



# Policy Brief



## ESTIMATING THE DISTRIBUTIONAL BURDEN OF INDIRECT TAXES IN PAKISTAN

*Iffat Ara & Muhammad Asad Khan*

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### INTRODUCTION

The literature suggests that the burden of indirect taxes often is not evenly distributed. Who bears higher and who bears lower burden in proportion to their income depends on the design of tax regime. And, investigating who actually bears the burden of a tax requires to study the incidence of taxation across different tiers of economic groups. This research is an attempt to investigate this in case of Pakistan.

The structure of federal taxes in Pakistan heavily relies on indirect taxes that constituted 62 percent of total tax receipts in 2018-19 whereas direct taxes constituted 38 percent. Of the 62 percent indirect taxes, General Sales Tax (GST) dominated with a share of 38 percent whereas Customs Duties (CD) and Federal Excise Duty (FED) constituted 18 percent and 6 percent respectively.

Among the recent researches conducted in Pakistan, Jamal and Javed (2013) indicates proportionality of GST, Wahid and Wallace (2008) and Refaqt (2008) show the overall federal indirect tax system to be proportional and SPDC (2004) finds it to be regressive. In the methodological perspective, results of these studies are based on an average rate of progression where they compared average rate of tax payment across different income group.

While estimating the incidence, Refaqt (2008) and Jamal and Javed (2013) considered taxes levied only on final consumption and did not incorporate taxes levied on intermediate inputs. Consequently, they did not incorporate the items that are exempted from tax into their analysis. It is argued that even if the final output is exempted from tax, its price includes an implicit tax which transfers through taxes levied on inputs. Estimating the incidence of indirect taxes without capturing the impact of taxes on inputs (cascading effect) may likely portray misleading results.

Though, Wahid and Wallace (2008) and SPDC (2004) accommodated the taxes levied on intermediate inputs, they did not estimate the incidence by different commodity groups such as food, utilities, and etc. It is felt that analyzing the distribution of incidence by commodity groups help understanding tax burden as per the consumption pattern of poor and rich.

Earlier, Malik and Saqib (1989) also assessed the incidence by incorporating taxes on inputs and concluded that overall indirect taxes exhibited a regressive pattern in Pakistan.



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This research assesses the incidence of federal indirect taxes and its distributional burden in Pakistan across deciles of households by filling these gaps. It uses the recent Household Integrated Economic Survey (HIES) 2018-19 to observe households' expenditures and the latest available Input-Output Table 2010-11 to capture the cascading effect of indirect taxes. The research examines the extent to which each component of indirect taxes (GST, CD and FED) can be considered as *progressive* (i.e. placing higher tax burden on higher income groups), *regressive* (i.e. placing higher tax burden on lower income groups) or *proportional* (i.e. placing same tax burden on each income groups).

The research also estimates incidence and its distribution for various commodity groups and heads of Withholding Tax (WHT) that are indirect in nature and where data at household level are available.

## METHODOLOGY

The research follows an input-output model based approach to estimate incidence of indirect taxes that allows tracing the cascading effects of indirect taxes on intermediate inputs (see Ahmed and Stern, 1991). Application of this approach requires following steps.

- Computation of nominal rate of taxes that are based on revenue collection. Using nominal tax rates, instead of statutory rates, help overcoming the issue of tax compliance.
- Computation of input adjusted effective tax rates (ETRs) by employing coefficient matrix (A) of input-output table and nominal tax rates (NTR) in the following manner.

$$ETR = NTR(I - A)^{-1}$$

Where  $I$  is identity matrix

- Taking household as unit of analysis and their total expenditures to ranks them by welfare level.
- Assuming the final burden of indirect taxes to be borne by consumers. Shifting of tax to consumers depends on elasticities of supply and demand but lack of reliable information on these elasticities tends to a general acceptance of the full forward shifting of indirect taxes to consumers (Gemmell and Morrissey, 2003).
- Computation of households' tax payments for each tax component in the following manner.

$$TP_{t,j,h} = EXP_{j,h} \times \frac{1}{1 + ETR_{t,j}}$$

Where  $TP$  is tax payment,  $EXP$  is household expenditure,  $j (=1...n)$  is consumption item,  $h (=1...m)$  is household, and  $t$  is components of indirect taxes.

- Computation of tax incidence which is percentage share of tax payments in respective household's total expenditures.
- Assessing progressivity/regressivity by comparing average rate of tax payment across different income group.

## FINDINGS

Distribution of tax incidence or distribution of tax burden across deciles of households' expenditures for each component of indirect taxes is displayed in Table 1. Since households are grouped into deciles, each group presents 10 percent of households, where the first decile specifies households in the lowest income group (or with lowest amount of total expenditures) while the tenth decile specifies households in the highest income group (or with highest amount of total expenditures).

The overall average incidence of all indirect taxes combined is 20.7 percent in Pakistan. The distribution of incidence of all indirect taxes is regressive ranging from 22 percent in the lowest decile to 19 percent in the highest decile. This suggests that for every Rs.100 expenditure, the poorest 10 percent households, on average, devote Rs.22 in paying indirect taxes while the richest 10 percent devote Rs.19.

As for the distribution of components of indirect taxes, except FED-Local, all components portray a regressive pattern. The magnitude and extent of regressivity (difference in the incidence in bottom and top deciles) is highest for GST-Imports where the bottom 10 percent households, on average, pay 7.6 percent while the top 10 percent pay 6.4 percent of their total expenditures in taxes. The distribution of incidence of FED-Local is mildly progressive associated with proportionality in the middle income groups.

Table 1: Distribution of Incidence (%) - Indirect Taxes 2018-19 - Pakistan All Areas

Deciles of HH Expenditures	GST			FED			CD	All Indirect Taxes
	Local	Imports	Combined	Local	Imports	Combined		
1	6.90	7.63	14.54	1.23	0.27	1.50	5.92	21.96
2	6.88	7.47	14.35	1.28	0.25	1.53	5.77	21.66
3	6.90	7.44	14.34	1.36	0.24	1.60	5.70	21.63
4	6.81	7.29	14.10	1.38	0.21	1.59	5.54	21.22
5	6.74	7.20	13.93	1.36	0.20	1.56	5.46	20.95
6	6.65	7.06	13.71	1.36	0.19	1.55	5.35	20.61
7	6.61	6.98	13.59	1.39	0.19	1.58	5.25	20.42
8	6.57	6.89	13.46	1.40	0.19	1.59	5.17	20.21
9	6.47	6.70	13.18	1.42	0.17	1.59	5.01	19.77
10	6.34	6.43	12.77	1.47	0.13	1.60	4.83	19.20
<b>Overall</b>	<b>6.69</b>	<b>7.11</b>	<b>13.80</b>	<b>1.36</b>	<b>0.20</b>	<b>1.57</b>	<b>5.40</b>	<b>20.77</b>

Source: Author's estimates based on HIES 2018-19.

Tables 2 and 3 display the distributions of indirect taxes and its component by rural and urban areas respectively. Incidence for all indirect taxes combined shows regressive pattern in both rural and urban areas, where incidence is roughly one percentage point higher at each decile in rural areas compared to that in urban areas. Here too, the pattern of incidence of all components of indirect taxes is regressive in both rural and urban areas except FED-Local, which exhibits a mild progressive pattern associated with proportional pattern in the middle deciles.

Table 2: Distribution of Incidence (%) - Indirect Taxes 2018-19 - Pakistan Rural Areas

Deciles of HH Expenditures	GST			FED			CD	All Indirect Taxes
	Local	Imports	Combined	Local	Imports	Combined		
1	6.93	7.66	14.59	1.16	0.28	1.44	5.99	22.02
2	6.95	7.65	14.59	1.30	0.27	1.57	5.89	22.06
3	6.93	7.52	14.45	1.32	0.25	1.57	5.80	21.82
4	6.92	7.47	14.39	1.36	0.24	1.60	5.72	21.71
5	6.85	7.39	14.24	1.39	0.23	1.62	5.62	21.48
6	6.85	7.34	14.19	1.37	0.23	1.60	5.61	21.41
7	6.71	7.18	13.88	1.36	0.22	1.58	5.47	20.93
8	6.66	7.12	13.78	1.41	0.21	1.61	5.40	20.79
9	6.59	7.01	13.60	1.42	0.19	1.62	5.27	20.49
10	6.50	6.80	13.30	1.50	0.17	1.67	5.11	20.08
<b>Overall</b>	<b>6.79</b>	<b>7.31</b>	<b>14.10</b>	<b>1.36</b>	<b>0.23</b>	<b>1.59</b>	<b>5.59</b>	<b>21.28</b>

Source: Author's estimates based on HIES 2018-19.

Table 3: Distribution of Incidence (%) - Indirect Taxes 2018-19 - Pakistan Urban Areas

Deciles of HH Expenditures	GST			FED			CD	All Indirect Taxes
	Local	Imports	Combined	Local	Imports	Combined		
1	6.71	7.24	13.95	1.29	0.23	1.53	5.55	21.03
2	6.72	7.10	13.82	1.36	0.22	1.58	5.39	20.80
3	6.62	7.00	13.62	1.35	0.21	1.55	5.25	20.42
4	6.59	6.89	13.48	1.33	0.20	1.53	5.19	20.20
5	6.57	6.83	13.40	1.36	0.19	1.55	5.10	20.05
6	6.54	6.83	13.36	1.39	0.19	1.57	5.08	20.02
7	6.44	6.65	13.09	1.35	0.18	1.53	4.95	19.57
8	6.47	6.62	13.08	1.40	0.17	1.57	4.95	19.60
9	6.32	6.42	12.74	1.36	0.15	1.51	4.82	19.07
10	6.29	6.19	12.48	1.52	0.13	1.65	4.63	18.76
<b>Overall</b>	<b>6.53</b>	<b>6.78</b>	<b>13.30</b>	<b>1.37</b>	<b>0.19</b>	<b>1.56</b>	<b>5.09</b>	<b>19.95</b>

Source: Author's estimates based on HIES 2018-19.

## Incidence by Commodity Groups

Distribution of incidence of all indirect taxed combined across deciles of household by commodity groups is presented in Table 4. Basic food items indicate highly regressive pattern of incidence across all deciles.<sup>1</sup> For example, the poorest 10 percent households pay 6.2 percent of their expenditures as indirect taxes when buying basic food items compared to 2.3 percent paid by the richest 10 percent. Other groups that show regressive pattern across all deciles include household items, pharmaceuticals and tobacco & products. Some groups, such as, personal items and transport services though depict an overall regressive pattern but associated with proportional pattern in the lower or middle income groups.

Commodity groups showing progressive incidence of indirect taxes include non-basic food items, transport fuel and durable goods. Though the magnitude of incidence is highest for non-basic food items, the extent of progressivity is highest for transport fuel. For example, the poorest 10 percent households pay 0.8 percent of their expenditures as indirect taxes on transport fuel while the richest 10 percent pay 2.3 percent. Other groups, such as, utilities and books & stationary though indicate an overall progressive pattern but accompanied with proportional pattern for 50 percent upper income groups. Communication services is proportional across all groups.

Table 4: Distribution of Incidence (%) by Commodity Groups- All Indirect Taxes Combined - Pakistan 2018-19

Commodity Groups	Deciles of household's expenditures									
	1	2	3	4	5	6	7	8	9	10
<b>Regressive</b>										
Basic food items	6.23	5.75	5.29	4.98	4.65	4.33	4.01	3.62	3.11	2.18
Personal items	4.64	4.57	4.57	4.46	4.38	4.35	4.18	4.16	4.04	3.69
Household items	2.26	2.07	2.01	1.88	1.84	1.82	1.78	1.76	1.63	1.72
Transport services	0.41	0.35	0.36	0.36	0.36	0.35	0.35	0.35	0.34	0.30

<sup>1</sup> Items such as wheat flour, rice, pulses, vegetables, spices, fresh dairy, ghee, sugar, tea are considered as basic food items in this research. The remaining food items are included in non-basic food group.

Pharmaceutics	1.00	0.88	0.82	0.84	0.79	0.77	0.76	0.67	0.65	0.59
Tobacco & products	0.86	0.66	0.65	0.61	0.57	0.47	0.45	0.42	0.36	0.27
<b>Proportional</b>										
Communication serv.	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.09	0.10	0.10
<b>Progressive</b>										
Non-basic food items	2.98	3.02	3.14	3.01	3.13	3.16	3.32	3.42	3.66	3.76
Durable goods	0.42	0.44	0.48	0.51	0.54	0.57	0.67	0.72	0.78	1.48
Utilities	1.96	2.08	2.13	2.17	2.22	2.22	2.26	2.31	2.34	2.26
Transport fuel	0.79	1.33	1.63	1.84	1.87	1.94	2.00	2.11	2.17	2.29
Books & stationary	0.15	0.25	0.31	0.34	0.39	0.41	0.43	0.45	0.48	0.47

Source: Author's estimates based on HIES 2018-19.

## Incidence of Withholding Tax

The results of incidence of specific WHT heads (constitute over 9 percent of WHT collection that are indirect in nature) are shown in Table 5. Incidence on telephone and mobile usage portray slightly regressive pattern associated with proportional pattern in the middle deciles while incidence on petroleum products and electricity is progressive across all deciles. Incidence on internet usage, air travel and CNG stations is also progressive but its magnitude is very minimal.

Table 5: Distribution of Incidence of WHT (%) – Pakistan 2018-19

Deciles of HH expenditures	Telephone & mobile	Internet	Petroleum Products	CNG	Electricity	Air travel
<b>All Areas</b>						
1	0.177	0.002	0.163	0.000	0.026	0.000
2	0.173	0.005	0.273	0.001	0.057	0.002
3	0.171	0.004	0.334	0.000	0.073	0.001
4	0.170	0.006	0.377	0.001	0.105	0.002
5	0.167	0.007	0.382	0.000	0.135	0.003
6	0.166	0.009	0.397	0.001	0.163	0.006
7	0.162	0.014	0.407	0.002	0.182	0.004
8	0.166	0.020	0.432	0.002	0.233	0.008
9	0.167	0.032	0.444	0.004	0.279	0.014
10	0.157	0.051	0.458	0.017	0.329	0.033

Source: Author's estimates based on HIES 2018-19.

## KEY POLICY RECOMMENDATION

Marked regressivity of incidence on basic food items primarily occurs on account of household spending pattern on food items. The data from HIES 2018-19 reveal that 30 percent poorest households on average spend 48 percent of their total expenditures on food, whereas 30 percent richest households spend 37 percent.

Food inflation has often been a major public policy challenge for the governments in Pakistan and numerous measures are undertaken to control food prices with a view to provide relief for the poor. For example, exemption of major food items from indirect taxation. However, indirect taxes levied on inputs used to produce these items transfer to the final prices of these items and cause increase in prices. Further, in order to raise revenues, governments often increase taxes on necessities – having inelastic demand – such as utilities which put burden particularly on the poor.



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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 are Transfer Payments, which can minimize the impact of taxes on them. Practices from other countries also demonstrate the use of transfer payments. Karageorgas (1973) points out 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) reports progressivity of sales tax at the lower end of the income scale due to transfer payments to these income classes in Canada. Crisan et al. (2015) highlights the progressive tax and transfer system in Canada, where the bottom two quintiles of the income distribution are net recipients of government transfers, while the middle and top two quintiles are net tax payers.

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