

The International Tobacco Control Policy Evaluation Project

The tobacco industry uses pricing to undermine tobacco tax policy: Evidence from Bangladesh

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Summary

The effectiveness of a tax increase in reducing tobacco use depends on the extent to which the industry passes on the tax to consumers. Evidence suggests that the tobacco industry may absorb or raise the price more than the tax increase (over-shift) depending on the brand segment of tobacco products. Very little is known about the tobacco industry's pricing strategy under a multi-tiered tax system with government-administered prices. In this report, we examine the industry's pricing strategy by price segment of the cigarette market in Bangladesh by observing the deviation between the market retail prices of cigarettes (i.e. those faced by consumers) and government-recommended prices that are used as tax base in the four ad valorem tax tiers.

Methods: Data on recommended retail prices by brands were collected from the National Board of Revenue. Data on market retail prices by brands were collected by the International Tobacco Control (ITC) Bangladesh Wave 3 Survey 2011-12 and Wave 4 Survey 2014-15.

Results: We found that cigarettes manufacturers and retailers in Bangladesh charge market prices higher than the government recommended price for higher-price brands to extract extra profit margin from the high end of the price distribution while lowering the relative price of cheaper brands.

Implications: This strategy allows tobacco companies to attract more price sensitive smokers to buy cheaper brands and to expand overall demand, while avoiding payment of tax on the extra profit margin derived from higher-price brands. The outcome of this differential pricing strategy is reflected in the volume growth of low-price brands by 12% and increase in the market share of low-price cigarette brands in total cigarette sales from 61.7% to 79.5% between 2012 and 2016. Thus, the tobacco industry can maximize profit both from increasing the profit per unit for higher-priced brands and expanding the market size of cheaper brands even at lower prices.

The Bangladesh cigarette industry adopts a differential pricing strategy that encourages smokers to switch down to cheaper brands instead of quitting when tax and price increase, undermining the intended effect of tax policy change in reducing cigarette consumption and improving public health through reduction in smoking-related diseases and deaths.

Recommendation: Because this pricing strategy is supported by the existing tiered ad valorem excise tax structure for cigarettes, it needs to be replaced with a uniform specific excise system, which would eliminate the opportunity to manipulate prices in this manner.

Introduction

Raising tobacco taxes is a proven measure for reducing tobacco consumption and tobacco-related diseases and deaths, accruing significant benefits to public health.^{1,2} The effectiveness of taxation in curbing tobacco use is crucially dependent on its effect on the retail price, which is considerably determined by the extent that manufacturers and retailers pass on the tax increase to consumers. If the manufacturers want to retain the market of certain brands, for example, they are likely to absorb some of the tax increase which means that the retail price of these brands will not increase by as much, if at all. There is evidence from the United Kingdom, Europe, New Zealand, Taiwan, and Spain that manufacturers tend to absorb the tax increase for cheaper brands while raising the price for more expensive brands.³⁻¹⁰ There is also evidence of tax absorption for brands across all price categories in Indonesia, with the percentage decrease in price being relatively greater among cheaper brands.¹¹ If this is the case, the effectiveness of any given tax increase will be mitigated and the public health benefit diminished, particularly for low-income smokers who consume mostly cheaper brands. In this report, we examine the pricing strategy of cigarette manufacturers in Bangladesh and its implications for the effectiveness of tax increases in reducing tobacco consumption.

Background: Cigarette taxation and pricing

In Bangladesh, the National Board of Revenue (NBR), an arm of the Ministry of Finance of the Government of Bangladesh that administers tax policies in the country, sets the recommended retail price (RRP) for each cigarette brand which is printed on cigarette packs. The RRP are estimated by the tax authority based on the data on the cost of production by brands provided by the cigarette manufacturers. The excise tax liability of cigarette manufacturers is dependent on tiered ad valorem supplementary duty based on the RRP at four different rates that successively increase with the four price tiers—low, medium, high,

and premium. In addition, there is a 15% value-added tax (VAT) based on the RRP. Changes in the price ranges and/or excise tax rates take place through annual budget announcements.

Table 1 below shows the tax rates and range of RRP for different tiers in 2011-12 and 2015-16, the years under observation in this study.

Table 1: Excise tax rates by price segment for cigarettes in Bangladesh, 2011-12 and 2015-16

	Recommended Retail Price, RRP (BDT/10 sticks)	Excise Tax Rate (% of RRP)	Total Tax Share, Excise + VAT (% of RRP)
2011-12			
Low	11.00 - 11.30	36%	51%
Medium	22.50 - 23.00	55%	70%
High	32.00 - 36.00	58%	73%
Premium	60.00+	60%	75%
2015-16			
Low	18.00	49%	64%
Medium	-	-	-
High	40.00 - 69.00	62%	77%
Premium	70.00+	64%	79%

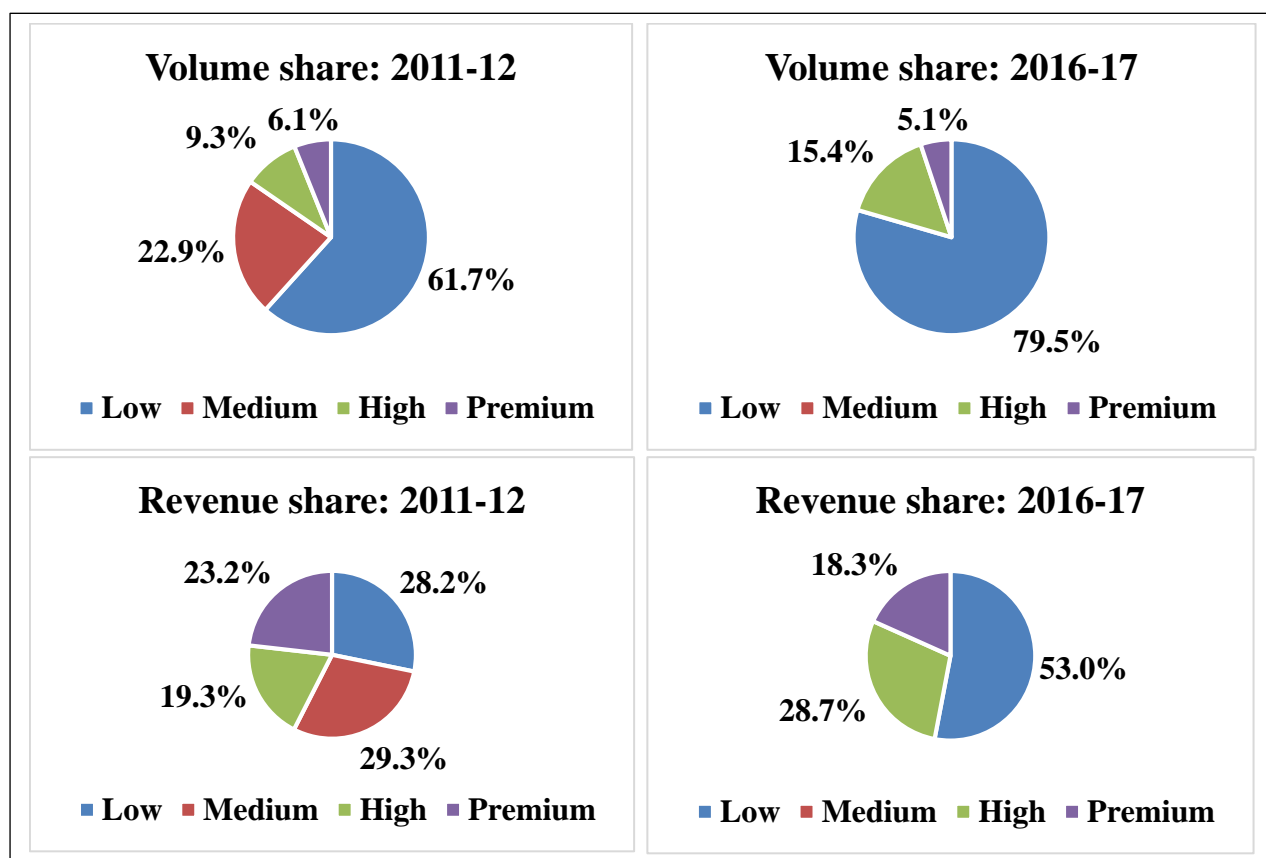
Source: National Board of Revenue, Ministry of Finance, Government of Bangladesh.

Notes

1. The total tax share adds a 15% value-added tax (VAT) on the recommended retail price (RRP) to the excise tax rate.
2. The medium-price segment did not exist in 2015-16 due to the rule introduced by the National Board of Revenue in 2015-16 that all brands belonging to the medium-price segment in 2014-15 must move to the high-price segment, while no brands were allowed to move from the low-price to the medium-price category.
3. A 1% Health Surcharge was included in the excise tax since 2014-15 fiscal year.

Historically, the significantly lower rate of excise tax for the low-price tier has been meant to favour the cheap cigarettes produced by domestic manufacturers and consumed predominantly by lower income smokers. While a policy stance such as this seems to serve the dual purposes of protectionism and equity, it conflicts with the public health interest of society by encouraging the production and consumption of cheaper cigarettes. The low-price segment constitutes the majority of the volume share of cigarettes that increased from 61.7% in 2011-12 to 79.5% in 2016-17 (Figure 1). However, due to the much lower rate of tax on the low-price segment, the revenue share was only 28.2% in 2011-12, which increased to 53.0% in 2016-17 (Figure 1).

Figure 1: The volume and revenue share of cigarettes by price segments in Bangladesh, 2011-12 and 2016-17.



Source: Authors' calculation based on data for 2011-12 and 2016-17 from the National Board of Revenue, Ministry of Finance, Government of Bangladesh.

Note: The medium-price segment did not exist in 2016-17 due to the rule introduced by the National Board of Revenue in 2015-16 that all brands belonging to the medium-price segment in 2014-15 must move to the high-price segment, while no brands were allowed to move from the low-price to the medium-price category.

The first cigarette manufacturer in Bangladesh (known as East Pakistan prior to 1971) began its journey in 1949 as Pakistan Tobacco Company, which was renamed Bangladesh Tobacco Company (BTC) in 1972 immediately after the independence of Bangladesh. It started out as a subsidiary of British American Tobacco (BAT) and was taken over by BAT in 1998 taking the name British American Tobacco Bangladesh (BATB).¹² Initially, BTC and later BATB operated as a monopoly for many years. Currently, BATB and Dhaka Tobacco (DT) are the two major cigarette manufacturers commanding 70% and 18% respectively of the cigarette market in Bangladesh as of 2016-17.¹³ There are eight other small cigarette manufacturers that account for the remaining 12% of cigarette sales. Japan Tobacco International (JTI) and Phillip Morris International (PMI) have recently entered the market with intangible effect on the competitive environment of the industry. BATB operates as a near monopolist or market leader with brands in all four price tiers of the market, while DT operates mostly in the bottom three tiers. The other smaller companies operate in the lowest tier. JTI and PMI have introduced only premium brands. BATB's dominance in cigarette market is also reflected in its 71% contribution to total tax revenues from cigarettes in 2016-17.¹³

The tiered ad valorem excise tax structure gives rise to large price gaps between cheap and expensive brands and creates incentives for smokers to switch down to cheaper brands in the event of a tax increase.¹⁴ The availability of low-tax and low-price cigarettes also serves to encourage smoking among vulnerable populations such as the youth and the poor. In addition, the tiered ad valorem excise system creates opportunity for tax avoidance and evasion by the manufacturers who tend to reposition brands in the lower price tier to qualify for lower tax rates. In Bangladesh, the existence of the RRP creates an additional burden on tax administration as it is likely to give way to manoeuvring of market retail prices (MRP) by the manufacturers and retailers. These factors combined weaken the effectiveness of tobacco

taxation as an instrument for promoting public health as highlighted in the World Health Organization Framework Convention on Tobacco Control (WHO FCTC).¹⁵

Methods

Data

As NBR determines both the tax rates and the RRP for cigarette brands, in contrast to the usual process whereby the tax authority determines the tax rates and then allows the market to determine the price, the pass-through of tax increases onto prices by the tobacco industry in Bangladesh cannot be easily separated from the price increases controlled by the tax authority. However, as we will show, the industry exercises some power over the MRP that the consumers ultimately pay, with this price often deviating from the NBR-administered RRP. Since these prices can be different, it was necessary for us to collect brand-specific MRPs and compare with corresponding RRP announced by NBR.

The data on the MRPs of different brands of cigarettes were collected in two phases by the ITC Bangladesh Project team in collaboration with WHO. The first phase was conducted under the ITC Bangladesh Wave 3 Survey from November 2011 to April 2012 to collect data on brand-specific MRPs corresponding to the RRP announced by NBR for the fiscal year 2011-12. The second phase was conducted under the ITC Bangladesh Wave 4 Survey in October 2015. The data on brand-specific MRPs collected in this phase were used to correspond to the RRP announced by NBR for the fiscal year 2015-16.

The ITC Bangladesh Survey is a nationally representative survey, with multistage sampling design (discussed in detail in Nargis et al., 2015), conducted by the Bureau of Economic Research at the University of Dhaka, Bangladesh, in collaboration with the University of

Waterloo, Canada.¹⁶ The sampling units, selected at successive stages with probability proportional to population size, included 20 of 64 districts from six divisions, 37 upazilas from 20 districts and 78 clusters (villages in rural areas and wards in urban areas) from 37 upazilas. Interviewers used survey forms to report the prices of the top five most popular brands sold in both packs and sticks by each retailer. It should be noted that retailers are the main distribution channel in Bangladesh.¹⁷ The participants provided informed consent.

The MRP data for 2011-12 were collected by interviewing retailers in 350 stores in 78 sample clusters. In 2011-12, the survey covered 19 brands in low, 4 brands in medium, 4 brands in high, and 2 brands in premium price tiers out of 45, 4, 4, and 2 brands listed with NBR for the respective price tiers, totalling 1970 observations on market price by brands.

The MRP data for 2015-16 were collected from retailers in 253 stores in 76 villages. The price data covered 15 brands in low, 7 brands in high, and 1 brand in premium price tiers out of 23, 10 and 2 brands listed with NBR for the respective price tiers, totalling 1560 observations on market price by brands. In 2015-16, no medium-price brands were found in the retail stores due to the rule introduced by the NBR in 2015-16 that all brands belonging to the medium tier in 2014-15 must move to the high tier, while no brands were allowed to move from the low to medium tier.

The data on brand-specific RRP for 2011-12 and 2015-16 were sourced from the NBR. Due to significant presence of both pack and stick purchases, the NBR offers RRP for both types of transactions. The MRP data were accordingly collected for both pack and stick purchases.

Analysis

Cigarette packs can be marketed in 10- and 20-stick pack sizes. The price of 10-stick packs is generally half of the price of 20-stick packs. For analytical convenience and to ensure the comparability of brand prices over time, all 20-stick pack prices were divided into half and converted to 10-stick pack prices. The prices per stick reported for stick purchases were converted to equivalent prices per pack of 10 sticks by multiplying by 10. The MRP was compared between pack and stick sale on the same standardised basis of Bangladesh Taka (BDT) per 10 sticks to measure the premium that the retailers derive from one type of sale over the other.

The average MRP for each brand was calculated from the MRP data reported from the stores. This average MRP was compared with the RRP for each brand by type of sale in packs and sticks. The comparison was also classified by the four price tiers to analyse how the MRP was at variance with the RRP by the price and tax tier. We analysed the deviation of market price from recommended price by brands by applying the following linear regression to estimate the average deviation by price tiers:

$$MRP_{it} - RRP_{it} = b_0 + b_1MEDIUM_{it} + b_2HIGH_{it} + b_3PREMIUM_{it} + b_4STICK_{it} + b_5YEAR_t + \sum_j b_{6j}CLUSTER_{itj} + u_i \quad (1)$$

where i , t , and j stand for individual brands, survey year and cluster respectively; $MEDIUM = 1$ if a brand belongs to medium-price tier and 0 otherwise; $HIGH = 1$ if a brand belongs to high-price tier and 0 otherwise; $PREMIUM = 1$ if a brand belongs to premium tier and 0 otherwise; $STICK = 1$ if price is reported for stick purchase and 0 for pack purchase; $YEAR = 1$ if year of observation is 2015-16 and 0 for 2011-12; and $CLUSTER$ represents

regional fixed effects for sample clusters. The constant term b_0 represents the average difference between market and recommended prices per pack for the reference category which includes low-price brands sold in packs in 2011-12.

We used only a linear specification of the regression equation (1) as opposed to log transformations since the dependent variable can have 'zero' values in cases where the MRP matches the RRP. Log is undefined for 'zero' values and excluding these cases would bias the estimates upward. Besides, we are unable to use log form of the independent variables which are all categorical.

Although smokers using cheaper brands might be more inclined to purchase in sticks than in packs, the data collected at the store level do not reflect smokers' purchasing pattern. The interviewers collected price data by brand and type of purchase from each retailer they visited. Thus, the dataset contains two observations for each brand price collected from each store—price per pack for pack purchases and price per stick for stick purchases. There is no correlation between type of purchase and price tiers and the problem of multicollinearity of independent variables is eliminated by study design.

Ordinary least squares (OLS) estimation of equation (1) is likely to yield biased estimates because the assumption of homogeneity of variance may not hold when all the independent variables are categorical, and the dependent variable is continuous.¹⁸ Provided that the variance of the dependent variable within each subgroup can be estimated independently, the linear regression equation (1) can be estimated using the variance-weighted least squares (VWLS) method to account for heterogeneity of outcome across subgroups. Thus, a second

set of estimates is obtained using VWLS regression. The Chi-square statistic of the Cook-Weisberg test was used to confirm the presence of heteroscedasticity.

The final step was to measure the variation in revenue collection attributable to the variance of MRP from RRP. If MRP is greater than RRP, it discourages cigarette smoking more than intended by the RRP, and thus is 'better' for public health. However, it implies that the Bangladesh government could generate more revenue had tax been based on MRP. It also implies that manufacturers and retailers are making larger profit by charging higher prices in the market, while paying tax based on the RRP which is lower than the MRP. On the other hand, if MRP is less than RRP, it is likely to encourage smoking to the detriment of public health.

The extra industry revenue is calculated as the following sum over the price segments i :

$$\sum_i (\text{MRP}_i - \text{RRP}_i) \times \text{Sales volume in packs}_i$$

The potential tax revenue gain is measured by the following sum over the price segments i :

$$\sum_i (\text{MRP}_i - \text{RRP}_i) \times \text{Sales volume in packs}_i \times (\text{Excise tax rate} + \text{Value Added Tax rate})$$

Findings

Divergence in Market Retail Price between pack and stick sales

According to the ITC Bangladesh Wave 3 Survey data, 57% of cigarette consumption takes place in pack form, while 43% is in stick form. The large market share of single stick sales in Bangladesh suggests that there must be incentives from both the demand and the supply sides that underpin this form of transaction. On the demand side, smokers who have relatively lower smoking intensity tend to purchase in the stick form. In ITC Bangladesh Wave 3 Survey, we observed that the average per capita daily consumption of cigarettes by smokers who purchased in packs was 11.58, while that for smokers purchasing sticks was 7.02. Besides, for those who have little money to spare, buying in smaller quantities in stick form allows them to satisfy their immediate nicotine craving.

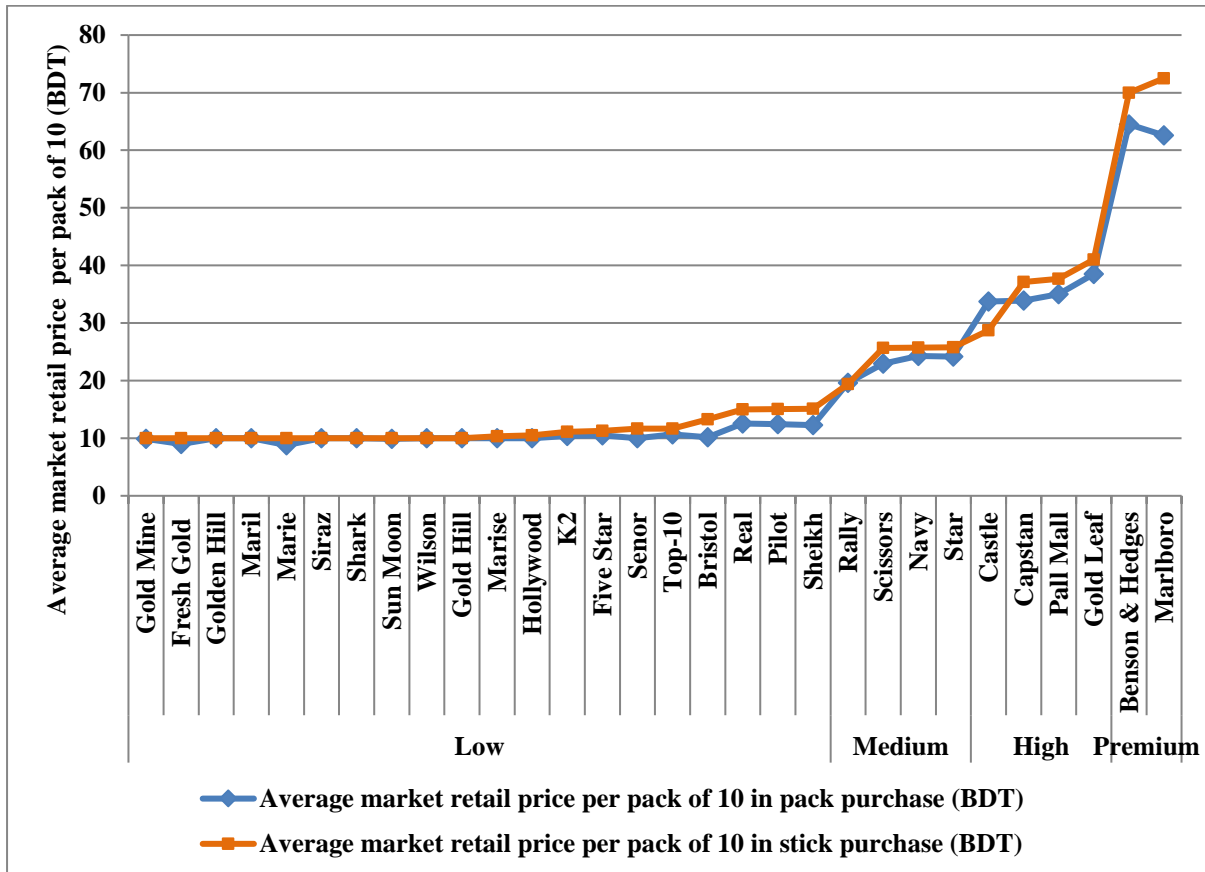
From the perspective of sellers, it enables greater differentiation along the demand curve. The supply-side incentive also lies in the price differential between pack and stick sales.

As shown in Figure 2a, for the year 2011-12, the price per 10 sticks does not differ significantly between pack and stick purchases for most of the low-price brands. For a few low-price brands that are popular such as Bristol, Real, Pilot, and Sheikh, the prices in stick purchase are greater than in pack purchase. Smokers are likely paying a premium in stick purchases of these popular brands for their brand loyalty. In contrast, for all the medium-price, high-price, and premium brands except for Castle in the high-price category, the prices in stick purchases are greater than in pack purchases. Figure 2b shows a clear price differential that exists for stick over pack sales across all brands in the market for 2015-16, the differential being more pronounced for high-price and premium brands compared to low-price brands. Since most of the market is concentrated in the low-price segment where it is also likely more price sensitive, the retailers do not extract much premium from stick sale at

this level. However, they can extract high retail margin for the higher-price brands in stick purchase where smokers are less price sensitive.

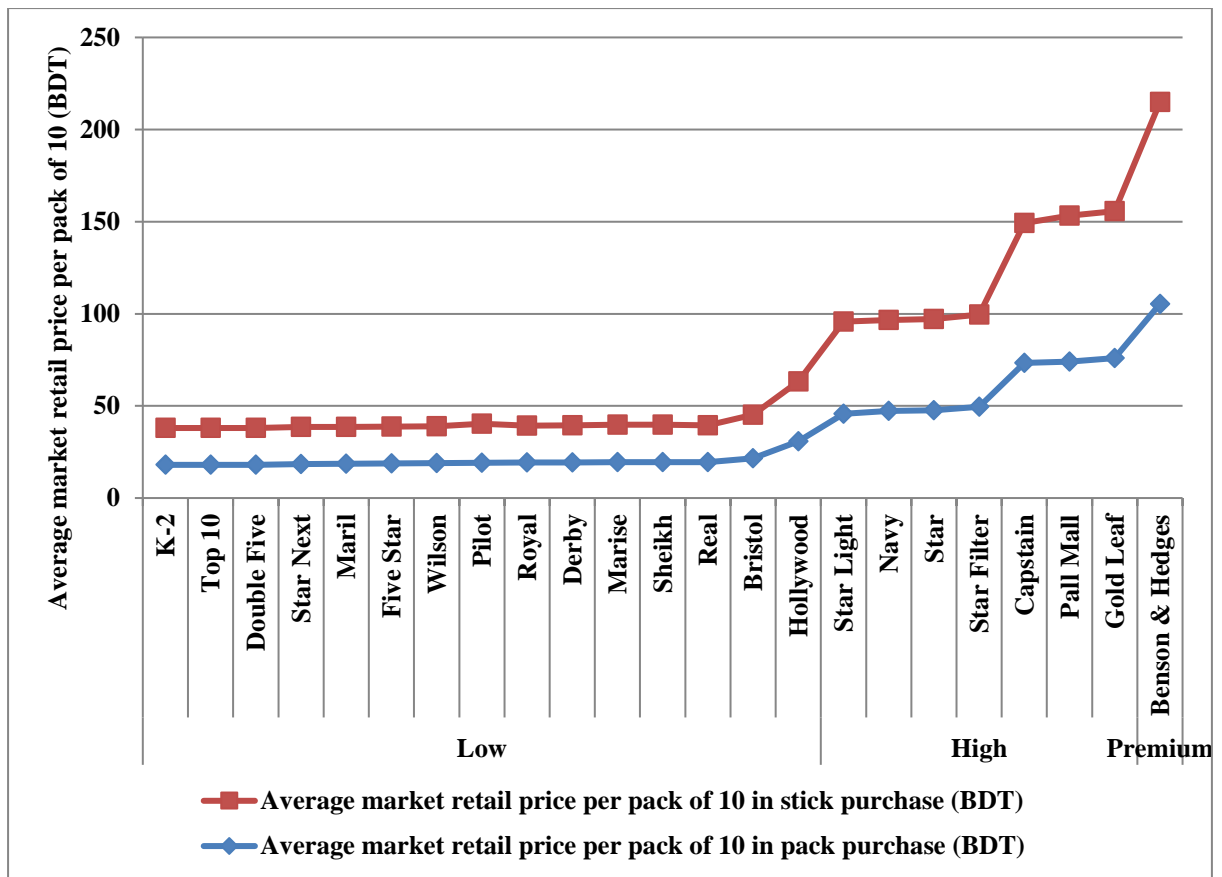
Figure 2: Comparison of cigarette market retail price (MRP) per pack of 10 (BDT) between pack and stick purchases by brand in Bangladesh

(a) 2011-12



Source: Authors' calculations based on market retail price data collected by the ITC Bangladesh Wave 3 Survey 2011-12.

(b) 2015-16



Source: Authors' calculations based on market retail price data collected by the ITC Bangladesh Wave 4 Survey 2014-15.

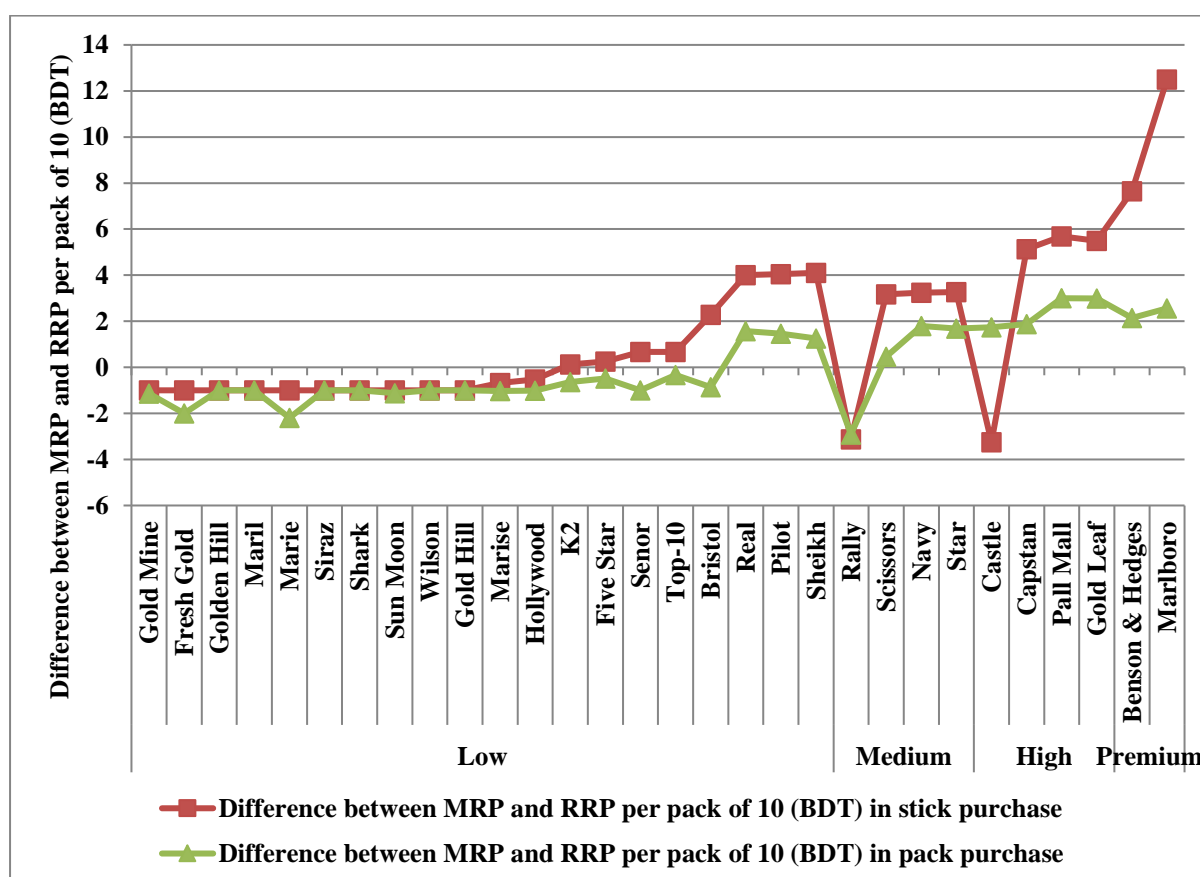
Note: The medium-priced segment did not exist in 2015-16 due to the rule introduced by the National Board of Revenue in 2015-16 that all brands belonging to the medium-price segment in 2014-15 must move to the high-price segment, while no brands were allowed to move from the low-price to the medium-price category.

Divergence between Market and Recommended Retail Prices

In Figure 3a and 3b, we compared the RRP with the MRP for both pack and stick sales for 2011-12 and 2015-16 respectively. In 2011-12, cigarette brands marketed in the medium-priced, high-priced, and premium tiers tended to record higher MRPs in both pack and stick purchases, except for two brands (e.g. Rally and Castle) (Figure 3a). A significant number of low-priced brands, on the other hand, were sold at the MRP below RRP as indicated by the negative differentials, suggesting the existence of manufacturers' discounting their brands at this low end of the market.

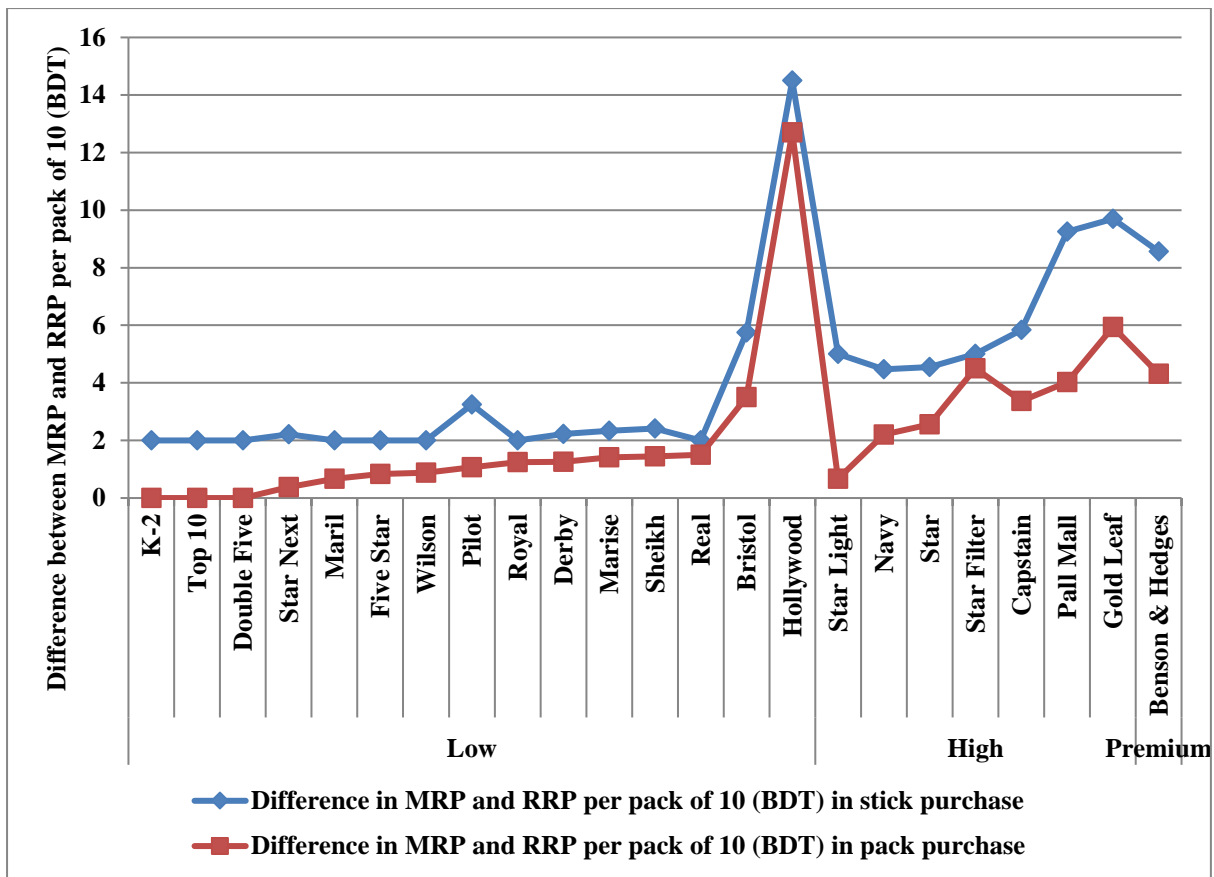
Figure 3: The MRP-RRP differential per pack of 10 (BDT) in stick and pack purchases by cigarette brands in Bangladesh

(a) 2011-12



Source: Authors' calculations based on the market retail price data collected by the ITC Bangladesh Wave 3 Survey 2011-12 and the recommended retail price data collected from the National Board of Revenue.

(b) 2015-16



Source: Authors' calculations based on the market retail price data collected by the ITC Bangladesh Wave 4 Survey 2014-15 and the recommended retail price data collected from the National Board of Revenue.

Note: The medium-price segment did not exist in 2015-16 due to the rule introduced by the National Board of Revenue in 2015-16 that all brands belonging to the medium-price segment in 2014-15 must move to the high-price segment, while no brands were allowed to move from the low-price to the medium-price category.

The MRP-RPP differential for both pack and stick purchases remained large for high-price and premium brands in 2015-16 (Figure 3b). However, a small price differential emerged for brands in the low-priced segment as well. This suggests that the manufacturers may have switched their pricing strategy in a contemporaneous or even collusive manner by no longer discounting low-price brands, although the differential of MRP over RRP for low-price brands were still lower than those for high-price and premium brands.

The mean of differences between MRP and RRP by brands and type of purchase (pack and stick) converted to 2015 prices are presented in Table 2. In 2011-12, retailers on average charged BDT 0.61, 2.11, 4.35, and 6.87 more than RRP per pack for low-price, medium-price, high-price, and premium brands. The difference was larger in stick than in pack purchases for all price tiers, with evidence of discounting in pack purchases in the low-price tier. The price differential grew noticeably bigger in 2015-16 compared to 2011-12 indicating that the profit motive of raising MRP above RRP got stronger over time. The discounting in pack purchases in the low-price tier was also replaced with a mark-up of BDT 2.31 per pack in 2015-16.

Table 2: Mean differential per pack (in 2015 BDT) between Market Retail Price (MRP) and Recommended Retail Price (RRP) by price segment in 2011-12 and 2015-16

Price segment	Number of stores	Pack purchase		Stick purchase		All purchases	
		Mean (2015 BDT)	95% CI	Mean (2015 BDT)	95% CI	Mean (2015 BDT)	95% CI
2011-12							
Low	933	-0.19	(-0.33, -0.05)	1.22	(0.98, 1.46)	0.61	(0.46, 0.76)
Medium	561	1.47	(1.27, 1.67)	2.58	(2.24, 2.93)	2.11	(1.89, 2.31)
High	321	3.27	(2.97, 3.58)	5.16	(4.38, 5.94)	4.35	(3.90, 4.79)
Premium	155	2.65	(1.94, 3.35)	10.06	(9.78, 10.33)	6.87	(6.33, 7.41)
All brands	1970	1.07	(0.94, 1.20)	2.94	(2.72, 3.17)	2.14	(2.00, 2.28)
2015-16							
Low	705	2.31	(1.90, 2.71)	3.77	(3.31, 4.26)	3.20	(2.88, 3.51)
Medium	0	n/a	n/a	n/a	n/a	n/a	n/a
High	736	4.43	(3.91, 4.95)	7.91	(7.46, 8.36)	6.52	(6.17, 6.87)
Premium	119	5.26	(4.00, 6.51)	10.48	(8.74, 12.22)	8.39	(7.25, 9.54)
All brands	1560	3.53	(3.21, 3.86)	6.24	(5.89, 6.59)	5.16	(4.92, 5.40)

Source: Authors' calculations based on the market retail price data collected by the ITC Bangladesh Wave 3 Survey 2011-12 and Wave 4 Survey 2014-15, and the recommended retail price data collected from the National Board of Revenue.

Note: The medium-price segment did not exist in 2015-16 due to the rule introduced by the National Board of Revenue in 2015-16 that all brands belonging to the medium-price segment in 2014-15 must move to the high-price segment, while no brands were allowed to move from low-price to the medium-price category.

The results of OLS and VWLS regression of the differential between MRP and RRP are presented in Table 3. The Chi-square statistic of the Cook-Weisberg test confirms the presence of heteroscedasticity. Hence, we use VWLS estimates to correct for the bias in OLS estimates. The results of VWLS (pooled) regression indicate that for low-price brands, MRPs were lower than RRP by BDT 1.47 on average, suggesting the presence of discounting in the low tier. In contrast, the MRPs were higher than RRP for all the three upper tiers. The statistically significant and larger estimates for higher price tiers (BDT 4.02 for medium-price, BDT 4.05 for high-price and BDT 5.25 for premium brands) suggest that the mark-up of market price over recommended price was higher for more expensive brands, which is indicative of cross-subsidization of low-price brands through charging a higher premium on higher-priced brands. The differential became larger by BDT 3.39 in 2015-16 compared to 2011-12, which suggests that the profit motive of charging market prices over the recommended prices intensified over time.

Separate VWLS regression for 2011-12 and 2015-16, however, indicate that the discounting offered to low-price brands in 2011-12 (BDT 1.39) reversed to an average premium of BDT 1.89 in 2015-16 and the mark-up for high-price and premium brands attenuated in 2015-16 compared to 2011-12. Nevertheless, the mark-up was significantly higher for high-price and premium brands than for low-price brands in both years.

Table 3: Coefficients estimated from ordinary least squares (OLS) and variance-weighted least squares (VWLS) regression of price differential per pack (in 2015 BDT) between market and recommended prices by price tiers in 2011-12 and 2015-16.

Dependent variable:	OLS			VWLS (pooled)			VWLS (2011-12)			VWLS (2015-16)		
	Coeff.	SE	P-value	Coeff.	SE	P-value	Coeff.	SE	P-value	Coeff.	SE	P-value
Difference of market and recommended prices												
Control variables:												
Constant	-0.35	0.56	0.54	-1.47	0.00	0.00	-1.39	0.00	0.00	1.89	0.00	0.00
Price tiers (Reference: LOW)												
MEDIUM	1.38	0.17	0.00	4.02	0.00	0.00	4.45	0.00	0.00	-	-	-
HIGH	3.01	0.13	0.00	4.05	0.05	0.00	3.72	0.08	0.00	3.28	0.09	0.00
PREMIUM	4.77	0.21	0.00	5.25	0.00	0.00	5.67	0.00	0.00	3.08	0.00	0.00
Type of purchase (Reference: Pack)												
Stick	2.03	0.11	0.00	0.09	0.00	0.00	0.18	0.00	0.00	0.10	0.00	0.00
Year (Reference: 2011-12)												
2015-16	1.73	0.13	0.00	3.39	0.00	0.00						
Number of observations		7060			6003			3270			2733	
Adjusted R-squared		0.20										
Cook-Weisberg test for heteroskedasticity:												
Chi-square (1)		699.28										
Prob>Chi-square		0.0000										

Source: Authors' calculations based on the market retail price data collected by the ITC Bangladesh Wave 3 Survey 2011-12 and Wave 4 Survey 2014-15, and the recommended retail price data collected from the National Board of Revenue.

Notes:

1. The regression controls for regional fixed effects using the sample clusters. The estimates of corresponding coefficients are suppressed for the brevity of presentation.
2. The medium-price segment did not exist in 2015-16 due to the rule introduced by the National Board of Revenue in 2015-16 that all brands belonging to the medium-price segment in 2014-15 must move to the high-price segment, while no brands were allowed to move from low-price to the medium-price category.

Implications for tax revenue and industry profit

When MRP exceeds RRP, the retail margin over and above RRP goes untaxed, with the implication that total tax revenues are lower than otherwise would be the case. In the fiscal year 2011-12, NBR collected BDT 94.78 billion (USD 1.16 billion) in excise and VAT revenue from the cigarette manufacturers. This was 10.26% of total revenue collection by the NBR in that year. Our calculation shows that if the NBR were authorized to collect tax on the MRP, it could have collected an additional BDT 7.5 billion (USD 91.2 million). The amount of excise and VAT revenue collected was thus 7% lower than the revenue potential. On the other hand, the tobacco industry made an estimated BDT 11 billion (equivalent to USD 134.7 million) in extra profit margin over and above the profit embedded in the RRP. The loss of cigarette tax revenue was even larger in 2015-16 at BDT 23.9 billion (USD 307 million), while the extra profit margin for the industry was an estimated BDT 35.3 billion (USD 452.5 million), more than doubling after adjustment for inflation since 2011-12.

Price gap between the cheapest and the most expensive cigarette brands

Due to the divergence between MRP and RRP, the price gap between the premium and low-priced brands also widened. As shown in Table 4, in 2011-12, the RRP of the most expensive brand, Benson & Hedges, was 5.67 times the RRP of the cheapest brand, Marie, in pack purchase. In terms of MRP, this ratio increased to 7.33. Similarly, in stick purchase, the ratio of RRP of the most expensive brand to the cheapest brand was 5.45, which increased to 7.25 in case of MRP. In 2015-16, both the MRP and the RRP were higher for pack and stick purchases. The price gap between the most expensive brand and the cheapest brand continued to be high in 2015-16 although it decreased somewhat for MRP compared to 2011-12.

Table 4: Market retail price (MRP), recommended retail price (RRP) and the price ratio of the most expensive and the cheapest cigarette brands in Bangladesh, 2011-12 and 2015-16.

	Price per pack of most expensive brand		Price per pack of cheapest brand		Price ratio: cheapest and most expensive brands	
	In Pack purchase (BDT/ pack of 10)	In stick purchase (BDT/ stick)	In pack purchase (BDT/ pack of 10)	In stick purchase (BDT/ stick)	In pack purchase	In stick purchase
2011-12						
Market retail price (MRP)	64.50	7.25	8.80	1.00	7.33	7.25
Recommended retail price (RRP)	62.35	6.00	11.00	1.10	5.67	5.45
2015-16						
Market retail price (MRP)	105.32	10.96	18.00	2.00	5.85	5.48
Recommended retail price (RRP)	101.00	10.10	18.00	1.80	5.61	5.61

Source: Authors' calculations based on the market retail price data collected by the ITC Bangladesh Wave 3 Survey 2011-12 and Wave 4 Survey 2014-15, and the recommended retail price data collected from the National Board of Revenue.

Discussion

Cigarette manufacturers' differential pricing strategy

This study demonstrates that cigarette manufacturers in Bangladesh follow pricing strategies that allow them to extract extra profit margin while avoiding payment of tax on the additional profit. By increasing market retail price higher than the government recommended price, the manufacturer can potentially extract higher profit margin from the high-end of the tiered system where smokers are expected to be more affluent and less price sensitive.¹⁹ In addition, it allows the manufacturer to cross-subsidize brands at the lower tiers with excess profit earned at the upper tier. By lowering the relative price of brands in the low tier, the manufacturer can attract more price sensitive smokers to buy cheaper brands and expand overall demand. As a matter of fact, total cigarette sales in Bangladesh registered a 12% increase from 79 to 89 billion sticks between 2012 and 2016,²⁰ while the market share of low-price brands expanded from 61.7% to 79.5%. The market share of low-priced brands in the total cigarette production of BATB itself increased from 67% to 74% in one year between 2014 and 2015.²¹ Thus, the tobacco industry maximizes profit both from increasing the profit per unit at the high end and expanding the market size at the low end of the price distribution.

It is evident from this study that the manufacturers switched their pricing strategy for low-price brands from discounting in 2011-12 to charging a premium over recommended prices in 2015-16. It suggests that the price discounts offered to recruit new smokers in the earlier period was no longer necessary. With the expansion and maturing of the market, manufacturers felt confident enough to extract extra profit margin over recommended prices even from the low-price cigarettes.

The differential pricing strategy of tobacco companies counteracts the intended public health impact of tax and price increases. On the one hand, it encourages initiation of tobacco use

among poorer and younger people. On the other, it widens the price dispersion between cheap and expensive cigarettes offering smokers the option to switch-down rather than to reduce or quit smoking when tax and price increase. Thus, it can undermine the effectiveness of tax and price increases in inducing smoking cessation or mitigating smoking initiation.²²⁻²⁴

Although the availability of single sticks is convenient for smokers with low daily purchasing power, they do end up spending more per unit with the extra profit enjoyed by retailers.

Single stick sales also pose a public health problem because it gives more room for smokers to continue smoking even though at a lower intensity, and this in turn becomes an impediment to quitting. Evidence suggests that smoking with lower intensity does not reduce the risk of smoking related diseases in a linear fashion.²⁵ In addition, the availability of single sticks can encourage experimentation among youth who are at risk of addiction.

Policy implications for Bangladesh

Despite the administration of cigarette price by the tax authority in Bangladesh, the cigarette manufacturers have been able to manipulate the retail price by setting the MRP below or close to the RRP at the low-priced tier while raising the MRP above the RRP at a much higher rate at the medium, high, and premium tiers. This industry pricing strategy has resulted in the majority of cigarette consumption being concentrated in the low-price tier, encouraging consumption among low-income smokers, while creating larger profit margin from the higher price tiers for the tobacco industry and revenue loss to the government.

The industry's differential pricing strategy is being supported by the tiered ad valorem excise tax structure that has been in force in Bangladesh for the past two decades. First, the government should consider replacing the tiered tax structure with a uniform system. Second, a specific tax (fixed amount per pack) should be in place instead of an ad valorem tax

(percentage of retail price). A specific tax would help reduce the price gap between low-price and higher-price brands and ensure a steady and predictable revenue flow. A specific tax, however, would need to be adjusted upward for inflation and income growth routinely in order to increase prices and keep the affordability of tobacco products from increasing.

The administration of a uniform specific excise system is significantly easier for the government. It would also allow the government to withdraw control from administering the RRP for cigarettes, which creates extra burden on the tax authority. The tax authority does not have the capacity to monitor and enforce the RRP across thousands of retailers throughout the country. The tobacco industry is taking advantage of this administrative weakness to maximize their profit. Therefore, it is recommended that the government let the market determine the relevant price and collect the revenue based on a sufficiently high specific tax that is independent of the value of the product and depends only on the volume of sale.

Finally, strong legislative measures should be taken to eliminate the sale of single sticks. Although such legislation requires enforcement, it would support other tobacco control efforts by increasing the likelihood that smokers will quit and by closing an important gateway for smoking initiation among youth.

Conclusion

Bangladesh cigarette manufacturers have adopted a differential pricing strategy that lowers the relative price of cheaper brands with cross-subsidization from the higher profit margin from expensive brands and expands cigarette demand, with negative public health impact and foregone tax revenue. This pricing strategy is supported – even amplified – by the tiered ad valorem excise structure that has been in place in Bangladesh for the past two decades. The government should replace the tiered ad valorem tax structure with a uniform specific excise system. The government also needs to withdraw its control over setting cigarette prices by allowing the market to determine them.

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25+ countries • >50% of the world's population
>60% of the world's smokers • >70% of the world's tobacco users

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France

Germany

Greece

Hungary

India

Ireland

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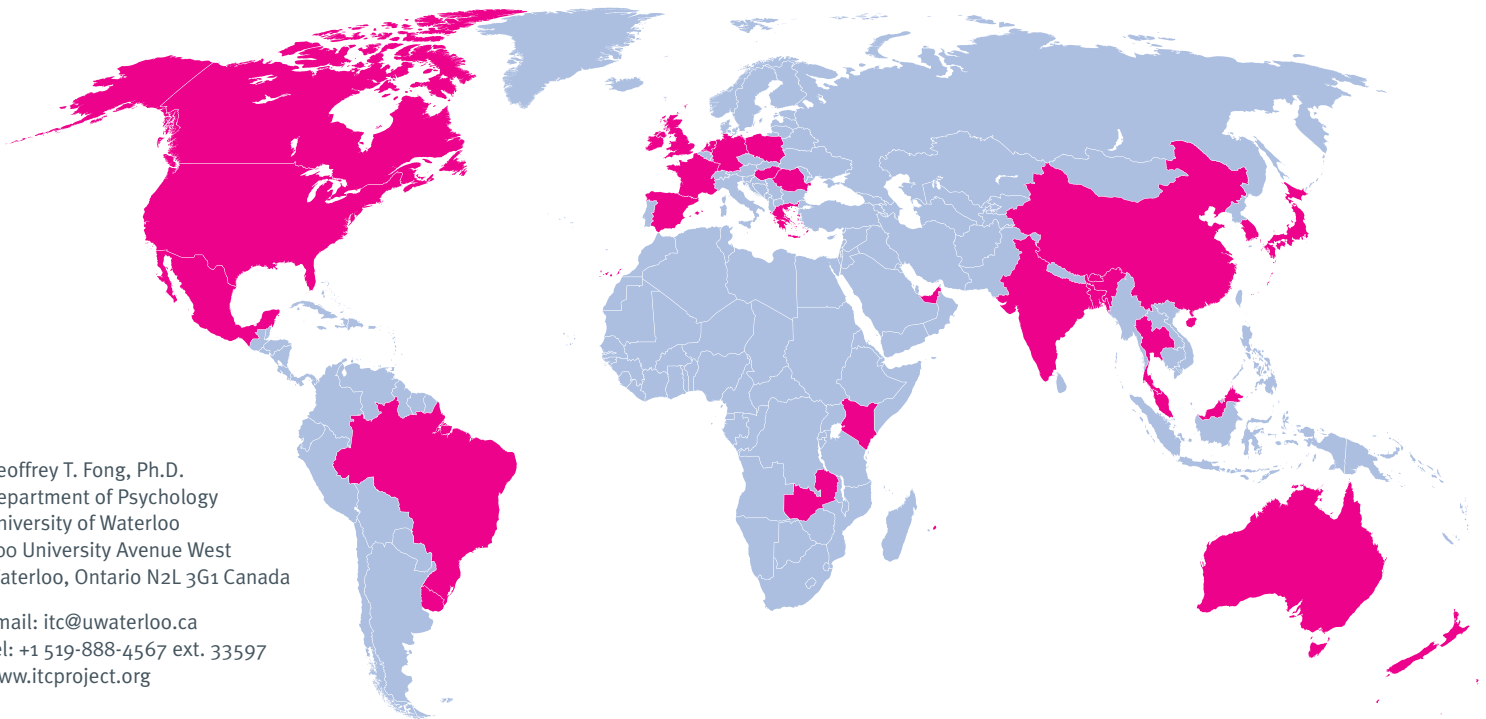
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