

## Who really pays Value Added Tax (VAT) in developing countries? Empirical evidence from Bangladesh

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**Abstract.** We measure the progressivity of a Value Added Tax (VAT) using income data from the Household Income and Expenditure Survey (HIES) 2005 in Bangladesh. Overall, the VAT burden is found to be relatively high for people in lower income groups at 6.92 percent as compared to the people of high income groups at only 4.56 percent. Comparing the results with and without VAT exemptions, we find that overall the VAT in Bangladesh is regressive. The study provides some policy recommendations that could help design a better VAT system in Bangladesh.

**Keywords:** Value Added Tax, progressivity, empirical study, Bangladesh

### 1. Introduction

Few fiscal issues are more important in developing countries than the Value Added Tax (Bird, 2005). The rise of the VAT around the world has been one of the most important tax developments in the recent century. This tax is considered to have advantages compared with other taxes, because it eliminates cascading, allows for zero rating of exports, and it is broad based and difficult to evade. VAT was first introduced on an extensive scale in France in 1954. Since then, more than 130 countries in the world had adopted a VAT of some kind. Like many developing countries, Bangladesh introduced VAT in 1991 with a view to mobilize its internal revenue collection and to bring transparency to its indirect tax system. At present, VAT is a significant source of revenue in Bangladesh. For the last 20 years more than 30 percent of revenue collected by the National Board of Revenue (NBR) in Bangladesh was from VAT and its contribution is increasing day by day. The question arises then who actually who bears the burden of VAT in Bangladesh. This paper tries to answer this question by measuring the progressivity of VAT in Bangladesh.

### 2. Incidence of Value Added Tax in Bangladesh

The study of tax incidence is, broadly defined, the studies of the effects of the tax policies on the distribution of economic welfare (Kotlikoff and Summers, 1987). It is the study of who bears the burden of tax. There are various ways to measure the progressivity of taxation. An incidence analysis attempts to answer who bears the burden of a particular tax (Sarker, 2006). Any attempt to evaluate the "fairness" of a tax (or a change in the tax system) requires knowing whose disposable income is changed and by how much in response to the tax. Economists often refer to taxes as "regressive" or "progressive," but the confusion over the terms' meanings requires careful definitions. The definitions that most economists use rely on the average tax rate, that is, the ratio of tax liabilities to income. A tax is "regressive" if the average tax rate falls with an increase in income, "proportional" if the average tax rate is constant and "progressive" if the average tax rate rises with

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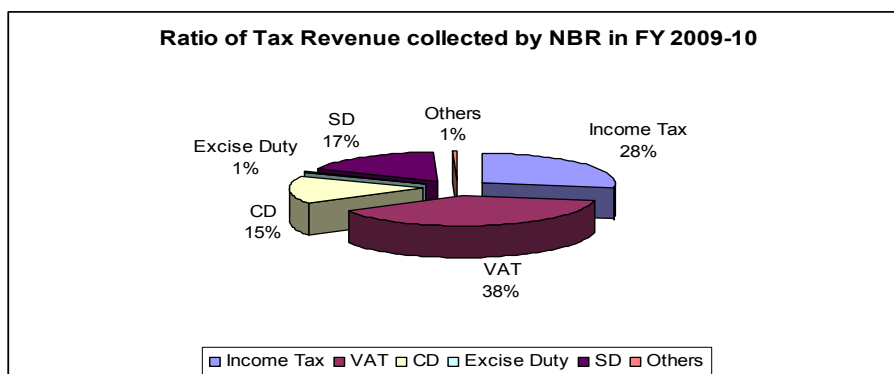
income. Simply put, low-income people pay a higher fraction of their income in taxes than wealthier people if the tax is regressive and a lower fraction of their income if the tax is progressive.

In Bangladesh, tax revenue accounts for about eighty percent of the total revenue of the Government. However, like in many other developing countries, very limited research has been undertaken to measure the incidence of indirect taxes in Bangladesh. Chowdhury (1994) provides an estimate of the incidence analysis of indirect taxation between sectors and socio-economic groups in Bangladesh. The study finds that the nominal tax incidence to be less than one percent for all sectors except in the industry (4.52%) and energy (18.47%) sectors. Effective tax incidences on the other hand, were more than 1 percent for all sectors. This suggests that the industrial sector shifts almost half of its nominal tax liability to other sectors. In that study, we find that the incidence of VAT on the poorest of the urban income groups is higher than that on the middle-income groups, but the incidence rises as income increases for the people of rural areas.

### 3. Overview of Tax Revenue and VAT in Bangladesh

Sound fiscal policy is fundamental to maintain macroeconomic stability and foster economic growth of any country. Excess expenditure over revenue collection (fiscal deficit) may have an adverse effect on macroeconomic stability. This means resource mobilization, whether sourced internally or externally, is immensely important to the overall economic management of a government. In most developing countries, taxes are the primary sources of revenue for government. This is true in Bangladesh, where tax revenue accounts for about 80 percent of total government revenue, and the VAT alone accounts for more than 35 percent of total tax revenue (Faridy, 2011). Figure 1 shows the share of direct and indirect taxes collected by NBR in Bangladesh in FY 2009-10.

Figure 1. Share of Direct and Indirect Taxes by NBR in Bangladesh in FY 2009-10



Source: Bangladesh Economic Review, 2009

### 4. Data and Methods

The study primarily used the Household Income Expenditure Survey (HIES) 2005 data to measure the progressivity of VAT in Bangladesh. Additional data available from other government sources, including the National Board of Revenue (NBR) and Bangladesh Bank were also used. To measure the progressivity of VAT, we first calculate the Effective VAT Rate on the following way:

$$\text{Effective VAT Rate} = [(\text{Actual VAT paid} / \text{Per capita consumption}) \times 100]$$

The Effective VAT Rate among different income groups can show us whether the tax system is progressive or regressive. The Relative Tax Burden Index is also important to determine the progressiveness of a tax, which is defined as the ratio (expressed in percentage terms) of its share of total taxes to its share of total income. In this study to determine the progressiveness of VAT on individual expenditure items, we calculate the relative tax burden index for various income groups. The Relative tax burden index and effective VAT rates can give an overall picture about VAT, whether it is progressive or regressive. Finally, Suits Index of Progressivity is used to calculate the VAT incidence at urban and rural levels based on the following formula:

$$\text{Suits Index of Progressivity or } S_x = 1 - \left(\frac{L_x}{K}\right)$$

Where,  $S_x$  is the progressivity index,  $K$  is the area of the triangle and  $L_x$  is the covered area below the Lorenz curve.

## 5. Results

Table 1 presents the Effective VAT Rates and shows how the burden of the VAT varies with the changes of per-capita household income. The average effective tax rate is 6.01 percent and the rate varies as the income ranges with the minimum of 4.56 percent to maximum 6.92 percent of their income.

Table 1. Effective VAT Rates in Bangladesh in FY 2005-06

Income Group	Income Range (In Tk.)	Per Capita Consumption	VAT Paid (In Tk.)	Effective VAT Rate (%)
1	< 3,999	2,996.29	207.34	6.92
2	4,000-4,999	4,757.51	319.70	6.72
3	5,000-5,999	5,371.19	338.92	6.31
4	6,000-6,999	6,055.52	352.43	5.82
5	7,000-7,999	6,681.90	432.31	6.47
6	8,000-8,999	7,367.67	450.90	6.12
7	9,000-9,999	7,345.70	453.22	6.17
8	10,000-12,499	8,940.37	540.89	6.05
9	12,500-14,999	10,251.07	608.91	5.94
10	15,000-17,499	11,971.06	713.47	5.96
11	17,500-19,999	12,720.51	638.56	5.02
12	20,000 & above	19,119.01	871.82	4.56
<b>Average</b>		<b>8631.00</b>	<b>494.03</b>	<b>6.01</b>

Source: Household Income Expenditure Survey, 2005 [1.00 USD = 73 Tk.]

Table 2 presents the numerical results giving the income share, the tax share and the relative tax burden of VAT for each income group. The actual relative tax burden of VAT and the VAT share without exemptions are also shown.

Table 2. Relative Burden Index of VAT: Bangladesh at FY 2005-06

Income group	Monthly Household Per-Capita Income (in Tk.)	Income Share (A)	Actual VAT Share (B)	Relative Tax Burden (B/A)x100	VAT Share Without Exemptions (C)	Relative Tax Burden (C/A)x100
1	< 200	0.49	1.98	404	3.18	648
2	200-249	0.89	2.09	234	3.03	340
3	250-299	1.08	2.10	194	3.36	311
4	300-349	1.27	2.13	168	3.07	242
5	350-399	1.47	2.62	178	3.38	230
6	400-449	1.66	2.49	150	3.29	198
7	450-499	1.86	2.55	137	3.30	177
8	500-599	2.15	2.94	136	3.46	161
9	600-799	2.68	3.00	115	3.60	138
10	700-799	2.92	3.58	123	3.88	133
11	800-899	3.31	3.96	120	4.11	124
12	900-999	3.70	4.03	108	4.37	118
13	1,000-1,249	4.37	4.91	112	4.97	114

14	1,250-1,499	5.32	5.67	107	5.52	104
15	1,500-1,999	6.74	7.30	108	6.35	94
16	2,000-2,499	8.68	8.63	99	7.58	87
17	2,500-2,999	10.58	10.48	99	9.15	86
18	3,000-3,499	12.44	11.56	93	9.20	74
19	3,500 & above	28.39	17.98	63	15.20	54
<b>Total</b>		<b>100</b>	<b>100</b>		<b>100</b>	

Source: Household Income Expenditure Survey, 2005 [1.00 USD = 73 Tk.]

Table 3 summarizes the progressivity of VAT based on Suit's Index at the national level as well as for urban and rural levels including with and without VAT exemptions. The index shows that the degree of progressivity of tax burden distributions for national level, rural and urban people.

Table 3 Progressivity of VAT of Bangladesh Based on Suits' Index

Particulars	With Exemptions			Without Exemptions		
	<i>National</i>	<i>Urban</i>	<i>Rural</i>	<i>National</i>	<i>Urban</i>	<i>Rural</i>
<i>Lx</i>	5851.281	5978.997	5845.342	6352.455	6420.530	6189.495
<i>K</i>	5000	5000	5000	5000	5000	5000
<i>Sx</i>	-0.170	-0.195	-0.169	-0.271	-0.284	-0.238

Source: Faridy (2011)

## 6. Conclusion

The empirical study showed that the VAT burden in the lowest income range is 6.92 percent, which is extremely high given the fact that the VAT burden of the highest income group is only 4.56 percent. The average effective VAT rate is 6.01 percent, which is higher than that of the highest fourth income groups' people. The higher income groups are enjoying fewer burdens than the lower income groups. Taking considerations to all of the analysis done in previous chapters, the study suggests the following policy recommendations that could help design a better VAT system in Bangladesh.

- First, VAT can be made less regressive by making a distinction between luxurious goods and necessity goods. So the better policy would be not to maintain a single rate of VAT in Bangladesh. Thus, the government could impose a higher rate of tax on goods that account for a greater share of expenditure of the better-off members of the society;
- Second, exemption causes distortion and induces elements of tax evasion in the tax system. But some exemptions are unavoidable. So exemptions should be limited only to basic health service, public transport, agriculture and agro-based industries and government education; and
- Finally, reasonably high threshold can reduce the regressivity of a VAT system. It can help the lower income group of people and ensure the equity of VAT. Even though applying high threshold, more revenue can be collected by close monitoring of the large taxpayers through adopting risk based audit programmes.

## 7. Acknowledgements

We would like to thank The World Bank for providing scholarship via JJ/WBGSP for this study.

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