-Output Table (IOT) for the year 2010-11. It has used the latest Household Integrated Economic Survey (HIES) 2018-19 to obtain household expenditures. In addition, it has looked at the distributional burden of GST by commodity groups that households consume.

The paper is organised as follows. Section 2 lays out the methodology used to estimate the incidence of GST and its distributional burden. Section 3 presents the estimation results and their explanation. Finally, Section 4 concludes the discussion and presents recommendations.

2. RESEARCH METHODOLOGY

The study utilised an IOT that allows tracing the cascading effects of indirect taxes on intermediate inputs. Hence, it measures the income of a household that goes away because of both taxes on final consumption and intermediate inputs used to produce final items for final consumption.

To incorporate this feature, input tax adjusted effective tax rates (ETRs) for each sector in the IOT were computed by employing the IOT's input coefficient matrix (see Ahmed & Stern, 1991).

In the simple IOT model of production with perfect competition and constant return to scale, the equilibrium price condition can be written as:

$$P_s = P_b A + V \qquad \ldots \qquad \ldots \qquad \ldots \qquad \ldots \qquad \ldots \qquad \ldots \qquad \ldots \qquad (1)$$

Where vector P_s represents the seller's price, i.e., the price received by producers for sales, P_b represents the buyer's price, i.e., the price paid by consumers on buying goods for final consumption as well as by producers for buying intermediate inputs, A is the

fixed coefficient matrix of IOT, and *V* is a vector of payments to factors of production or value added.

In the presence of taxes, the buyer's prices become:

$$P_b = P_s + T \qquad \ldots \qquad \ldots \qquad \ldots \qquad \ldots \qquad \ldots \qquad \ldots \qquad \ldots \qquad (2)$$

Or

$$P_s = P_b - T \qquad \ldots \qquad \ldots \qquad \ldots \qquad \ldots \qquad \ldots \qquad \ldots \qquad \ldots \qquad (3)$$

Substituting Equation 3 into Equation 1 gives:

$$P_b - T = P_b A + V \qquad \ldots \qquad \ldots \qquad \ldots \qquad \ldots \qquad \ldots \qquad \ldots \qquad (4)$$

Or

$$P_b = T(I - A)^{-1} + V(I - A)^{-1} \qquad \ldots \qquad \ldots \qquad \ldots \qquad \ldots \qquad \ldots \qquad (5)$$

This indicates that the purchaser's price is the sum of two components. The component $T(I - A)^{-1}$ is the input tax adjusted ETR vector (product of statutory tax rates and inverse of the (I-A) matrix). The component $V(I - A)^{-1}$ is the per-unit resource cost vector (product of per-unit value-added and inverse of the (I-A) matrix), which is the basic price vector or prices in the absence of tax.

This ETR is based on the assumption of full forward shifting of indirect taxes, i.e., the burden of indirect taxes is borne by consumers in proportion to their expenditures.

The methodology employed to compute the incidence of GST and its distributional burden across households comprised of following steps.

(i) Computation of Nominal Tax Rates

The variable *T* in Equation (6) is the prevailing statutory GST rate. The question is whether to take statutory rate or nominal rates of GST. Nominal rates are based on revenue collection and gross value added (GVA). Studies have used both rates. However, the nominal rate helps overcome the issue of tax compliance and matching tax burden with revenue collection. The present study computed nominal rates for GST instead of taking statutory tax rates. Nominal rates were computed in the following manner.

    (a) The mapping of revenue collections of GST was carried out with sectors in the IOT to acquire revenue collection from each sector, i.e., the mapping of the revenue collection of 882 commodities with 81 sectors in the IOT.

    (b) The shares of GVA for each sector of were calculated from the IOT 2010-11. These shares were then applied to the total GVA (GDP at factor cost) for the year 2018-19 to obtain sector-wise GVA for 2018-19.

    (c) Nominal GST rate of each sector was computed by dividing revenue collection of respective sector with its GVA.

(ii) Computation of Effective Tax Rate

Nominal rates and the IOT coefficient matrix, *A*, were then used to compute the ETR for each sector as specified in the following equation.

$$T_e = T(I - A)^{-1}$$

These ETRs are used to compute the tax payments of households to assess the incidence of GST.

(iii) Reference Unit

The household was taken as the unit of analysis because it was assumed that household members collectively make decisions regarding work, consumption, and saving, and they often pool their resources and share them equally (see Alleyene, 2004; Refaqat, 2005, 2008; Wahid & Wallace, 2008; Jamal & Javed, 2013).

(iv) Welfare Indicator

Households' total expenditures were taken as a measure of their well-being and an indicator was constructed that ranks them by welfare level. Representing consumption as a proxy of household welfare is justified because it reflects the capacity to pay, is less volatile than current income, and is less likely to be under-reported than income (see Deaton & Grosh, 2000; Refaqat, 2005, 2008; Wahid & Wallace, 2008; Cubero & Hollar, 2010).

(v) Tax Shifting Assumption

The final burden of indirect taxes was assumed to be borne by consumers based on the view that owners of factors of production have perfectly inelastic supplies and consumers have perfectly inelastic demand for commodities. The lack of reliable information on these elasticities tends to the widespread adoption of the full forward shifting of indirect taxes (Gemmell & Morrissey, 2003).

(vi) Computation of Household Tax Payment

The estimation of tax incidence requires tax payments of each household for each item. For this, household consumption items were mapped with the sectors in the IOT. The estimated input tax adjusted ETR for each sector was then assigned to each item according to its mapping with the respective sector.

Tax payment for each item was computed by applying the respective item's ETR to its expenditure in the following manner.

$$TP_{j,h} = EXP_{j,h} \times \frac{1}{1+ETR_j} \quad \ldots \qquad \ldots \qquad \ldots \qquad \ldots \qquad \ldots \qquad \ldots \qquad (6)$$

Where *TP* is tax payment, *EXP* is a household expenditure, j $(=1\ldots n)$ is consumption item, h $(= 1\ldots m)$ are households.

(vii) Estimation of Tax Incidence

Tax incidence (INC) was computed by taking a percentage share of tax payment for a particular item in the household's total expenditures.

$$INC_{j,h} = \frac{TP_{j,h}}{EXP_h} \times 100 \quad \ldots \qquad \ldots \qquad \ldots \qquad \ldots \qquad \ldots \qquad \ldots \qquad (7)$$

The distribution of incidence or distribution of tax burden was assessed based on average rate of progression, which is comparison of the average rate of incidence across household expenditure deciles.

This allows for analysing the progressivity or regressivity of taxes. A tax is progressive when the ARP rises along with the rise in households' total expenditures, it is regressive when it falls, and it is proportional when it remains constant.

Data Sources

The following data sources were used.

- The latest available Household Integrated Economic Survey (HIES) 2018-19, Pakistan Bureau of Statistics, Government of Pakistan, for households' consumption expenditures. HIES data were assigned survey weights provided in HIES. As a result, the analysis was based on data that is both nationally and provincially representative.
- The Input-Output Table 2010-11, Federal Bureau of Revenue, Government of Pakistan, was used to trace the impact of taxes on intermediate inputs.
- Tax schedules of the Sales Tax Act 1990 (amended up to 11 March 2019), Federal Board of Revenue, were used to identify the taxable and exempted sectors/items.

3. RESEARCH FINDINGS AND DISCUSSION

This section presents the estimation results. It first displays the nominal and estimated ETRs for each component of indirect taxes. It then furnishes results for the incidence of taxes and their distribution across household deciles.

3.1. Nominal and Effective Tax Rates

Computed nominal rates and estimated input tax adjusted ETRs of the GST are presented only for those sectors in the IOT that are related to households' final consumption of goods (see Table A1: Annexure).

The statutory tax rate of GST is 17 percent, but, except for a few sectors, the computed nominal tax rate for each sector, based on its revenue collection, was less than the statutory rate. This indicates the presence of leakage in tax revenue collection. A comparison of nominal rates and ETRs indicates that all sectors were affected by GST-domestic levied on intermediate inputs, which is reflected by the higher ETRs compared to nominal rates (Table A1: Annexure). In other words, it means that the burden of taxes on households was higher than the tax rate that exists due to cascading effect of taxes on inputs. In particular, nine sectors associated with crops, livestock, fisheries and milled grains are exempted from GST. However, these sectors are taxed at varying rates, in the range of one to 3 per cent, depending on the type and share of, and the nominal tax rate on intermediate inputs they used.

3.2. GST Incidence and Its Distribution Across Households

The distributional burden of GST across household expenditure deciles is presented in Table 2. The first decile represents the households in the lowest income

group or with the lowest total expenditures, while the tenth decile represents the households in the highest income group or with the highest total expenditures. This section uses the terms income and expenditures interchangeably while explaining research findings.

Table 2

Overall Distribution of Incidence of GST (%) – 2018-19

Deciles of HH Expenditures	All Areas	Rural	Urban
1	6.90	6.93	6.71
2	6.88	6.95	6.72
3	6.90	6.93	6.62
4	6.81	6.92	6.59
5	6.74	6.85	6.57
6	6.65	6.85	6.54
7	6.61	6.71	6.44
8	6.57	6.66	6.47
9	6.47	6.59	6.32
10	6.34	6.50	6.29
Overall	**6.69**	**6.79**	**6.53**

Source: Author's estimates based on HIES 2018-19 and IO Table 2010-11.

According to Table 2, the overall incidence of GST was on average 6.7 percent in Pakistan. The distribution of incidence was found to be regressive as it declined for higher deciles. It ranged from 6.9 percent for the lowest decile to 6.3 percent for the highest decile. This suggests that households in the first decile or the poorest 10 percent households, on average, pay Rs.7 as GST on the expenditure of every Rs.100, while households in the tenth decile or the richest 10 per cent pay Rs.6, on average. The pattern of incidence of GST was also regressive in both rural and urban areas. The magnitude of incidence in rural areas was 0.2 to 0.3 percentage points higher in rural areas compared to urban areas.

3.3. Distribution of Incidence: Comparison with Earlier Studies

Before providing the distributional pattern of incidence of earlier studies, a few words on the structure of taxation in Pakistan, which has undergone several reforms over the last three decades, are in order. In 1990-91, indirect taxation was shifted away from CD and FED and moved towards GST, which is a variant of the Value Added Tax (VAT). The Sales Tax Act of 1990, introduced a GST at the rate of 12.5 percent on imported goods and value added at each stage of production on goods manufactured and sold in Pakistan. However, goods, such as agricultural products, petroleum, electricity, pharmaceuticals, and fertilisers, were exempted from GST. By the late 1990s, the GST net was broadened to include items such as petroleum products, electricity, and natural gas. Over time, the rate of GST increased to 17 percent and the exemptions were removed. At present, the GST net has been expanded to include food items (e.g., tea, sugar, beverages, etc.), essential consumer products, and fertiliser, among other products.

As a result of these reforms, the composition of federal indirect tax receipts kept changing. In 1990-91, of the total federal tax collection, the CD constituted 55 percent, sales tax 18 percent, and FED 27 per cent. In 2000-01, the GST constituted 57 percent, CD 24 percent, and FED 18 percent. In 2021-22, among the three components of indirect taxes, the GST dominated with a share of 66 per cent followed by CD at 26 percent, and FED at 8 percent.

The effect of the imposition of the GST on domestic production and sale with an expanded base and increased rate reflects on its distributional burden across different segments of society. A comparison of the results of the GST incidence of this study with those conducted earlier is given in Table 3.[3]

While comparing the incidence in the pre- and post-reform era, Refaqat (2008) indicated that the distribution of GST changed from progressive in 1990-91 to proportional in 2001-02. Jamal & Javed (2013) also found it to exhibit a proportional pattern associated with progressivity at the upper end of income in 2010-11. It can be said that as the coverage of GST increased, incidence changed from progressivity to proportionality. However, Refaqat (2008) and Jamal & Javed (2013) considered tax levied only on final consumption and did not incorporate taxes levied on intermediate inputs, i.e., the cascading effect of tax. Due to this, they excluded the items that are exempted from GST from their analysis. This might be the factor resulting in a proportional GST burden.

Table 3

Distribution of GST Incidence—Comparison with Earlier Studies

Monthly Income Class (Rs)	Malik & Saqib (1989) HIES 1978-79	HH Deciles	Refaqat (2008) HIES 1990-91	HIES 2001-02	SPDC (2004) HIES 2001-02	Wahid & Wallace (2008) HIES 2004-05	Jamal & Javed (2013) HIES 2010-11	This Paper HIES 2018-19
up to 300	1.08	1	1.08	4.58	9.30	3.32	4.41	6.90
301 - 400	1.03	2	1.25	4.73	8.60	3.23	5.49	6.88
401 -500	0.95	3	1.25	4.70	8.30	3.20	4.62	6.90
501 -600	1.01	4	1.28	4.70	8.20	3.27	4.73	6.81
601 - 800	0.92	5	1.30	4.71	8.00	3.50	4.77	6.74
801 - 1000	1.00	6	1.31	4.68	7.70	3.58	4.95	6.65
1001 - 1500	0.87	7	1.34	4.69	7.40	3.30	4.97	6.61
1501 - 2000	0.83	8	1.35	4.58	7.10	3.65	5.02	6.57
2001 - 2500	0.78	9	1.39	4.70	6.70	3.39	5.26	6.47
2501 - 3000	0.76	10	1.52	4.65	5.90	3.72	5.49	6.34
3001 - 3500	0.77							
3501 +	0.88							
Average	**0.91**		**1.31**	**4.67**	**7.72**	**3.42**	**4.97**	**6.69**

Source: Studies mentioned in the Table.

On the other hand, Malik and Saqib (1989), SPDC (2004), and the present study showed the distribution of GST burden to be regressive in 1978-79, 2001-02, and 2018-19. All these studies took into account the cascading effect of the GST and, therefore, included all items even if the final consumption was exempted from the GST. And that could be one of the reasons that they found a regressive pattern of incidence. However, despite incorporating the impact of taxes on inputs, Wahid and Wallace (2008) concluded that the incidence was proportional.

[3] All studies used the Household Integrated and Economic Survey (HIES) corresponding to the year of their analyses and computed the average rate of progression to assess the incidence of the GST.

Although exempted items have zero tax, taxes paid on inputs used in producing these items are not adjusted by a refund. As a result, even in the case of exempted items, any tax on inputs is passed on to consumers based on the inputs' share in production as well as the ripple effect of these inputs in terms of the type-1 multiplier. For example, wheat flour is exempted from the GST, but taxes paid on inputs (electricity, petrol, etc.) are not adjusted. Therefore, incorporating these taxes through the IOT wheat flour is effectively taxed, which is included in the consumer price of wheat flour.

The household expenditure pattern shows that 30 per cent poorest households, on average, spent 48 per cent of their total expenditures on food, whereas 30 per cent of the richest households spent 37 per cent (HIES 2018-19). It shows that the effective tax on wheat affected poor households relatively more compared to rich households. Hence, the incidence of the effective tax rate on wheat was regressive. The literature points out that the results of the incidence analysis are different if taxes on inputs are incorporated or not. Generally, taxes are regressive if taxes on inputs are incorporated (see Rajemison, et al. 2003; Younger, et al. 1999).

3.4. Distribution of GST Incidence by Commodity Groups

The distribution of the incidence of the GST by commodity groups across deciles of household expenditures is given in Table 4.

Table 4

Distribution of Incidence of GST by Commodity Groups (%) – 2018-19

Commodity Groups	Household Expenditures by Deciles									
	1	2	3	4	5	6	7	8	9	10
Regressive										
Basic Food Items	1.634	1.505	1.382	1.303	1.225	1.139	1.057	0.961	0.824	0.582
Personal Items	1.360	1.333	1.334	1.304	1.281	1.271	1.223	1.218	1.183	1.087
Household Items	0.753	0.692	0.671	0.631	0.616	0.611	0.593	0.584	0.543	0.565
Transport Services	0.156	0.135	0.136	0.139	0.137	0.135	0.133	0.133	0.128	0.114
Pharmaceutics	0.503	0.442	0.412	0.419	0.395	0.385	0.380	0.337	0.327	0.298
Tobacco & Products	0.146	0.111	0.109	0.102	0.095	0.080	0.076	0.071	0.060	0.045
Proportional										
Communication Services	0.031	0.031	0.031	0.031	0.030	0.031	0.031	0.033	0.035	0.037
Progressive										
Non-Basic Food Items	0.828	0.822	0.844	0.793	0.816	0.820	0.860	0.884	0.957	0.994
Durable Goods	0.142	0.151	0.166	0.171	0.183	0.192	0.224	0.240	0.259	0.461
Utilities	0.979	1.037	1.046	1.051	1.069	1.065	1.081	1.107	1.126	1.100
Transport Fuel	0.335	0.567	0.694	0.785	0.797	0.828	0.851	0.898	0.919	0.950
Books & Stationery	0.035	0.059	0.073	0.079	0.092	0.097	0.101	0.105	0.113	0.110

Source: Author's estimates based on HIES 2018-19 and IO Table-2010-11.

Basic food items had a highly regressive pattern of tax incidence across all deciles with the highest magnitude among all commodity groups.[4] For example, 10 percent of the poorest households paid 1.6 percent of their expenditures as GST when buying basic food items compared to 0.6 percent paid by the 10 percent richest households.

Other commodity groups that had regressive patterns across all deciles include transport services and tobacco products. Some groups, though, depicted an overall

[4]Items such as wheat flour, rice, pulses, vegetables, spices, fresh dairy, ghee, sugar, tea were considered basic food items in this study. The remaining food items were included in non-basic food group.

regressive pattern but a proportional pattern for the bottom deciles. These include personal items, household items, and pharmaceutics. The incidence of GST on transport services showed proportionality associated with regressivity for the bottom deciles.

Commodity groups that had a progressive incidence of GST include transport fuel and durable goods. The highest progressivity was in transport fuel where the poorest 10 percent of households' 0.3 percent expenditures were on GST, while the richest 10 percent paid one per cent. Other commodity groups, such as utilities, non-basic food items, and books and stationery, had an overall progressive pattern accompanied by a proportional pattern for some deciles. For instance, the incidence for utilities was progressive for the bottom two deciles, proportional to the sixth decile, and progressive thereafter. The incidence of tax for communication services was proportional across all deciles.

4. CONCLUSION AND RECOMMENDATIONS

This paper examined the incidence of GST in Pakistan and its distribution across deciles of household expenditures. The findings indicate that the overall incidence of GST, on average, was 6.7 percent. The distribution of incidence portrayed an overall regressive pattern across all deciles and in rural and urban areas.

Analysis by commodity group shows the highest rate of incidence as well as the highest extent of regressivity for basic food items. Other commodity groups that indicated regressivity include personal and household items. Commodity groups indicating a progressive pattern of incidence included non-basic food items, utilities and transport fuel.

The marked regressivity of incidence for basic food items primarily occurred on account of household spending patterns on food items. The HIES 2018-19 data revealed that 30 percent poorest households, on average, spent 48 percent of their total expenditures on food, whereas 30 percent of the richest households spent 37 percent.

Food inflation has often been a major public policy challenge for the governments in Pakistan and numerous measures are undertaken to control basic food prices to provide relief for the poor. For example, major basic food items have been exempted from indirect taxation over several years. However, indirect taxes levied on inputs used to produce these items act as implicit taxes, which are transferred to the final prices of these items and cause an increase in prices. On the other hand, to raise revenues, governments often increase taxes on necessities, which have inelastic demand, such as utilities, which put a burden on households' budgets, particularly on the poor.

Regressivity affecting the poor segment needs to be addressed, albeit without causing secondary distortions. For example, exempting selected essential items as well as their inputs from taxes would not only cause revenue losses but would also benefit the items not in the consumption basket of the poor.

An alternative way to avoid secondary distortions and support low-income groups is transfer payments, which can minimise the impact of taxes on them. Practices from other countries also demonstrate the use of transfer payments. Karageorgas (1973) pointed out a decline in inequality after the initiation of transfer payments in Greece, with the highest benefit received by the lowest income groups. Ruggeri, et al. (1994) reported the progressivity of general sales tax at the lower end of the income scale due to transfer payments to these income classes in Canada. Crisan, et al. (2015) also highlighted the progressive tax and transfer system in Canada, where the bottom two quintiles of the income distribution were net recipients of government transfers, while the middle and top two quintiles were net taxpayers.

The transfer payments program in Pakistan, for example Benazir Income Support Program (BISP), is such initiative that provides income support to the recipient households in the bottom three deciles approximately. Yet, its coverage is not perfect due to which many lower income households remained overlooked.

ANNEXURE

Table A1

Nominal and Estimated Effective Tax Rates of GST 2018-19

Sectors From IOT	Nominal Rate	Effective Rate
Rice	0.016	3.375
Wheat	0.000	3.270
Sugarcane	0.000	2.609
Pulses	0.003	0.810
Potatoes	0.000	2.962
Vegetables & Condiments	0.113	2.919
Fruits	0.025	2.395
Livestock & Slaughtered Products	0.091	1.246
Fisheries	0.000	6.880
Coal	16.944	19.257
Crude Oil & Natural gas	4.936	6.691
Vegetable Oils	0.827	5.256
Milled Grains	0.003	3.019
Bakery Products	8.572	12.663
Sugar	8.098	10.123
Other Food	17.000	19.879
Beverages	17.000	21.943
Cigarettes & Tobacco	5.325	6.739
Cotton Cloth	0.055	5.160
Art Silk	0.330	6.495
Made-up Textile Goods	0.036	3.725
Knitwear	0.551	4.916
Carpets	0.434	4.674
Garments	3.827	7.966
Other Textile Products	11.932	16.907
Leather & Leather Products	2.048	5.471
Footwear	6.400	9.342
Paper & Printing	4.458	10.531
Pharmaceuticals	7.078	14.964
Chemical Consumer Products	17.000	25.384
Refined Petroleum	17.000	23.519
Rubber & Plastic Products	4.578	13.209
Bricks	0.033	5.901
Cement	8.728	15.421
Metal Products	16.994	23.151
Non-electrical Machinery	5.887	14.937
Electrical Equipment	13.120	22.596
Transport Equipment	9.714	23.671
Handicrafts	0.328	3.986
Sports Goods	0.544	6.361
Jewelry & Precious Metals	0.177	5.509
Other Manufacturing Products	16.967	22.725
Electricity, Waterworks & Supply	11.796	19.320
Gas Supply	5.644	9.826
Transport - Railway	0.000	13.007
Transport - Road	0.000	4.748
Communication	0.206	1.595

Source: Author's estimates based on IOT 2010-11.

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