

The Economics of Tobacco and Tobacco Taxation in Bangladesh

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Taxing all cigarette brands at a specific tax rate of 34 taka per 10 sticks (70% of retail price) could lead nearly 7 million current smokers to quit and prevent 7 million youth from initiating smoking, preventing 6 million premature deaths and raising additional excise revenues of 15.1 billion taka (US\$ 200 million).

Further, taxing all bidis at a specific tax rate of 4.95 taka per pack (40% of average prices) could lead 3.4 million adult bidi smokers to quit and prevent 3.5 million youth from initiating bidi smoking, preventing 2.5 million premature deaths and raising additional excise revenues of 7.2 billion taka (US\$ 87.5 million).



- Monitor** tobacco use and prevention policies
- Protect** people from tobacco smoke
- Offer** help to quit tobacco use
- Warn** about the dangers of tobacco
- Enforce** bans on tobacco advertising, promotion and sponsorship
- Raise** taxes on tobacco

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Executive Summary

Introduction

Bangladesh is one of the largest tobacco consuming countries in the world. Over 58% of men and 29% of women use some form of tobacco, whether smoked (both cigarettes and bidis) or smokeless. In 2012, an estimated 46.3 million adults used some form of tobacco product, smoked or smokeless. Most smokers are male — 28.3% of adult men smoke manufactured cigarettes and 21.4% smoke bidis. In contrast, smokeless tobacco use is substantial across both genders, with 26.4% of men and 27.9% of women using some form of smokeless tobacco. Most smokeless tobacco use is of betel quid with tobacco (zarda) though other forms of smokeless tobacco products, including gul, sada pata, and khoinee, are also commonly used.

Youth tobacco use is a growing problem in Bangladesh. In 2007, 6.9% of in-school youth ages 13 through 15 years reported current use of some tobacco product, including 2.0% who reported cigarette smoking.

Overall cigarette and bidi consumption have been rising in Bangladesh in recent years, with cigarette smoking rising by over 40% between 1997 and 2010, and bidi consumption rising by over 80% during the same period. While its population has been growing rapidly, the increases in consumption have outpaced population growth so that per capita consumption of both grew sharply over this period.

Given the high levels of tobacco use, Bangladesh faces considerable health and economic consequences from tobacco. Over 57,000 deaths are attributed to tobacco use each year, about one in six of all deaths among Bangladeshis 30 years and older. In 2004, nearly 51 billion taka were spent to treat the diseases caused by smoking, including 5.8 billion taka spent to

treat non-smokers exposed to tobacco smoke. In addition, smoking harms the economy, with a conservative estimate that smoking-attributable lost productivity was 59 billion taka in 2004. Together, the economic costs of tobacco use in Bangladesh accounted for over 3% of GDP in 2004.

Tobacco Growing and Manufacturing

Employment in tobacco farming accounts for less than 0.5% of agricultural employment in Bangladesh. Tobacco is grown throughout the country, with the largest tobacco growing areas including Rangpur, Kushtia, and Chittagong Hill. After many years as a net importer of tobacco leaf, acreage and yields rose beginning 1999, and Bangladesh has become a net exporter in recent years, exporting about one-third of the tobacco grown.

The cigarette market in Bangladesh, as in much of the world, is highly concentrated. The premium segment of the market in Bangladesh is dominated by British American Tobacco Bangladesh (BATB), a subsidiary of multinational tobacco company British American Tobacco. The largest local tobacco company is Dhaka Tobacco Industries (DTI), a part of the Akij Group. DTI dominates the market for lower-priced cigarettes. In 2007, DTI entered into an agreement with Philip Morris International to market Marlboro cigarettes in Bangladesh.

By contrast, bidi manufacture in Bangladesh is more fragmented, with Akij Bidi Factory, Ltd. (another part of the Akij Group) the largest firm, accounting for over one-quarter of the market, and the top 4 firms accounting for less than 50% of the market.

Very few Bangladeshis are employed in cigarette manufacturing, while more are involved in bidi manufacturing, including many women and children

working in household based establishments where they make low wages and live in poverty. Overall, employment in tobacco manufacturing is estimated to account for less than 1% of overall manufacturing employment in Bangladesh.

Tobacco Control Efforts

The World Health Organization's Framework Convention on Tobacco Control (FCTC), the world's first public health treaty, calls for governments to adopt comprehensive policies to curb tobacco use. Bangladesh signed the FCTC on 16 June, 2003, and ratified it less than one year later, on 14 June, 2004. Bangladesh's participation in the FCTC has resulted in some advances in tobacco control policy, most notably the Smoking and Tobacco Products Usage (Control) Act, 2005.

The 2005 Act restricted smoking in a variety of places, but the only fully smoke-free environments in Bangladesh are health care facilities and educational facilities (not including universities), sports facilities and taxis. Smoking is restricted in other venues, including restaurants, bars, and workplaces, but smoking is allowed in designated areas. The Act also mandated rotating, textual warning labels that cover 30% of the front and back of cigarette packs. Efforts to strengthen these warnings to include more prominent, rotating graphic images are ongoing. Additionally, the Act prohibits a variety of tobacco product advertising, some promotions, and sponsorships, but point-of-sale advertising and promotional discounts continue to be allowed. Bangladesh does have a national agency for tobacco control and tobacco prevention is a national objective, but significant progress is required to reach the set of strong, comprehensive policies recommended by the World Health Organization as part of the MPOWER package.¹

Tobacco Taxes, Prices and Demand

The cigarette tax structure in Bangladesh is complicated, with a tiered structure which imposes

different *ad valorem* taxes based on retail cigarette price slabs. Bidis are taxed at a much lower rate, with the effective rate reduced even further by taxing them based on an artificially determined "tariff value" rather than actual retail price.

Excise taxes in Bangladesh account for just over half of retail cigarette prices on average, while total taxes on cigarettes account for almost two-thirds of retail prices. This is below the level in countries that have taken a comprehensive approach to reducing tobacco use, where excise taxes typically account for 70% or more of retail price and total taxes typically account for more than 3/4 of retail price. As a result, cigarette prices in Bangladesh are among the lowest in the world and bidis are even cheaper. In addition, real cigarette prices have been falling in recent years, and increases in real incomes over the past decade have made tobacco products increasingly affordable.

Extensive research from a growing number of countries has documented the inverse relationship between tobacco product prices and consumption. Bangladesh is no exception. Existing evidence as well as new estimates produced for this report clearly show that falling cigarette and bidi prices lead to increases in smoking, while rising prices will reduce smoking, all else being constant. These estimates indicate that a 10% increase in average cigarette prices in Bangladesh will lead to an over 5% reduction in cigarette consumption, while a 10% increase in average bidi prices will reduce their consumption by almost 7%. In addition, both the existing and new evidence show that rising incomes could lead to significantly more smoking in Bangladesh unless steps are taken to reverse this trend.

Impact of Tax Increases on Public Health and Tax Revenues

Based on existing and new estimates, we estimated the impact of changes in the existing tax structure and rates. Eliminating the tiered tax structure and adopting a uniform specific excise tax of

34 taka per pack of 10 cigarettes would result in the cigarette excise tax accounting for 70% of retail prices as recommended by the World Health Organization (WHO). This tax would raise average cigarette prices by almost 130% and reduce consumption by more than two-thirds. In addition, this tax and price increase would lead nearly 7 million current Bangladeshi cigarette smokers to quit smoking, while preventing over 7 million Bangladeshi youth from taking up cigarette smoking. Together, these reductions in smoking will prevent almost 6 million premature deaths caused by tobacco use in the current population cohort. At the same time, because of the inelasticity of cigarette demand, the tax increase will generate almost over 15 billion taka (US\$ 200 million) in new cigarette tax revenues.

Similarly, sharp increases in bidi taxes would also generate significant new tax revenues while reducing bidi smoking and its public health consequences. We estimate that levying a uniform specific excise tax of 4.95 taka per pack of 25 bidis and applying the VAT to the actual retail price of bidis would reduce the number of adult bidi smokers by over 3.4 million and prevent almost 3.5 million youth from taking up bidi smoking. These reductions in bidi smoking would prevent nearly 2.4 million premature deaths that will otherwise result from bidi smoking in the current Bangladeshi population cohort, while generating about 7.2 billion taka (US\$ 87.5 million) in new bidi excise tax revenues.

Recommendations

1. Eliminate the use of price slabs as the basis for differential taxation.
2. Adopt a uniform specific cigarette excise tax that significantly raises cigarette prices and reduces tobacco use.
3. Increase bidi taxes substantially through a high uniform specific bidi excise tax that significantly raises bidi prices and reduces use.
4. Increase taxes on other tobacco products to be equivalent to cigarette taxes and to reduce the use of these products.
5. Implement annual adjustments to specific excise tax rates so that they retain their real value over time.
6. Implement annual adjustments to excise tax rates on tobacco products so that they result in increases in product prices that are at least as large as increases in incomes.
7. Strengthen tobacco tax administration, improve enforcement, and tax duty-free sales of tobacco products in order to reduce tax evasion and avoidance.
8. Earmark tobacco tax revenues for health purposes, including health promotion and tobacco control.

Endnotes

¹ World Health Organization. WHO Report on the Global Tobacco Epidemic, 2008: The MPOWER Package. Geneva: World Health Organization. 2008.

I. Introduction

Tobacco smoking and other forms of tobacco use impose a large and growing public health burden globally and in Bangladesh. Globally, tobacco use currently causes 5.4 million premature deaths each year, and current trends predict that one billion people will die from tobacco use in the 21st century.¹ Tobacco use imposes considerable economic costs, both on account of the health care expenses incurred to treat the diseases caused by tobacco use and from the lost productivity resulting from tobacco-related illnesses and premature death. Bangladesh is one of the largest tobacco consuming countries in the world. Applying prevalence figures from the 2009 Global Adult Tobacco survey to the 2012 population, it is estimated that over 46.3 million persons ages 15 and older consume tobacco products, including over 43% of all men and nearly 29% of women.²

Over 46.3 million persons ages 15 and older consume tobacco products, including over 43% of all men and nearly 29% of women.

Tobacco use in Bangladesh is split among a variety of different products, with 23% of adults smoking tobacco, and 27.2% consuming smokeless tobacco products. Men are much more likely to smoke than women, with smoking prevalence among men at nearly 45%, as compared to 1.5% among women. Most female smokers smoke bidis, while men are more likely to smoke manufactured cigarettes, although many consume bidis. In contrast, smokeless tobacco use rates among women are slightly higher than they are among men. In addition, a significant number of Bangladeshi youth are taking up tobacco use, with over 9% of boys and 5% of girls ages 13 through 15 consuming some tobacco product.³

The growing recognition of the health and economic consequences of tobacco use have led many to call for the adoption and implementation of strong tobacco control measures, prompting some policy makers to introduce a variety of legislation. To date, however, these efforts have been met with strong opposition from the tobacco industry and existing policies are relatively weak. While the country has signed and ratified the WHO (World Health Organization) Framework Convention on Tobacco Control, it does not yet meet most of the obligations and guidelines of the treaty.^{4,5} Smoke-free policies are limited to health care and educational (excluding university) facilities and do not cover bars, restaurants, government buildings, transport, indoor workplaces and other indoor public places. Tobacco advertising is banned on television and radio, in local magazines and newspapers, and on billboards, but is allowed at the point of sale. Tobacco company sponsorship of tournaments is banned, but promotional discounts and distribution of free samples are allowed. Health warnings are required on cigarette and bidi packages, but do not include graphic images, and no warnings are required on smokeless tobacco products. Tobacco excise taxes have increased over time, but tobacco products have become more affordable over time and significant tax increases have not been adopted to curb tobacco use.

The existing tobacco tax structure in Bangladesh is complex, keeping some products relatively inexpensive while creating opportunities for tax avoidance and tax evasion. The cigarette market in Bangladesh is largely controlled by two firms — the multinational British American Tobacco (BAT), which dominates the premium segment of the market, and the local Dhaka Tobacco Industry (DTI), which dominates the lower priced market segments. In 2007, DTI entered into an agreement with Philip Morris International (PMI) to distribute PMI's brands in Bangladesh. In contrast, the bidi and smokeless tobacco product markets are more fragmented.

In this report, we briefly describe the tobacco environment in Bangladesh, beginning with a discussion of tobacco use and its health and economic consequences, followed by a short review of the supply of tobacco and tobacco products. Given available data, most of the discussion focuses on smoked tobacco products, particularly manufactured cigarettes and bidis. We then provide a short description of tobacco control policies in Bangladesh, followed by a more

detailed discussion of tobacco taxes and prices. Existing evidence on the effects of prices on tobacco use is presented and this evidence is used to estimate the impact of alternative tax increases on consumption, excise tax revenues, tobacco use prevalence, and future deaths from tobacco use among those in the current population cohort. The report concludes with recommendations for future tobacco tax policy in Bangladesh.

Endnotes to Chapter I

- ¹ World Health Organization. WHO Report on the Global Tobacco Epidemic, 2008: The MPOWER Package. Geneva: World Health Organization. 2008.
- ² Global Tobacco Surveillance System. Global Adult Tobacco Survey (GATS) - Fact Sheet, Bangladesh: 2009. Atlanta GA: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. 2009.
- ³ Global Youth Tobacco Survey. Bangladesh (Ages 13-15) Global Youth Tobacco Survey (GYTS) Fact Sheet. Atlanta GA: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. 2008.
- ⁴ World Health Organization. WHO Framework Convention on Tobacco Control. Geneva: World Health Organization. 2003.
- ⁵ World Health Organization. WHO Report on the Global Tobacco Epidemic, 2011: Implementing Smoke-Free Environments. Geneva: World Health Organization. 2011.

II. Tobacco Use and its Consequences in Bangladesh

Bangladesh is one of the largest tobacco consuming countries in the world. Tobacco is consumed in many forms in Bangladesh, including smoking of cigarettes, bidis, waterpipe (hookah), and chewing (often with betel leaves and nuts, as jarda). Cigarettes and bidis account for most of smoked tobacco consumption. Data from various surveys suggest that smoking prevalence has been relatively flat or rising in Bangladesh since the mid-1990s. Initiation of tobacco use occurs at relatively older ages in Bangladesh, but a large number of Bangladeshi youth have tried smoking and many consume other tobacco products.

Country Profile

Bangladesh's estimated population in 2012 is over 160 million and the country is one of the most densely populated in the world. Bangladesh is divided into 7 administrative divisions, which are further divided into 64 districts or zilas. The population is relatively young, with more than one-third under the age of 15 years compared to less than 5% ages 65 years or older. With per capita national income of US\$ 700 in 2010, Bangladesh is classified by the World Bank as a low-income country. Economic growth in Bangladesh, however, has been steady in recent years, with an average annual growth rate of over 6% in real GDP between 2006 and 2010. While poverty rates have fallen over time with economic development, 40% of the country was estimated to live in poverty in 2005. Literacy is low but improving, with the literacy rate in 2009 estimated at 56% for those ages 15 years and older.

Adult Tobacco Use

Based on data from the Global Adult Tobacco Survey conducted in 2009, 43.3% of Bangladeshis ages 15 and older consume some type of tobacco product.

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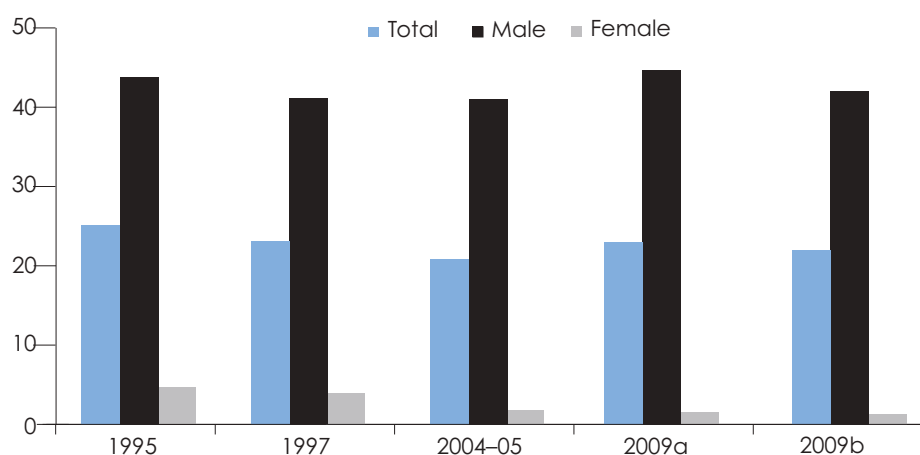
Many are smokers, with 23.0% of adults reporting tobacco smoking and 20.9% reporting daily smoking. Men are about twice as likely to use tobacco products as are women, with prevalence rates of 58.0% and 28.7%, respectively. Men are much more likely to smoke than women, with smoking prevalence among men at 44.7% compared to 1.5% for women. More than half of smokers consume manufactured cigarettes (14.2% prevalence rate), while just under half consume bidis (11.2% prevalence rate). Over one million Bangladeshi adults smoke other forms of tobacco, including hand-rolled cigarettes, cigars, pipes, and water-pipe. Given an estimated population ages 15 and older in 2011 of nearly 107 million, these prevalence rates suggest that there are over 46.3 million tobacco users in Bangladesh, including over 24.5 million smokers.

Smoking prevalence in Bangladesh has been assessed infrequently since the mid-1990s; while survey methods and samples vary across surveys and over time, these surveys suggest that smoking prevalence has been relatively flat among men for the past 17 years, while declining somewhat among women (see Graph 2.1).

About one in ten smokers smokes less than daily, with non-daily smoking rates similar among male and female smokers. Male smokers are somewhat more likely to smoke cigarettes (28.3% prevalence) than they are to smoke bidis (21.4% prevalence), while most females smokers smoke bidis (prevalence rates of 0.2% and 1.1% for cigarettes and bidis, respectively).

Smokeless tobacco use is common among both men and women, with 27.2% of Bangladeshi adults reporting any smokeless tobacco use. A slightly higher percentage of women than men use smokeless tobacco

**Graph 2.1: Tobacco Smoking Prevalence, Total and by Gender
Bangladesh, 1995-2009**



Notes: Data are from the following surveys:
 1995 - 10 and older, Bangladesh Bureau of Statistics
 1997 - 10 and older, Bangladesh Bureau of Statistics
 2004-5 - 15 and older, WHO
 2009a - 15 and older, Global Adult Tobacco Survey
 2009b - 15 and older, ITC-Bangladesh

Smokeless tobacco use is common among both men and women, with 27.2% of Bangladeshi adults—26.4% of men and 27.9% of women—reporting any smokeless tobacco use.

products. Most smokeless tobacco use is in the form of betel quid with tobacco, with relatively low prevalence rates for sada pata, gul, khoinee, and other forms of tobacco. Tobacco use patterns in Bangladesh are summarized in Table 2.1.

As in high-income countries, as well as a growing number of low and middle-income countries, tobacco use prevalence falls with income and education, as shown in Graphs 2.2 and 2.3. The socioeconomic gradients in tobacco use are particularly pronounced

for bidis and smokeless tobacco products, while essentially non-existent for cigarettes.

Smoking cessation is not uncommon in Bangladesh, with 17.85% of ever-daily smokers reporting having successfully quit smoking. Nearly half of former smokers (47.5%) report having stayed quit for more than ten years, while more than one in eight stopped in the past year. In addition, many current smokers want to quit smoking, with nearly half (47.3%) making a quit attempt in the past year and more than two-thirds (68%) indicating that they are planning to or thinking about quitting.

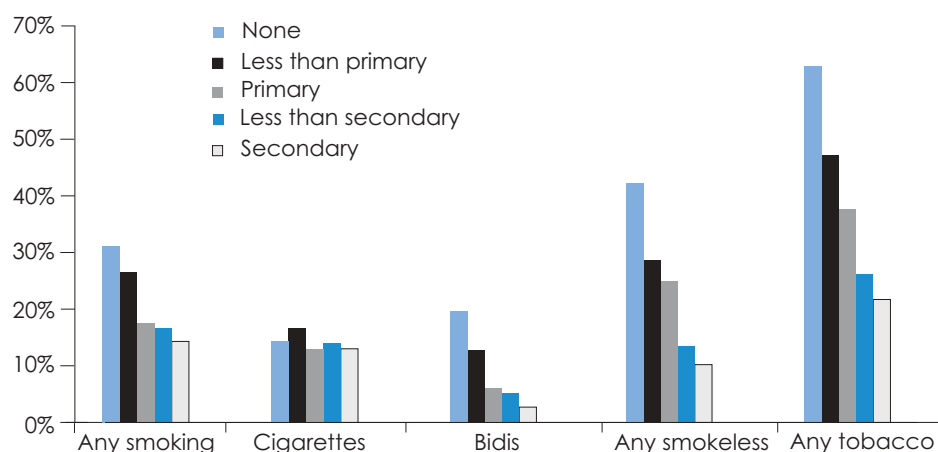
Cigarette consumption per smoker is relatively modest, with 28.1% of daily smokers consuming less than 5 cigarettes per day and another 27.5% consuming between 5 and 9 cigarettes per day. Men who smoke daily consume an average of 5.2 cigarettes per day, while daily female smokers smoke about one cigarette

Table 2.1: Prevalence of Different Forms of Tobacco Use, by Gender, Bangladesh, 2009

	Total	Male	Female
Any Tobacco Smoking	23.0%	44.7%	1.5%
Manufactured Cigarettes	14.1%	28.3%	0.2%
Hand-Rolled Cigarettes	0.4%	0.7%	0.1%
Bidis	11.2%	21.4%	1.1%
Other	0.1%	1.7%	0.3%
Any Smokeless Tobacco	27.2%	26.4%	27.9%
Betel Quid with Tobacco	24.3%	23.5%	25.2%
Gul	5.3%	5.5%	5.1%
Sada Pata	1.8%	2.0%	1.6%
Khoinee	1.5%	1.9%	1.2%
Other	1.4%	1.6%	1.2%
Any Tobacco Use (Smoking, smokeless or both)	43.3%	58%	28.7%

Source: GTSS, 2009.

Note: Subcategories of smoking tobacco prevalence are not mutually exclusive; some users consume more than 1 product.

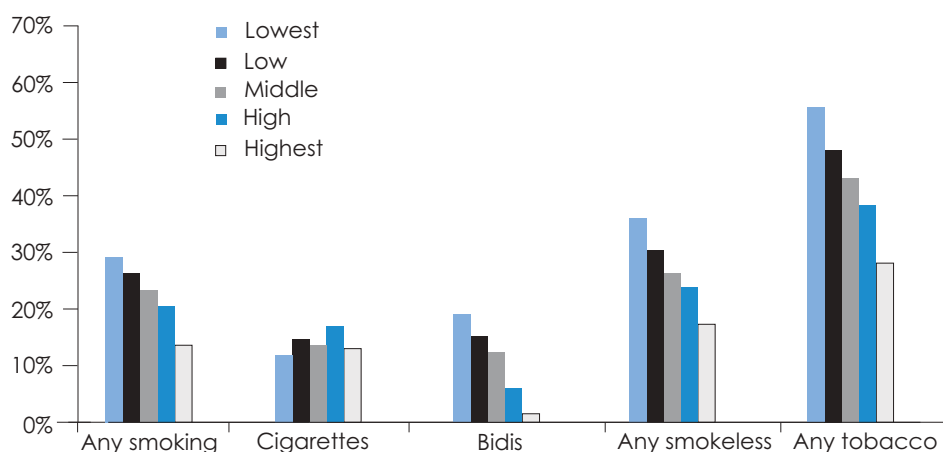
Graph 2.2: Tobacco Use Prevalence by Education, Bangladesh, 2009

Source: GTSS, 2009.

per day. While 27.7% of daily bidi smokers consume fewer than 5 bidis per day and 27.6% consume 5 to 9 bidis per day, and 44.4% of male bidi smokers smoke 15 or more per day. Daily male bidi smokers consume an average of 7 bidis per day, while daily female bidi

smokers consume just over 4 bidis per day. Cigarette consumption is, however, much higher among urban smokers than among rural smokers (average daily consumption of 8.5 and 4, respectively), while the opposite is true for bidis (average daily consumption of

Graph 2.3: Tobacco Use Prevalence by Quintiles of Wealth, Bangladesh, 2009



Source: GTSS, 2009.

2.7 and 8.3, respectively). Daily smokeless tobacco users use these products as frequently as 8 times per day, with few differences by gender or urbanicity.

Youth Tobacco Use

Youth tobacco use is an emerging problem in Bangladesh. Based on data from the 2007 Global Youth Tobacco Survey, 6.9% of in-school youth ages 13 to 15 years reported currently using any tobacco product, with 2.0% reporting cigarette smoking. Boys are more likely to use tobacco products than girls, with 9.1% of boys reporting current tobacco use and 2.9% reporting current cigarette smoking, compared to 5.1% and 1.1% of girls, respectively. Current youth smokers are interested in quitting, with 85% reporting having tried to quit in the past year and 70.7% indicating that they want to quit.

GATS data indicate that most Bangladeshi smokers take up smoking at older ages than in other countries, with a mean age of daily smoking initiation of almost 19 years. Women take up smoking at even

later ages, with 61.5% reporting daily smoking initiation after age 19 and a mean age of initiation of 26.5 years. However, the relatively high prevalence rates among 13 to 15 year old girls suggest that future smoking prevalence rates among women may be considerably higher than they are currently.

Also of concern are the high rates of youth exposure to secondhand smoke, with more than one-third of youth ages 13-15 (34.7%) reporting having been exposed at home, and more reporting having at least one parent who smokes (41.1%). Additionally, more than 4 in 10 youth (42.2%) report exposure outside the home. Most youth (83.3%) are aware of the risk of exposure to secondhand smoke and three-quarters (74.9%) support banning smoking in public places.

More than one-third (38.3%) of young smokers buy their cigarettes from stores. Exposure to tobacco company advertising is high, with 73.5% of respondents in 2007 reporting seeing billboard advertising and 64.0% reporting seeing ads in newspapers or magazines in the month prior to the survey.

Tobacco Product Consumption

Overall cigarette consumption has been rising in recent years in Bangladesh, both in the aggregate and per capita.⁶ Between 1997 and 2010, cigarette consumption rose by over 40%, from 50.9 billion cigarettes to almost 71.4 billion cigarettes (Graph 2.4). Comparable data on bidi consumption are not available; instead, we estimate bidi consumption using official statistics on quantum indices for cigarette and bidi production, which are reported for various years, and levels of cigarette production. Our estimates indicate that bidi consumption has risen more rapidly over time, from just under 43 billion bidis in 1990 to over 81 billion in 2010 (Graph 2.4). These increases in bidi consumption have outpaced population growth, so that per capita consumption of bidis has increased over the past two decades, while per capita consumption of cigarettes has been rising since 2001 (Graph 2.5).

Most (86%) cigarettes sold today in Bangladesh are filter-tipped, up sharply from the early 1980s when filter-tipped cigarettes accounted for about 3% of the market.⁷ Premium brand cigarettes are typically sold in packs of 20, while discount brands are often sold in 10

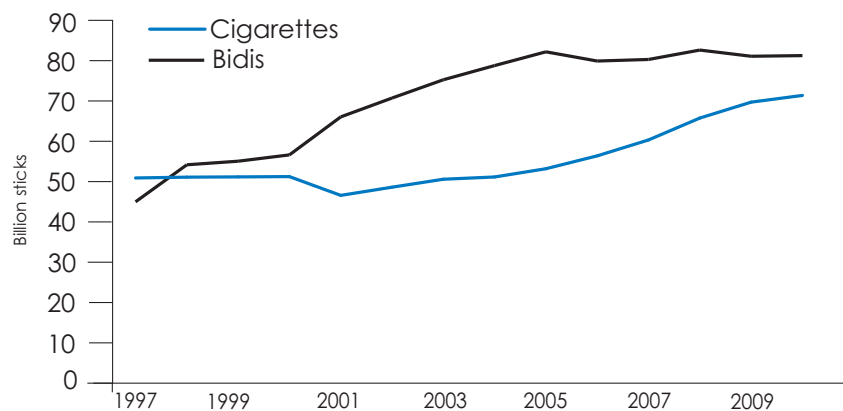
Increases in bidi consumption have outpaced population growth, so that per capita consumption of bidis has increased over the past two decades; per capita consumption of cigarettes has been rising since 2001.

packs so as to keep pack prices more affordable.⁷ High tar cigarettes account for most of the market, although “light” cigarettes have begun to emerge in recent years.⁷

Health and Economic Consequences of Tobacco Use

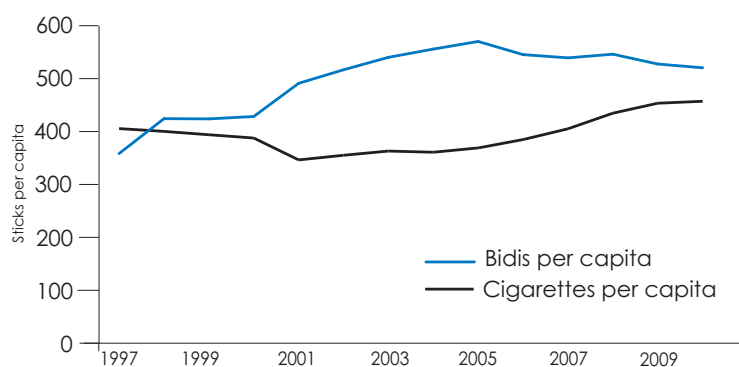
Currently, tobacco use causes nearly six million deaths per year worldwide — more than one in ten adult deaths. About 70% of current tobacco-attributable deaths occur in low and middle-income countries.⁸ Given current trends, tobacco-attributable deaths are expected to rise to 8.3 million by 2030.⁹ While deaths caused by tobacco are expected to fall in

Graph 2.4: Estimated Cigarette and Bidi Consumption, Bangladesh, 1997-2010



Source: Euromonitor, 2011 and official statistics.

Graph 2.5: Estimated Cigarette and Bidi Consumption per Capita, Bangladesh, 1997-2010



Source: Euromonitor, 2011; US Census Bureau; and authors' calculations

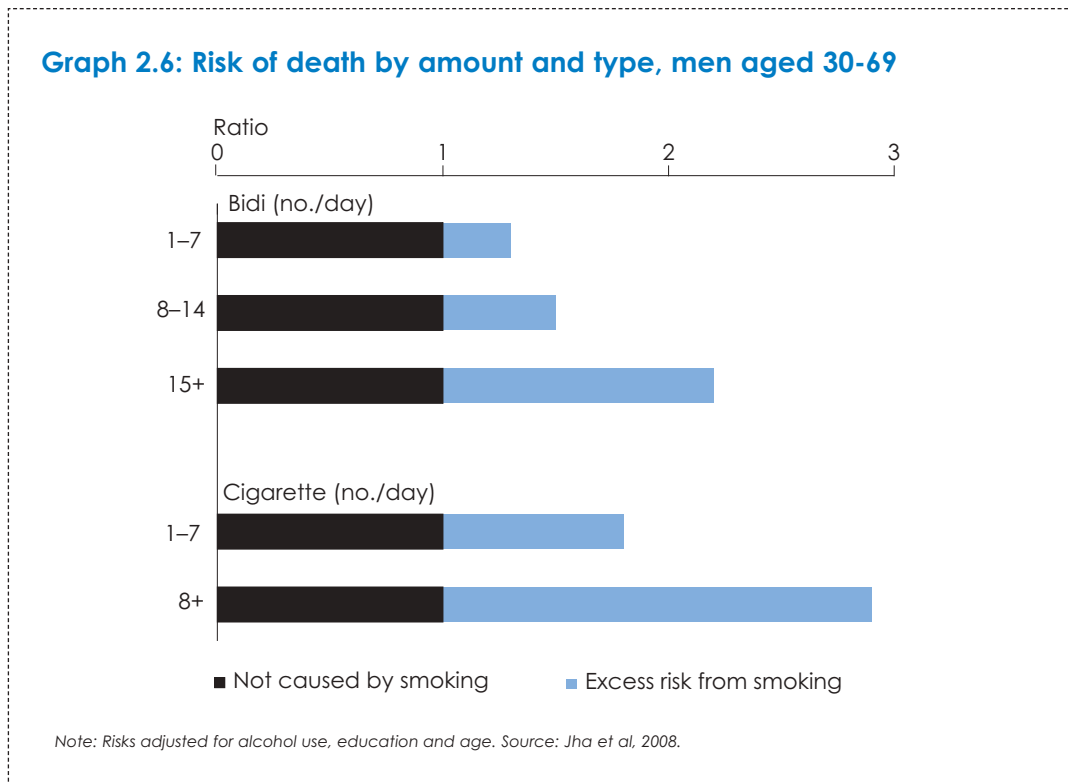
high-income countries, they are expected to double to 6.8 million in low- and middle-income countries by 2030.⁹ About half of all tobacco deaths occur between the ages of 35 and 69, resulting in a loss of 20 to 25 years of life for smokers versus nonsmokers.⁸ Smoking cessation, however, is effective in reducing the health consequences of smoking, with those who quit before middle age avoiding almost all of the excess health risks associated with continued smoking.^{8,10}

Strong scientific evidence shows that nearly one-half of regular cigarette smokers will die prematurely as a result of their addiction.¹¹ About one-third of these deaths result from cancers caused by tobacco, with tobacco-attributable cardiovascular and respiratory diseases accounting for about 30% each.⁹

While data on mortality from bidi use was lacking for several years, a recent study from India on the relative risk of death from bidis and cigarettes is instructive for Bangladesh.¹² As shown in Graph 2.6, both bidi and cigarette smoking result in a higher occurrence of deaths among smokers overall in comparison to non-smokers. Further, a dose-response

relationship is observed between smoking and mortality, both among men who smoke only bidis and among men who smoked only cigarettes. Smoking more results in an even higher risk of death, with particularly elevated risk ratios for cigarette smoking. The study also revealed that, on average, male bidi smokers die roughly 6 years earlier and male cigarette smokers die about 10 years earlier than their non-smoking counterparts. Female bidi smokers die about 8 years earlier. These relative risks have important implications for Bangladesh given that more than two-thirds of male bidi smokers smoke 10 or more bidis per day, and 44.4% of male bidi smokers smoke 15 or more per day.¹³

Tobacco use is estimated to kill approximately 57,000 people in Bangladesh each year — about one in six of all deaths among people ages 30 years and older.¹⁴ As in other countries, the majority of these deaths result from lung and other cancers, strokes, ischemic heart and other cardiovascular diseases, and respiratory diseases. Estimates indicate that there are about 1.2 million cases of lung cancer, cerebro-vascular disease, coronary artery diseases, chronic obstructive



pulmonary disease and other tobacco-attributable illnesses in Bangladesh annually.¹⁴

Given the numerous diseases caused by tobacco use, the health care costs of treating these diseases are substantial. Estimates for 2004 indicate that the annual health care costs attributable to tobacco-related illnesses in Bangladesh were 50.9 billion taka (US\$ 856 million), including 5.8 billion taka (US\$ 98 million) to treat the diseases caused by exposure to secondhand tobacco smoke.¹⁴ These are almost certainly underestimates given that the study focused on the costs of eight selected tobacco-related diseases rather than all diseases caused by tobacco use and conservatively estimated that 25% of those experiencing a disease caused by tobacco would seek inpatient care.

In addition to tobacco use leading to sizable health care costs, the premature deaths and disability caused by smoking result in significant lost productivity. In most high-income countries, these costs are about the same or slightly higher than the health care costs caused by smoking.¹⁵ Conservative estimates for Bangladesh similarly find that the lost productivity costs due to tobacco use are somewhat higher than the health care costs. In 2004, lost productivity from tobacco-attributable premature deaths caused by the eight selected diseases caused by tobacco use estimated to be 59 billion taka (US\$ 993 million).¹⁴ Taken together, a very conservative estimate of the economic costs of tobacco use in Bangladesh in 2004 is 110 billion taka (US\$ 1.85 billion), over 3% of GDP in 2004.

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As described above, tobacco use is more prevalent among lower socioeconomic populations in Bangladesh, and is associated with a greater burden of disease, increased health care spending, and lost productivity incurred by those most economically vulnerable.

Endnotes for Chapter II

- ⁶ Euromonitor International. Bangladesh: Country Sector Briefings. London: Euromonitor International. 2011.
- ⁷ ERC Group. World Cigarettes 1/2010. Suffolk, England: ERC-World. 2010.
- ⁸ Jha P, Chaloupka FJ, Moore J, Gajalakshmi V, Gupta PC, Peck R, Asma S, Zatonski W. Tobacco addiction. In: Jamison DT, Breman JG, et al. eds., Disease control priorities in developing countries. 2nd ed. Washington DC: International Bank for Reconstruction and Development/World Bank. 2006;869-885.
- ⁹ Mathers CD, Loncar D. Projections of Global Mortality and Burden of Disease from 2002 to 2030. PLoS Med. 2006; 3(11): e442 Available at: <http://www.plosmedicine.org/article/info:doi/10.1371/journal.pmed.0030442>. Accessed March 31, 2010.
- ¹⁰ International Agency for Research on Cancer. Tobacco Control: Reversal of Risk after Quitting Smoking, IARC Handbook of Cancer Prevention, Volume 11. Lyon, France: International Agency for Research on Cancer. 2007.
- ¹¹ U.S. Department of Health and Human Services. The Health Consequences of Smoking: A Report of the Surgeon General. Atlanta, Georgia: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. 2004.
- ¹² Jha P, Jacob B, Gajalakshmi V, Gupta PC, Dhingra N, Kumar R, et al. A nationally representative case-control study of smoking and death in India. New England Journal of Medicine 2008; 358:1137-1147.
- ¹³ Global Tobacco Surveillance System. Global Adult Tobacco Survey - Bangladesh Report 2009. Dhaka, Bangladesh: World Health Organization, Country Office for Bangladesh. 2009.
- ¹⁴ World Health Organization. Impact of Tobacco-related Illnesses in Bangladesh. New Delhi, India: World Health Organization, Regional Office for South-East Asia. 2007.
- ¹⁵ Centers for Disease Control and Prevention. Annual smoking-attributable mortality, years of potential life lost, and economic costs--- United States, 2000--2004. Morbidity and Mortality Weekly Report. 2006; 57(45):1226-1228.

III. Supply of Tobacco and Tobacco Products in Bangladesh

Tobacco Farming

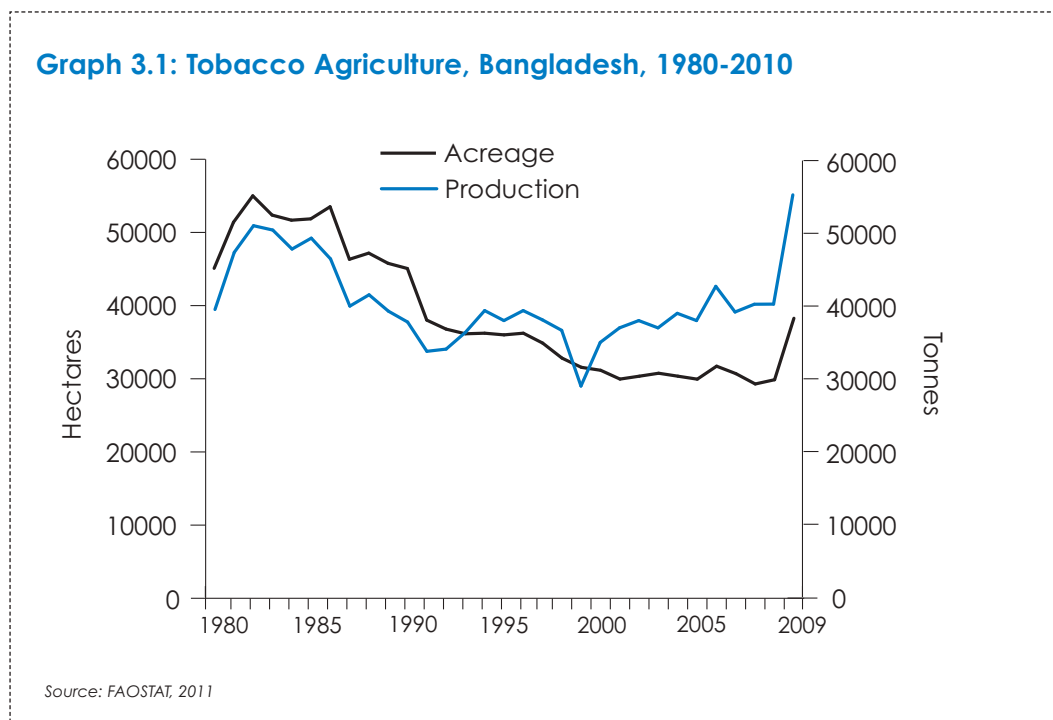
While widely grown, tobacco is a relatively minor crop in overall agriculture in Bangladesh. In 2010, the acreage devoted to tobacco growing accounted for only 0.25% of acreage for all crop production and, in 2009, the value of the tobacco grown was only 0.22% of the value of all agricultural production.¹⁶

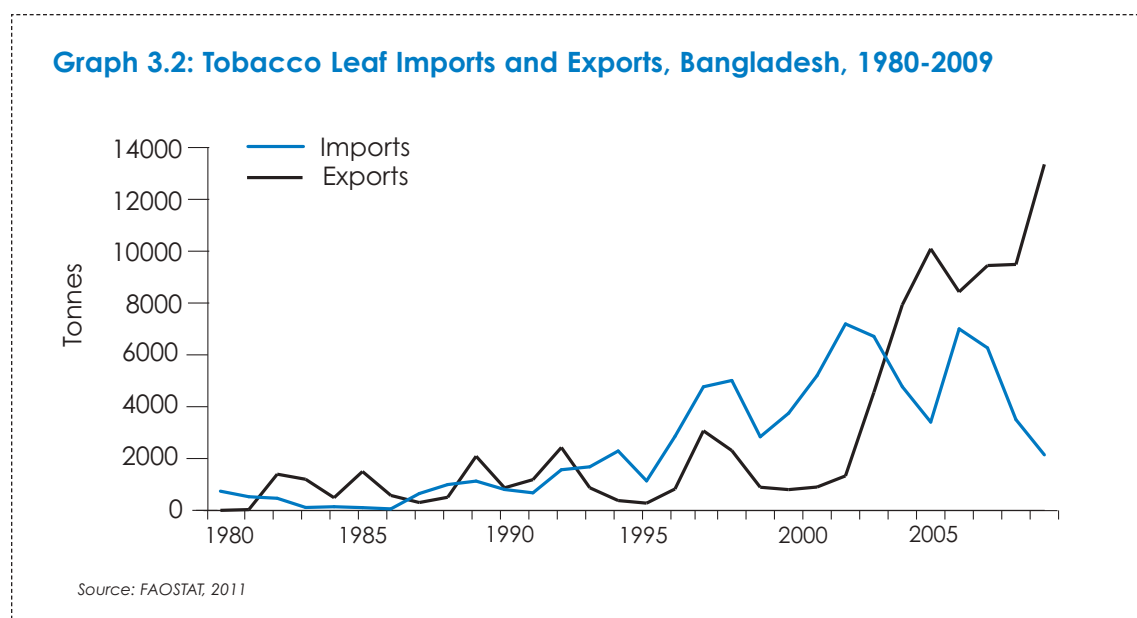
The acreage devoted to tobacco growing in Bangladesh has been falling steadily for most of the past three decades, before rising sharply in 2010 (Graph 3.1). In 2009, tobacco was grown on just under 30,000 hectares, down 46% from 1982, before rising to over 38,270 hectares in 2010.¹⁶

As shown in Graph 3.2, there is considerable trade in tobacco leaf both in and out of Bangladesh. For

many years, imports and exports of unmanufactured tobacco were similar. In recent years, however, tobacco leaf exports have grown much more rapidly, the result of a 10% incentive on exports provided by the government as part of an export diversification program begun in 2003. Much of the recent rise in the quantity of tobacco grown in Bangladesh is accounted for by these increased exports, with the share of tobacco exported rising from about 2.5% in 2000 to nearly 34% in 2009. In 2008, the export incentive was eliminated. In the 2010/11 budget, the government imposed a 10% duty on tobacco leaf exports in an effort to discourage tobacco growing.

The Bangladesh Bureau of Statistics estimated that, in 2005/06, 115,500 persons were employed in tobacco growing, about 0.3% of the agricultural labor force. While the recent rise in tobacco growing in Bangladesh is likely to have increased the number of tobacco farmers in the country, the overall share of agricultural employment in tobacco growing is likely to be less than 0.5%.



Graph 3.2: Tobacco Leaf Imports and Exports, Bangladesh, 1980-2009

Cigarette and Bidi Manufacturing

Cigarette manufacturing is highly concentrated in Bangladesh, while bidi manufacturing is much more fragmented. As Table 3.1 indicates, cigarette markets are dominated by two firms—British American Tobacco Bangladesh (BATB) and the domestic Dhaka Tobacco Industries (DTI), a part of the Akij Group. BATB is one of the oldest tobacco product manufacturers in Bangladesh, in operation for over 100 years. BATB brands account for almost 46% of cigarette consumption in 2010, down somewhat from the 54% half of the market the company had controlled as recently as 2006.⁷ BATB largely focuses on the premium segment of the market, but in 2009 entered the lower priced segment of the market in an apparent effort to regain market share.⁷ BATB's leading premium brands include John Player Gold Leaf, Benson & Hedges, Pall Mall, and Capstan. Mid-priced brands include Star and Scissors, while Pilot and Bristol are BATB's recently introduced low-priced brands.

DTI is part of the Akij Group, a large domestic conglomerate that includes a variety of subsidiaries involved in cement, computers, foods & beverages,

jute, textiles, pharmaceuticals, and much more. DTI has historically focused on the lower priced segment of the market.⁷ DTI's key brands include lower priced brands Sheikh, K-2, Five Star, Red & White, Real, and Surma; other major brands are Navy (mid-priced) and Caste (premium). In addition, in 2007 DTI entered into an agreement with Philip Morris International (PMI) to market PMI's brands, most notably Marlboro, in the Bangladeshi cigarette market. DTI's share of the cigarette market is around 40% in recent years.⁷

There are a number of other smaller domestic cigarette companies operating in Bangladesh, including Abul Khair Tobacco Company (AKTC), Alpha Tobacco Manufacturing Company, Azizuddin Industries Ltd., Sonali Tobacco Company Ltd., National Tobacco, and Nasir Tobacco. Together, they account for 10-15% of the Bangladeshi cigarette market. To date, Japan Tobacco International and Imperial Tobacco/Altadis, the world's other leading multinational tobacco companies, have not established a significant presence in Bangladesh, with imports of their brands and other multinational brands accounting for a very small share of the Bangladeshi market.

The dominance of BATB and DTI is reflected in brand shares in the Bangladeshi cigarette market, as shown in Table 3.2, derived from household survey questions on brands used in the GATS (2009).¹³ Star (BATB) and Sheikh (DTI) are the two most popular brands, followed by Navy (DTI), Gold Leaf (BATB), and Marise (AKTC). Together, the top 4 brands account for over two-thirds of cigarette consumption. To date, DTI's agreement with PMI has not generated much interest in Marlboro, which had less than 1% market share in 2010.

Most cigarettes produced and sold in Bangladesh are filter-tipped, with market share stable at around 86% for the past decade, after rising sharply in the 1990s⁷. Nearly all cigarettes consumed in Bangladesh are high-tar cigarettes, although lower tar brands are starting to emerge. Most premium brand cigarettes are sold in packs of 20, while less expensive cigarette brands are more often sold in packs of 10. The smaller

packs appear to be targeted at keeping pack prices affordable for lower income smokers. Over half of cigarette consumption is of inexpensive brands and about 30% is of mid-priced brands.

In contrast, bidi production is much more fragmented than cigarette manufacturing. The top 4 firms account for a little less than 50% of the market, and, according to the 2001/03 Economic Census, there were a total of 9,624 bidi manufacturers, with over 96% of these household based. Among bidi manufacturing companies, Akij Bidi Factory, Ltd, another subsidiary of the Akij Group, is the largest, with an estimated market share of 29.1% in 2009 (GTSS, 2009). Akij Group's ownership of both Dhaka Tobacco Industries and Akij Bidi Factory could result in shared distribution channels and marketing practices. Aziz Bidi Factory is the only other company with more than 10% of the market, while the remainder account for shares of around 5% or less (Table 3.3). Most bidis are sold in packs of 25.

Table 3.1: Cigarette Company Market Shares, Bangladesh, Selected Years, 2000-2010

Company	2000	2002	2004	2006	2008	2010
BATB	55.0%	50.4%	51.6%	54.0%	45.5%	45.8%
Domestic Manufacturers	44.7%	49.4%	48.1%	45.7%	54.3%	54.1%
Imports	0.3%	0.2%	0.3%	0.3%	0.2%	0.1%

Source: ERC Group, 2010.

Table 3.2: Cigarette Brand Shares based on household survey data, Bangladesh, 2009

Brand	Company	2010
Star	BATB	25.6%
Sheikh	DTI	18.3%
Navy	DTI	13.7%
Gold Leaf	BATB	10.3%
Marise	AKTC	8.9%
Others	---	23.2%

Source: GTSS, 2009.

Note: Reflects responses among smokers of manufactured cigarette to a Global Adult Tobacco Survey (GATS) question on last brand purchased.

Table 3.3: Bidi Brand Shares based on household survey data, Bangladesh, 2009

Brand/Company	2010
Akij	29.1%
Aziz	10.8%
Ansar	4.8%
Nasir	4.7%
Others	50.6%

Source: GTSS, 2009.

Note: Reflects responses among bidi smokers to GATS question on last brand purchased.

Bangladesh does very little trade in cigarettes. Imports were allowed starting in the late 1980s, but account for less than 1% of cigarette consumption. Most imports come from Singapore, India, and Malaysia. Similarly, cigarette exports are minimal, accounting for less than 1% of production in most years, with most exports going to Yemen and Malaysia.

Tobacco products are sold through a variety of channels in Bangladesh. BATB states that about 900,000 retailers sell their brands in Bangladesh.¹⁷ Given BATB's focus on the higher priced end of the cigarette markets, there are likely to be many more retailers selling cigarettes, bidis, and other tobacco products in Bangladesh. Particularly important are the small convenience stores that account for more than two-thirds of cigarette and fourth-fifths of bidi purchases and the tea stalls that account for nearly 20% of cigarette purchases and 14% of bidi purchases. The significant presence of these informal distribution channels creates significant opportunities for tax

avoidance and evasion, as described below. Most of the remaining sales take place through smoke shops (e.g. cigarette/bidi/pan stores).

The 2001/03 Economic Census estimated that 2,812 people were employed in cigarette manufacturing and 45,272 in bidi manufacturing. When other products and related manufacturing are included, a total of 51,095 people were employed in tobacco manufacturing, less than 1% of all manufacturing employment. Most of those employed in cigarette manufacturing were male, full time workers (70.4%).

About two-thirds of employment in bidi manufacturing is in the formal sector and one-third in household-based establishments. Women are somewhat more likely to be employed in producing bidis in the formal sector, but about 65% of those employed in household-based bidi manufacturing are women. As described by Roy and colleagues (2011), wages for bidi workers are very low, most bidi workers live in poverty, and many children are also involved as unpaid assistants in household bidi production.¹⁸

Endnotes for Chapter III

¹⁶ FAOSTAT, Food and Agricultural Organization of the United Nations. 2011. Available at: <http://faostat.fao.org/site/291/default.aspx>; accessed December 30, 2011.

¹⁷ British American Tobacco Bangladesh. About Us. 2012. Available at <http://www.batbangladesh.com>, accessed January 5, 2012.

¹⁸ Roy A, Efroymsen D, Jones L, Ahmed S, Arafat I, Sarker R, FitzGerald S. Gainfully employed? An inquiry into bidi-dependent livelihoods in Bangladesh. *Tobacco Control*. TC Online First 10.1136/tc.2011.043000. 2011.

IV. Tobacco Control in Bangladesh

In addition to the case for countering the substantial public health burden caused by tobacco, a strong economic rationale exists for government intervention to reduce tobacco use.^{18,8} This section reviews the market failures that provide the economic rationale for government intervention to reduce tobacco use and describes the tobacco control environment in Bangladesh.

Rationale for Government Intervention

The notion of consumer sovereignty—the principle that an individual makes the best choices for himself or herself—depends on two key assumptions: that an individual fully understands the costs and benefits of these decisions and that an individual bears all of the costs and receives all of the benefits of his or her decisions. Tobacco use clearly violates both of these assumptions, resulting in market failures that justify government intervention.^{19,8}

In general, consumers have imperfect information about the health and other consequences of tobacco use. Many users do not fully understand the health hazards associated with tobacco use, and those who do have a general understanding of the risks do not adequately internalize these risks.⁸ This is particularly true in Bangladesh, where many smokers are less than fully aware of the health consequences of smoking. For example, while 92.0% of Bangladeshi smokers believe smoking causes lung cancer, only 87.0% believe smoking causes heart attacks and 84.2% believe the smoking causes strokes.¹³ Among Bangladeshi smokers with a low socio-economic status (SES), knowledge is worse, with 20.2% and 22.5% of smokers in the lowest wealth quintile unaware that smoking causes heart attacks and strokes, respectively.

This imperfect information is complicated by the

fact that many tobacco users initiate use as youths. As noted above, even though the age of initiation is a bit older in Bangladesh than in many other countries, in absolute numbers, millions of Bangladeshi youth do begin using tobacco by age 15. Children and adolescents' ability to make fully informed, appropriately forward looking decisions is limited at best, leading governments to intervene with respect to youth in many areas such as driving, drinking alcohol, and voting.

The problems of imperfect information are further complicated by the addictive nature of tobacco use, which is poorly understood and underappreciated, particularly among those initiating tobacco use. Addiction makes quitting smoking very difficult, even among young users, as illustrated by the over 70% of Bangladeshi youth smokers who want to quit and the 85% who tried unsuccessfully to quit in the past year.³

Finally, there are externalities associated with tobacco use. Nonusers' exposure to the smoke generated by tobacco users results in various cancers, respiratory and cardiovascular diseases, and other diseases.²⁰ More than one-third of Bangladeshi youth are exposed to tobacco smoke at home and over 42% are exposed to second hand smoke in public places. Similarly, 45% of adult Bangladeshis are exposed to tobacco smoke in public places, while 63% are exposed in the workplace.¹³ Additionally, the financial externalities that result from publicly financed health care will become more important as Bangladesh works to adopt a publicly funded, universal health insurance system.

Tobacco Control Policy in Bangladesh

A variety of tobacco control policies and programs can be used to address the failures inherent in the markets for tobacco products. The WHO's Framework Convention on Tobacco Control (FCTC), the world's first public health treaty, calls for governments to adopt

comprehensive policies to curb tobacco use. Bangladesh signed the FCTC on 16 June, 2003, and ratified it less than one year later, on 14 June, 2004, one of the first countries to both sign and ratify the treaty.

However, as with many other low and middle-income countries that have signed and ratified the treaty, tobacco control policies in Bangladesh fall short of those called for by the FCTC.⁵ Bangladesh's participation in the FCTC has resulted in some advances in tobacco control policy, most notably the Smoking and Tobacco Products Usage (Control) Act, 2005, but there is still considerable room for further action. This section briefly reviews tobacco control policies in Bangladesh, with the exception of tobacco taxation which is covered in the next section.

The 2005 Act restricted smoking in a variety of places, but the only smoke free environments in Bangladesh are health care facilities and educational facilities (not including universities), sports facilities and taxis.⁵ Smoking is restricted in other venues, including universities, government buildings, restaurants, bars, and private workplaces, but smoking is allowed in designated areas. These restrictions fall far short of the comprehensive smoke-free policies described in the FCTC Article 8 Guidelines. Moreover, sub-national jurisdictions are not allowed to adopt stronger restrictions on smoking than those contained in the national legislation and compliance with the restrictions included in the Act is low.

The tobacco control act also mandated health warning labels on tobacco product packaging, calling for six rotating text warnings that take up 30% of the front and back of cigarette and bidi packs. The warnings provide general statements about the health consequences of tobacco use, stating smoking causes death, lung cancer, stroke, heart disease, respiratory problems, or other problems. Efforts to adopt stronger health warnings, including graphic warnings, through an amendment to the Act have thus far been

unsuccessful. As a result, tobacco warning labels in Bangladesh fall short of the FCTC Article 11 Guidelines that call for multiple rotating, more prominent, graphic warning labels on all tobacco products.

The general nature of the existing text warnings coupled with the high illiteracy rate in Bangladesh likely contribute to the less than full understanding about the specific risks from tobacco use among Bangladeshi smokers described above.²¹ Other restrictions on tobacco product labeling, including a ban on the use of misleading descriptors like "light" or "low tar" have not been adopted. Similarly, other public education efforts, including mass-media campaigns to inform smokers of the risks from smoking, are minimal at best and have limited impact on the least educated and lowest income Bangladeshis. About half of all Bangladeshi adults noticed any anti-smoking messages delivered through various channels, while only 36% of the poorest smokers noticed these messages.

The 2005 Act restricts advertisements of tobacco products but implementation is less comprehensive. Most tobacco product advertising is banned, including on television and radio, in local print, and billboards, as well as tobacco company sponsorship of tournaments. However, point-of-sale advertising is allowed, as are promotional discounts. Despite the somewhat comprehensive ban, about half of adult Bangladeshis reported being exposed to tobacco company marketing in 2009, with two-thirds of smokers reporting exposure to any cigarette marketing.¹³ The exemption of the point-of-sale from the advertising ban accounts for much of this, with one-third of all adults and half of adult smokers reporting noticing advertising in stores. Reported exposure is even higher among youth, with nearly three-quarters of 13 to 15 year olds reporting seeing cigarette ads on billboard and almost two-thirds reporting seeing cigarette ads in newspapers or magazines in 2007.

The sale of tobacco products to youth is

prohibited, but the minimum purchase age is lower than the international standard of 18 years, with the minimum age being 16 years.⁷ However, minors have little trouble purchasing cigarettes, with more than one third (38.3%) of 13-15 year olds reporting buying cigarettes in stores. The numerous small tobacco product vendors, particularly the small convenience stores and smoke shops selling pan/bidi/cigarettes, make effective enforcement of the prohibition on sales to minors a challenge.

An additional concern is that smokeless tobacco products in Bangladesh do not fall under the scope of the 2005 Act and its regulations.

Evidence from high-income countries and a growing number of low and middle-income countries demonstrates that strong tobacco control policies will

Stronger and more comprehensive policies would help to reverse the recent increases in smoking in Bangladesh.

lead to significant reductions in tobacco use, while relatively weak policies will have a limited impact at best.^{22,8} To date, the adoption and implementation of the tobacco control policies contained in the BTCA appears to have had little impact on smoking in Bangladesh. Stronger and more comprehensive policies would help to reverse the recent increases in smoking.

Endnotes for Chapter IV

¹⁹ Jha P, Musgrove P, Chaloupka FJ, Yurekli A. The economic rationale for intervention in the tobacco market. In: Jha, P, Chaloupka FJ, eds. Tobacco Control in Developing Countries. Oxford: Oxford University Press. 2000.

²⁰ U.S. Department of Health and Human Services. The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General. Atlanta, Georgia: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. 2006.

²¹ ITC Project. ITC Bangladesh Report on Tobacco Warning Labels. Ontario, Canada and Dhaka, Bangladesh: University of Waterloo and University of Dhaka. 2011.

²² Jha P, Chaloupka FJ, editors. Tobacco Control in Developing Countries. Oxford: Oxford University Press. 2000.

V. Cigarette Taxes and Prices in Bangladesh

Structure of Tobacco Taxes

Tobacco taxes that translate into price increases are widely considered the single most effective option for reducing tobacco use.^{21,23,24} Significant increases in taxes that raise the prices of tobacco products will reduce their consumption, while at the same time generating substantial increases in revenues.

Bangladesh imposes a variety of taxes on tobacco products, including supplementary duties on cigarettes, bidis, chewing tobacco and pipe tobacco, duties on imported tobacco products and on both imported and exported tobacco leaf, and a value added tax on the retail prices of all tobacco products.

Given that the supplementary duties are applied uniquely to tobacco products, these are effectively, and will be referred to below as, excise taxes. Bangladesh has a tiered *ad valorem* excise tax structure for cigarettes.

Cigarette excise taxes in Bangladesh are *ad valorem* taxes, with the current rate varying from 36% to 60% based on maximum retail price; more expensive cigarettes are taxed at higher rates. The price slabs that define the tiered tax structure are not continuous; no brands are supposed to be priced below the minimum price in slab A, while brands sold at prices between the slabs are taxed at the maximum rate. However, most cigarette smokers in Bangladesh surveyed in the ITC-Bangladesh surveys of 2009 and 2010 report paying prices between the price slabs, in effect paying lower taxes.²⁵

This tiered tax structure requires strong tax administration given that it creates incentives for tax avoidance and tax evasion. The existence of brands priced between the price slabs is one example of the non-compliance and tax revenue losses that result

from this complex and difficult to administer tax structure.

The National Board of Revenue (NBR), an arm of the Ministry of Finance, determines the tobacco excise taxes and administers these taxes in Bangladesh. The NBR regularly adjusts the supplementary duty rates applied to different tobacco products, largely based on revenue needs; in recent years, rates have also been raised in an effort to reduce tobacco consumption and its public health consequences.

Tobacco products carry a Value Added Tax (VAT) of 15% of retail prices. In addition to the excise tax (supplementary duty), cigarette manufacturers are subject to a tax of 42.5%.

Table 5.1 summarizes the evolution of cigarette excise taxes in Bangladesh since 2006.

Bidis are taxed at a much lower rate, with unfiltered bidis taxed at a rate of 20% of retail price and filtered bidis taxed at a rate of 25% of retail price. Bidis are also subject to the 15% VAT.

It might appear that bidi tax rates do not compare unfavorably to the 36% excise tax on the lowest price slab of cigarettes. An important issue in bidi taxation, however, is that the excise tax and VAT on bidis are not applied to the retail price, but rather to a “tariff value,” a notional amount that is roughly half the retail price.

The excise tax on bidis is not applied to the retail price, but rather to a “tariff value,” a notional amount that is roughly half the retail price. This results in significantly lower tax revenues than would be obtained by taxing bidis based on their actual prices.

Table 5.1: Cigarette Excise Tax Rates, Bangladesh, 2007/08-2011/12

Price Slab	2007/08	2008/09	2009/10	2010/11	2011/12
Premium	6.0-6.99	6.5-7.5	7.25-8.75	8.4-9.15	11.0-11.3
Tax	32%	32%	32%	33%	36%
High	12.5-13.49	13.25-14.25	16.25-17.25	18.4-19.0	22.5-23.0
Tax	52%	52%	52%	53%	55%
Medium	19-26.9	21-28	23.25-29.25	27.0-32.0	32.0-36.0
Tax	55%	55%	55%	56%	58%
Low	≥35	≥41	≥46.25	≥52	≥60
Tax	57%	57%	57%	58%	60%

Notes: Price slabs are based on prices for a pack of 10 cigarettes. Taxes are imposed on maximum retail price.

This results in significantly lower tax revenues than those that would be obtained by taxing bidis based on their actual prices. Moreover, bidi prices are significantly lower than they would be if the tax were applied to actual prices, resulting in higher bidi consumption and greater health and economic consequences of bidi smoking. The low tax rates applied to bidis relative to cigarettes appear to result from government efforts to protect the bidi industry, with concerns about the employment impact of higher bidi taxes often a deterrent to increasing these taxes. The current bidi tax structure is shown in Table 5.2.

Finally, smokeless tobacco products are also subject to the 15% VAT and to a supplemental duty. The 2011/12 budget raised the supplemental duty on smokeless tobacco products from 10% to 30% of price.

Tobacco Product Prices: Price Gaps and Increased Affordability

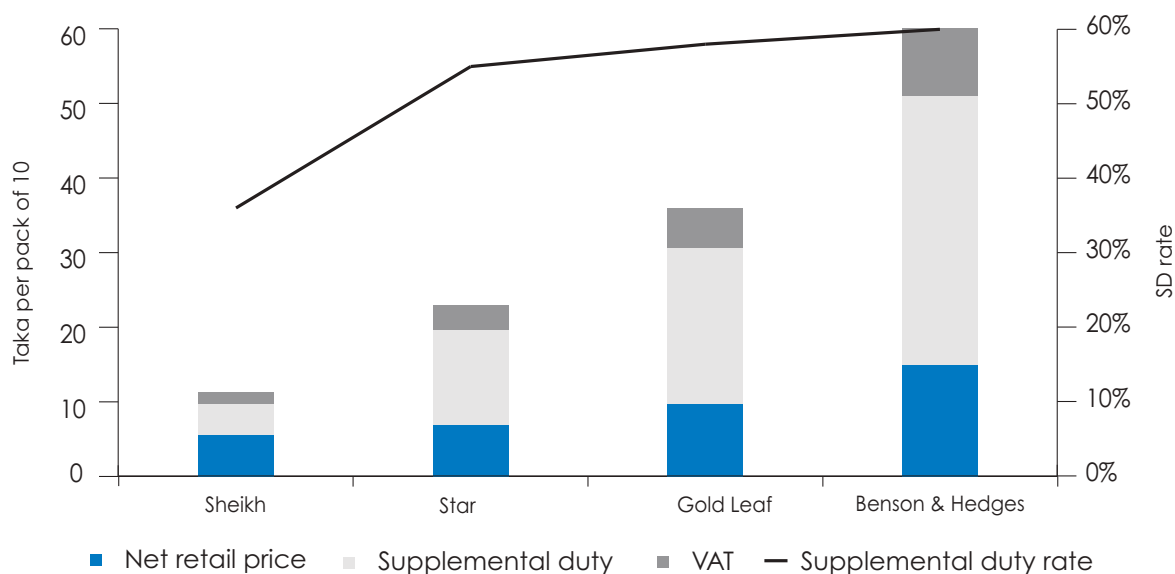
Graph 5.1 shows the current composition of cigarette prices for popular brands in each price tier in 2010/11. As the graph illustrates, the tiered *ad valorem* tax structure in Bangladesh results in significant price gaps between brands in different price categories, with

The tiered *ad valorem* tax structure in Bangladesh results in significant price gaps between brands in different price categories, with low priced brands selling for less than one-fifth of what premium brands sell for.

Table 5.2: Bidi Supplemental Duty (excise) rates, Bangladesh, 2011/12

Tariff Value	Supplementary Duty (excise) rate	Effective excise tax (taka)
Handmade Bidis, Unfiltered		
1.0105 per 8 stick pack	20%	0.20
1.5158 per 12 stick pack	20%	0.30
3.1579 per 25 stick pack	20%	0.63
Handmade Bidis, Filtered		
1.715 per 10 stick pack	25%	0.43
3.43 per 20 stick pack	25%	0.86

Graph 5.1: Cigarette Taxes and Prices per Pack of 10 Cigarettes Selected Brands, Bangladesh, 2012



Sources: Most popular brand in each category based on GTSS (2009) and ERC Group. Notes: Prices are assumed to be at the top end of each price slab for slabs A, B and C; Premium brand prices are assumed to be twice the minimum price for slab D, based on recent EIU price data.

low priced brands selling for less than one-fifth of what premium brands sell for, and less than half of what brands in the second-lowest price tier cost. The availability of very inexpensive cigarettes and the large price gaps between price tiers creates considerable opportunity for cigarette smokers to substitute down to cheaper brands in response to tax and price increases. The differential tax treatment of bidis and cigarettes make bidis an even lower priced substitute for smokers to switch down to in response to cigarette tax and price increases. Based on self-reported cigarette expenditure and quantity data from the 2009 GATS, the average price smokers reported paying for a pack of 10 cigarettes was 16.05 taka, compared to an average price per pack of 25 bidis of 6.23 taka, making the price of a single bidi about one-sixth the price of a cigarette.

In addition, Graph 5.1 shows that both total taxes and excise taxes as a percentage of retail cigarette prices are well below the levels in other countries and those recommended by international organizations.

In 1999 the World Bank, for example, recommended that taxes should account for between two-thirds and four-fifths of retail prices.²² Under the existing tax structure, total taxes on cigarettes account for just under 66% of price on average, near the bottom of the range recommended by the World Bank. More

Both total taxes and excise taxes as a percentage of retail cigarette prices are well below the levels in other countries.

recently, the World Health Organization identified excise taxes that account for at least 70% of retail prices as a best practice in tobacco taxation.²⁶ On average, cigarette excise taxes in Bangladesh currently account for just over half of retail prices. Simply eliminating the tiered tax system and taxing all cigarettes at the current maximum *ad valorem* rate would bring Bangladesh closer to these targets, raising the average share of excise tax in price to 60% and the total tax share to 75%. The next section discusses the additional policy benefit of reduced substitution to cheap brands that would result if these very excise and total tax shares were attained through a high uniform specific tax.

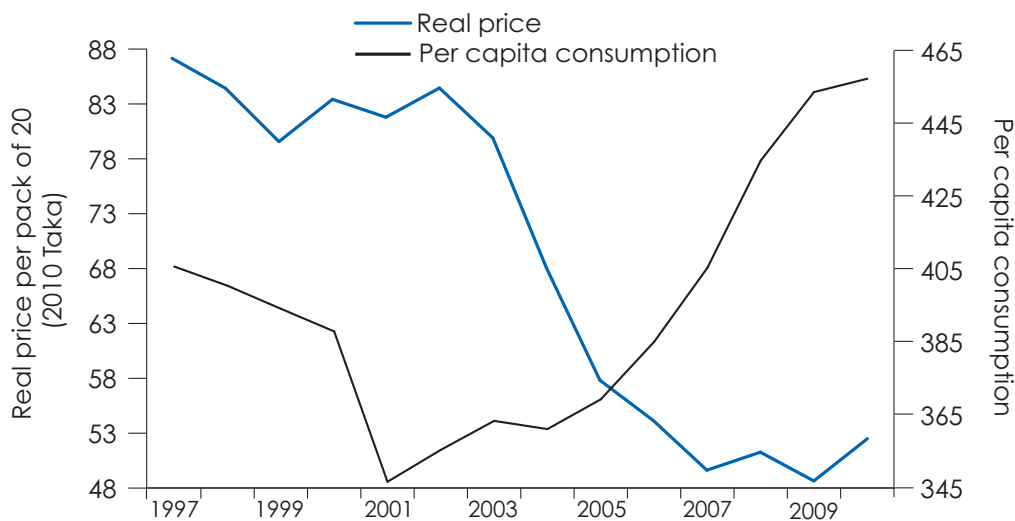
Graph 5.2 illustrates an additional concern for control of Bangladesh’s cigarette taxes over time. While the excise tax rates and the values that define the price slabs have been increased periodically, these increases have not kept pace with inflation. As a result,

The inflation-adjusted price of cigarettes in Bangladesh has actually fallen for most of the past two decades.

the inflation-adjusted price of cigarettes has actually fallen for most of the past two decades. The sharp decline in real prices from 2002 through 2007 appears to be a particularly important factor in explaining the rise in per capita cigarette consumption over this period.

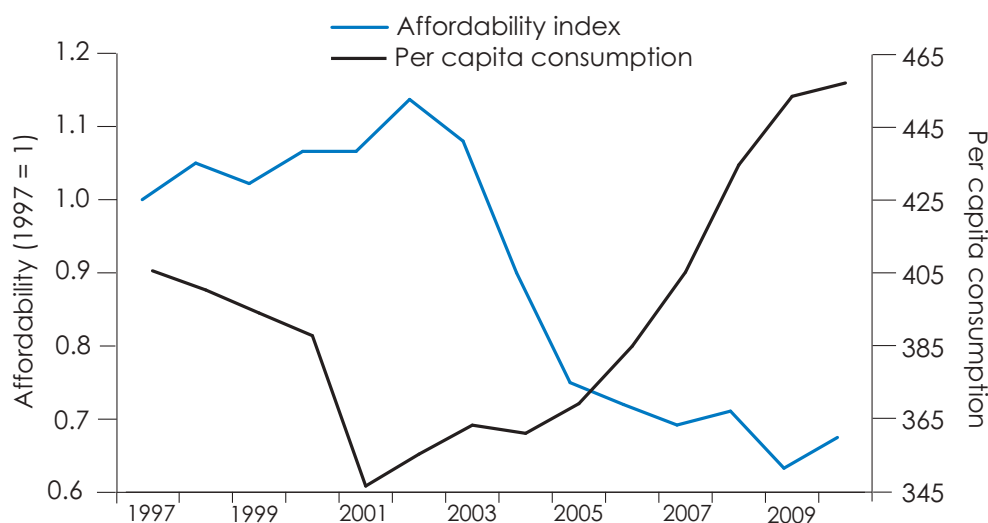
The relationship between prices, income, and cigarette consumption in Bangladesh is clearer when one considers the affordability of cigarettes, measured by the ratio of average cigarette pack price to per capita income, as illustrated in Graph 5.3. Cigarettes became increasingly less affordable in Bangladesh from 1997 through 2002 as real incomes were falling, before

Graph 5.2: Inflation Adjusted Cigarette Prices and Per Capita Cigarette Consumption, Bangladesh, 1995-2010



Sources: Euromonitor International, 2011; Economist Intelligence Unit, 2011; World Bank, 2011; and authors' calculations.

Graph 5.3: Cigarette Affordability and Per Capita Cigarette Sales Bangladesh, 1997-2010



Sources: ERC Group, 2010; Economist Intelligence Unit, 2011; World Bank, 2011; and authors' calculations.

Note: The affordability index here is the ratio of pack prices to annual per capita income. Cigarettes are becoming less affordable as the affordability index rises and are becoming increasingly affordable as the affordability index falls.

Increasing affordability of cigarettes after 2002 is a key factor in the rise in per capita consumption from 2003.

becoming more affordable after 2002, when incomes rose rapidly. The reduction in affordability contributed to the declines in per capita cigarette consumption during this period. Similarly, increasing affordability of cigarettes after 2002 is a key factor in the rise in per capita consumption from 2003 through 2010.

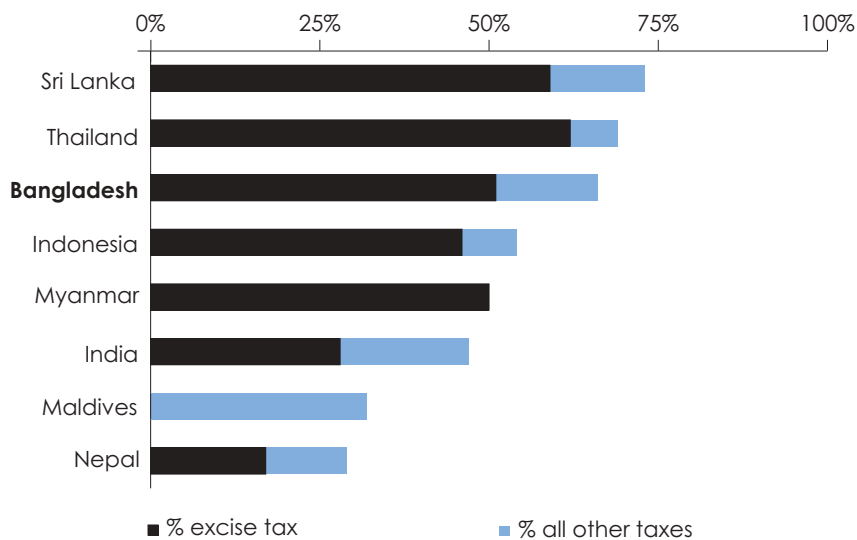
Cigarette Taxes and Prices in Comparison to Other Countries

Compared to other countries in the Southeast Asian region, cigarette taxes in Bangladesh are in the

Very low industry prices and the resulting low absolute tax that results from the *ad valorem* rate make cigarette prices in Bangladesh the lowest in the region as well as among the lowest in the world.

middle of the range, in terms of the percentage of the retail price of cigarettes accounted for by taxes (Graph 5.4). However, very low industry prices and the resulting low absolute tax that results from the *ad valorem* rate make cigarette prices in Bangladesh the lowest in the region (Graph 5.5), as well as among the lowest in the world. Moreover, the tiered *ad valorem* cigarette tax structure makes the price gap between brands larger in Bangladesh than in many other countries.

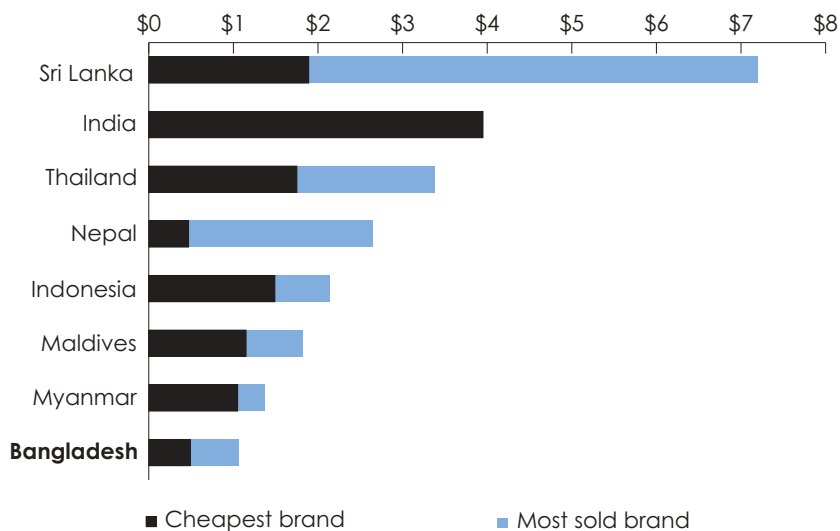
Graph 5.4: Share of Total and Excise Taxes in the Price of a Pack of the Most Sold Brand of Cigarettes, South East Asia Region, 2010



Source: WHO, 2011.

Notes: Data not reported/not available for: Democratic People's Republic of Korea and Timor-Leste. It is illegal to sell cigarettes in Bhutan. Data for Bangladesh are based on authors' calculations using the data discussed in this report instead of the data reported by WHO.

Graph 5.5: Prices of Pack of Most Sold and Cheapest Brands of Cigarettes in International (Purchasing Power Parity - adjusted) Dollars, South East Asia Region, 2010



Source: WHO, 2011.

Notes: Prices are for a pack of 20 cigarettes. Data not reported/not available for: Democratic People's Republic of Korea. PPP not available for: Timor-Leste. It is illegal to sell cigarettes in Bhutan. Data for Bangladesh are based on Star and Sheikh brand prices rather than the prices reported by WHO. International dollars (or PPP-adjusted dollars) are used instead of conversions as the official exchange rate to enable better comparison: An international dollar has the same purchasing power as the U.S. dollar has in the United States.

Tax Structure: Specific vs. *Ad Valorem* Tax

There are two basic types of tobacco excise taxes – specific excises (taxes that are fixed amounts based on quantity or weight and that are independent of price) and *ad valorem* excises (taxes assessed as a percentage of price). Each type of tax has its strengths and weaknesses in terms of tax administration and its impact on public health and on revenues.

Cigarette excise taxes in Bangladesh are *ad valorem* taxes, but because the tax rate is itself based on price slabs, with the rate rising as price rises, the tax structure exacerbates some of the consequences of an *ad valorem* tax.

With *ad valorem* excises, the tax per unit rises with prices so that the tax and the revenues it generates are more likely to keep pace with inflation, in contrast to specific taxes where the real value of the tax and resulting revenues will fall with inflation unless regularly adjusted upward. Specific taxes do not have this advantage, requiring regular increases to keep pace with inflation. As noted above, the infrequent and small increases in the *ad valorem* tax rates, coupled with the modest increases in the price ranges for the price slabs have led to declining real cigarette prices in Bangladesh in recent years. Some countries have addressed the problem of inflation eroding the value of a specific tobacco tax by creating mechanisms for annual or other administrative adjustments to specific tax rates that maintain the real value of the tax over time.

With respect to their impact on tobacco product prices, *ad valorem* taxes result in greater differentials in prices between high and low priced products than is the case for a single specific tax. This creates more opportunities for users to switch down to cheaper brands in response to tax induced and other price increases, reducing the impact of tax and price increases on tobacco use.

***Ad valorem* taxes result in greater differentials in prices between high and low priced products than is the case for a single specific tax. This creates more opportunities for users to switch down to cheaper brands.**

Because of the potential for substitution to lower priced brands, manufacturers of premium brands (often multinational tobacco companies) generally prefer specific taxes to *ad valorem* taxes that tend to favor low priced brands (that are often produced by locally based manufacturers). In this respect, Bangladesh's system of tiered *ad valorem* taxes that increase with price magnifies the disadvantage usually associated with an *ad valorem* tax—it results in larger price differentials between high and low priced brands than would have existed with a uniform *ad valorem* tax rate, which in turn are larger than those that would result from a uniform specific rate. This creates incentives for smokers to substitute to cheaper brands rather than quit as taxes and prices rise and/or cigarettes became less affordable. In addition, this type of tiered tax structure also tends to result in manufacturers' prices for various brands clustering at or near the top of the range of prices in each tier to which taxes are applied. If prices are not closely monitored and there are gaps between the price slabs as there are in Bangladesh, firms might even have incentives to price between slabs, in effect paying a tax rate on a lower slab and retaining a higher percentage of price.

In terms of revenues, tobacco tax revenues will be more stable and predictable with a specific tax than with an *ad valorem* tax. With an *ad valorem* tax, the amount of the tax varies with industry prices, implying

Tobacco tax revenues will be more stable and predictable with a specific tax than with an *ad valorem* tax.

that firms can reduce the revenue and public health impact of a tax increase by lowering their prices in response. In addition, any industry price cut is amplified—any time a firm cuts its product price, the tax assessed in terms of takas per pack also declines, resulting in a price reduction that exceeds the firm’s original price cut.

With respect to tax administration, specific excise taxes tend to be easier to administer than *ad valorem* excises given that they are based on quantity rather than value. With *ad valorem* excises, firms have a greater opportunity to game the system when the taxes are based on ex-factory prices. For example, firms can reduce their tax liability by setting an artificially low

price at which they sell to their own distributors, who then raise prices significantly before selling to wholesalers and/or retailers. By applying the *ad valorem* tax to the retail price rather than ex-factory price, Bangladesh reduces the likelihood of this problem for cigarettes. Nevertheless, this problem could be entirely avoided by the application of a uniform specific tax.

A mixed specific and *ad valorem* tax structure, such as that used in European Union countries, combines the strengths of both types of taxes while limiting their weaknesses. The overall tax will be less eroded by inflation given the significant *ad valorem* component; however, the specific component will need to be regularly increased to keep pace with inflation for the overall tax to retain its real value. Similarly, given the significant uniform specific component, the price gap between premium and lower-priced brands will be smaller than it would be under a uniform *ad valorem* tax.

Endnotes for Chapter V

- ²³ Jha P, Chaloupka FJ. *Curbing the Epidemic: Governments and the Economics of Tobacco Control*. Washington, D.C.: International Bank for Reconstruction and Development/World Bank. 1999.
- ²⁴ International Agency for Research on Cancer. *Effectiveness of Tax and Price Policies for Tobacco Control: IARC Handbook of Cancer Prevention, Volume 14*. Lyon, France: International Agency for Research on Cancer. 2011.
- ²⁵ Nargis N, Ruthbah UH, Hussain AKMG, Ashiquzzaman SM, Fong GT, Huq I. *Pricing and Taxation of Tobacco Products in Bangladesh: Findings from Wave 1 (2009) and Wave 2 (2010) of the ITC Bangladesh Survey*. ITC Project Working Paper Series. Waterloo, Ontario, Canada: University of Waterloo. 2011.
- ²⁶ World Health Organization. *WHO Technical Manual on Tobacco Tax Administration*. Geneva: World Health Organization. 2010.

VI. The Demand for Cigarettes and Bidis in Bangladesh

Considerable empirical evidence from high-income countries and growing evidence from low- and middle-income countries demonstrates that higher tobacco product taxes and prices lead to reductions in tobacco use.²³ These result from increased cessation, fewer former users restarting, less initiation, and reductions in consumption among continuing users. This section briefly reviews existing global evidence, with an emphasis on studies from low- and middle-income countries, particularly India, as well as the limited existing evidence for Bangladesh. This is followed by new estimates of the impact of price, income, and other factors on cigarette demand in Bangladesh.

Global Evidence

Many studies have employed aggregate data to examine the impact of cigarette and other tobacco product taxes and prices on overall tobacco use.²³ Before 2000, nearly all of these studies came from high-income countries including the United States, Canada, the United Kingdom, Australia, and several others. These studies consistently find that increases in taxes and prices on tobacco products lead to reductions in tobacco use. Most studies have focused on cigarette smoking, given that cigarettes account for the nearly all tobacco use in high-income countries. While these studies have produced a wide range of estimates of the magnitude of the effects of price on overall cigarette consumption, the vast majority of these studies estimate price elasticities in the range from -0.25 to -0.5 , with most of these clustered around -0.4 , suggesting that a 10% increase in cigarette prices will, on average, bring about a 4% reduction in consumption. As expected, models that account for the addictive nature of tobacco use find that demand is

more responsive to price in the long run than it is in the short run.

Over the past decade, a growing number of studies have examined the impact of taxes and prices on tobacco use in low and middle-income countries. These studies have estimated a wide range of price elasticities, with some, but not all, indicating that demand for tobacco products is more responsive to price in low and middle-income countries than it is in high income countries. For example, Hu and Mao (2002) estimate that the price elasticity of cigarette demand in China ranges from -0.50 to -0.64 , while Karki and colleagues (2003) estimate an overall price elasticity of cigarette demand of -0.88 in Nepal.^{27,28} John (2008) examined demand for multiple tobacco products in India, estimating price elasticities of -0.35 , -0.91 , and -0.88 for cigarettes, bidis, and leaf tobacco, respectively.²⁹ More recently, Guindon and colleagues (2011) updated and extended John's analysis, estimating cigarette and bidi price elasticities of -1.03 and -0.94 , respectively.³⁰ As in studies for high-income countries, studies from low and middle-income countries that account for the addictive nature of tobacco use find that demand responds more to price in the long run. For example, Aloui (2003) estimates short run price elasticities for tobacco use in Morocco in the range from -0.51 to -0.73 , and estimates long run elasticities that range from -1.36 to -1.54 .³¹

Findings from studies based on individual-level survey data on adult tobacco use indicate that taxes and prices influence both tobacco use decisions (*prevalence*) and the *frequency* and *amount* of tobacco consumption. In general, the estimates from high-income countries suggest that about half of the impact of price on tobacco use results from its effect on prevalence. Given that relatively little initiation occurs during adulthood, these changes largely result from cessation among adult users. This is confirmed by a

small number of studies which find that increases in price lead a number of current users to try to quit, with many users successful in doing so in the long run.

Studies using survey data from low and middle-income countries similarly find that price affects prevalence, although the relative impact on prevalence and consumption varies considerably across studies and countries. For example, Adioetomo and colleagues (2005) find no impact of price on the prevalence of smoking in Indonesia, while at the same time estimating an elasticity for conditional cigarette demand (changes in consumption of cigarettes by current smokers) of -0.62 .³² In contrast, Kyaing (2003) estimates a prevalence price elasticity of -1.28 and a conditional demand elasticity of -0.34 in Myanmar.³³

Finally, several studies examine the potential for substitution among tobacco products in response to changes in the relative prices of these products. In general, these studies find that part of the reduction in the use of one tobacco product in response to an increase in its price will be offset by increased use of other products if the prices of these products are not also increased. For example, Laxminarayan and Deolalikar (2004) find that changes in relative prices for cigarettes and rustic tobacco in Vietnam will lead to substitution between the two, particularly for substitution from cigarettes to rustic tobacco in response to an increase in the relative price of cigarettes.³⁴ Similarly, Guindon and colleagues (2011) found some evidence of cross-price effects for bidis and cigarettes in India, with low-SES and rural households substituting bidis and cigarettes, while the two tobacco products appeared to be complements for higher-SES households.²⁹ The potential for substitution highlights the importance of increasing taxes and prices for all tobacco products rather than a subset of products at the expense of ignoring others.

Tobacco Demand in Bangladesh — Existing Evidence

To date, a few studies have estimated the price elasticity of demand for tobacco products in Bangladesh. Ali and colleagues (2003) estimated tobacco demand for Bangladesh using annual time series data from 1983 through 1999 to estimate a relatively parsimonious model that included prices and per capita GDP as the only explanatory variables. They obtained a negative but statistically insignificant price elasticity of -0.27 , and a positive and significant income elasticity of 0.62 . They did not estimate bidi demand given the lack of data on bidi prices and consumption over time.

Guindon and colleagues (2003) estimated cigarette demand for Bangladesh as part of a larger study that also estimated demand in Indonesia, Nepal, Sri Lanka, Thailand, Maldives, and Myanmar.³⁶ Using annual time series data from 1970 through 2000, they too estimated a relatively parsimonious model that included only price and income as determinants of demand. In addition to estimating a conventional demand model, they also estimated a myopic addiction model. Like Ali and colleagues, they found no significant effect of prices on cigarette demand in either model. In their country-specific models for the other countries they examined, they generally found negative and often significant price effects, with short-run price elasticity estimates for cigarette demand clustered around -0.5 and long-run elasticity estimates clustered around -0.7 .

More recently, Nargis and colleagues (2010, 2011) have used the individual level data from the ITC-Bangladesh survey to estimate the price elasticity of cigarette and bidi demand in Bangladesh.^{37,24} Given the low prevalence rates of cigarette smoking among women, cigarette demand models were estimated for adult males only; bidi demand models were estimated

for both men and women. In addition to price and income, Nargis and colleagues controlled for a variety of other factors in their demand models, including age, marital status, educational attainment, employment status, household size, urban/rural location, the number of years since initiation, and survey year (in the 2011 analysis that used both the 2009 and 2010 survey data). Estimates from these models are summarized in Table 6.1.

Nargis and colleagues estimate significant negative effects of cigarette prices on both cigarette smoking prevalence and on cigarette consumption among smokers, with the effects on prevalence about double those of the effects on conditional demand. Their overall cigarette price elasticities range from -0.43 to -0.66 , somewhat less inelastic estimates than the range estimated in studies from high-income countries and well within the range estimated in studies from low- and middle-income countries. Nargis and colleagues interpret the relatively inelastic estimates obtained for bidi demand as being attributable to the very low prices for bidis which make them highly affordable. In their analysis of the pooled 2009/10 ITC-Bangladesh data, Nargis and colleagues also estimate price elasticity for subgroups based on

socioeconomic status. Consistent with Guidon and colleagues (2011) estimates for India, they find some evidence that cigarette smoking in lower socioeconomic groups is somewhat more sensitive to price, with overall elasticities of -0.76 and -0.59 for the lowest and highest tertiles, respectively.^{24,36,35}

Cigarette Demand in Bangladesh — New Estimates

We use annual time series data on aggregate cigarette consumption from 1981 through 2004 to generate new estimates of price elasticity. In contrast to the earlier time-series analyses by Ali and colleagues (2003) and Guidon and colleagues (2003), we apply an econometric methodology that accounts for the time series properties of the data.^{34,35,*} Given available data, our model is similarly parsimonious and includes only price and income as determinants of cigarette demand. Aggregate cigarette consumption data were obtained from the Bangladesh Bureau of Statistics and were divided by population to obtain a measure of per capita consumption. Cigarette price data reflect the inflation adjusted price of Star brand cigarettes, the most popular brand of cigarettes consumed in Bangladesh over this time period. Our measure of

Table 6.1: Estimated Price Elasticities of Cigarette and Bidi Demand from International Tobacco Control Policy Evaluation Project (ITC) Bangladesh Surveys, 2009 & 2010

	2009		Pooled 2009 & 2010	
	Cigarettes	Bidis	Cigarettes	Bidis
Prevalence	-0.29^{***}	-0.46^*	-0.44^{***}	0.03
Conditional Demand	-0.14^{***}	-0.18	-0.22^{***}	-0.22^{**}
Total	-0.43	-0.64	-0.66	-0.22

Sources: Nargis, et al. (2010, 2011).

Notes: ***, **, and * represent estimates statistically significant at the 1%, 5%, and 10% significance levels, respectively.

* In particular, we test for non-stationarity in the data (Engle and Granger, 1987). Non-stationarity arises when time series do not return to a particular value or predictable linear trend over time; the presence of non-stationarity biases estimates of the effect of price on consumption. On the other hand, by testing for and finding evidence of co-integration (the property of time series tending to trend together), we are able to arrive at consistent estimates of coefficients.

income is inflation adjusted per capita GDP. Details on the estimation are contained in the Web Annex.

Cigarette price is found to have a negative and statistically significant impact on cigarette demand in Bangladesh, while income is found to have a positive and statistically significant impact. Estimated short run price and income elasticities are -0.41 and 1.14

respectively, with long run estimates of -0.57 and -1.46 . Together, the estimates imply that the past decade's general trend towards increasingly affordable cigarettes, plus the combined effect of reductions in cigarette prices and increases in household income, have led to significantly higher cigarette smoking in Bangladesh than would have been the case had cigarettes remained less affordable.

Endnotes for Chapter VI

- ²⁷ Hu TW, Mao Z. Effects of cigarette tax on cigarette consumption and the Chinese economy. *Tobacco control*. 2002; 11(2):105–8.
- ²⁸ Karki YB, Pant KD, Pande BT. A Study on the Economics of Tobacco in Nepal. HNP Discussion Paper. Washington DC: The World Bank. 2003.
- ²⁹ John RM. Price elasticity estimates for tobacco products in India. *Health Policy and Planning*. 2008; 23:200-209.
- ³⁰ Guindon GE, Nandi A, Chaloupka FJ, Jha P. Socioeconomic Differences in the Impact of Smoking Tobacco and Alcohol Prices on Smoking in India. National Bureau of Economic Research Working Paper Number 17580. Cambridge, Massachusetts: National Bureau of Economic Research. 2011.
- ³¹ Aloui O. Analysis of the Economics of Tobacco in Morocco. HNP Discussion Paper. Washington DC: The World Bank. 2003.
- ³² Adioetomo SM, Djutaharta T, Hendratno. Cigarette Consumption, Taxation And Household Income: Indonesia Case Study. HNP Discussion Paper. Washington DC: The World Bank. 2005.
- ³³ Kyaing NN. Tobacco Economics in Myanmar. HNP Discussion Paper. Washington DC: The World Bank. 2003.
- ³⁴ Laxminarayan R, Deolalikar A. Tobacco initiation, cessation, and change: evidence from Vietnam. *Health Economics*. 2004; 13:1191-1201.
- ³⁵ Ali Z, Rahman A, Rahaman T. An Economic Analysis of Tobacco Control in Bangladesh. HNP Discussion Paper. Washington DC: The World Bank. 2003.
- ³⁶ Guindon GE, Perucic AM, Boisclair D. Higher Tobacco Prices and Taxes in South-East Asia: An Effective Tool to Reduce Tobacco Use, Save Lives, and Generate Revenue. HNP Discussion Paper. Washington DC: The World Bank. 2003.
- ³⁷ Nargis N, Ruthbah UH, Fong GT. Taxation of Tobacco Products in Bangladesh: Findings from the 2009 ITC Bangladesh Survey. ITC Project Working Paper Series. Waterloo, Ontario, Canada: University of Waterloo. 2010.
- ³⁸ Engle RF, Granger CWJ. Co-integration and error correction: Representation, estimation and testing. *Econometrica*. 1987; 55(2): 251-276.

VII. Impact of Cigarette and Bidi Tax Increases in Bangladesh

Using the estimates described in Chapter VI, we simulate the effects of cigarette tax increases on several outcomes related to cigarette and bidi smoking in Bangladesh, including overall consumption, government tax revenues, the number of current and future smokers, and deaths caused by smoking. Finally, we discuss other impacts of tax increases, including their effects on the poor, illicit trade, and employment in Bangladesh. In all scenarios considered, rather than preserve the existing *ad valorem* system and price slabs, we consider the effects of using a uniform specific excise tax where tax does not vary by price.

Several assumptions are used in these simulations. First, all other factors, most notably per capita income, are being held constant; to the extent that income is rising, the tax increases we model will generate smaller reductions in tobacco use, but larger increases in revenues than predicted, given that increases in income result in greater consumption. Second, we assume that there is no substitution between tobacco products in response to the simulated tax and price increases. Third, we assume that the increases in taxes are fully passed through to consumers so that price rises by at least the amount of the tax increase. Fourth, we assume that the price elasticities are constant across the entire range of prices. Fifth, since the taxes in the simulations are introduced as uniform specific taxes, we assume they are adjusted for inflation — specific taxes have to be increased to account for annual inflation if they are to retain their impact. Finally, we assume that there is no increase in tax avoidance or evasion as a result of increased taxes. These assumptions are fairly strong. Allowing for tax evasion, or allowing for changes in consumption of bidis when cigarette taxes increase might reduce the revenue projected. On the other

hand, price changes may work in the direction of even further consumption reductions if bidi and cigarette producers pass price increases more than proportionate to tax increases.

Impact of Cigarette Tax Increases on Cigarette Consumption and Tax Revenues

For the baseline, we assume that the average price of cigarettes is 21.20 taka (US\$ 0.26) per pack of 10, based on averages of prices within price slabs and the share of the market accounted for by each slab; that, on average, cigarette excise taxes are 50.7% of total retail price (10.7 taka or US\$ 0.13 per pack): and that total tax-paid cigarette sales were just under 7.4 billion packs of 10 cigarettes. At these values, total cigarette excise tax revenues were estimated to be just under 80 billion taka (US\$ 0.97 billion). Our first analysis (Scenario 1) simulates the impact of replacing the current tiered *ad valorem* tax structure with a uniform, specific cigarette excise tax of 17.50 taka per pack of 10 (US\$ 0.21), a tax that raises the percentage of average retail cigarette prices accounted for by the excise tax to 60 percent. We estimate that this tax increase will raise average retail prices to 29.2 taka (US\$ 0.36) per pack — a 37.5% increase in price.

Our second analysis (Scenario 2) simulates the impact of levying a uniform, specific cigarette excise tax of 34 taka (US\$ 0.41) per pack of 10 cigarettes. At this level, the cigarette excise tax will account for 70% of retail price, as recommended by WHO. With this tax, the average retail price, inclusive of taxes, would rise to 48.60 taka (US\$ 0.59) per pack of 10 cigarettes, an almost 130% increase in the average price over the baseline.

At the midpoint of the elasticity range (−0.41 to −0.66) obtained from the estimates described above (−0.535), we estimate that a uniform specific tax accounting for 60% of the average retail price (Scenario 1) will reduce overall cigarette sales by just

over 20%, while at the same time generating substantial new revenues. At the new, lower level of consumption, we estimate that cigarette tax revenues would increase by almost 50.2 billion taka (US\$ 0.6 billion). We estimate that taxing all brands at

a specific tax rate of 34 taka per pack (70% of retail price, Scenario 2) would cut cigarette sales by more than two-thirds while increasing excise revenues by about 15.1 billion taka (US\$ 200 million) above the baseline. These estimates are presented in Table 7.1.

Taxing all cigarette brands at a specific tax rate of 34 taka per pack (70% of retail price) would increase excise revenues by about 15.1 billion taka (US\$ 200 million).

Impact of Cigarette Tax Increases on the Public Health Consequences of Cigarette Smoking

In addition to estimating the impact on smoking and tax revenues, we simulate the impact of the two tax increases described above on the number of cigarette

Table 7.1: The Impact of Increasing Cigarette Excise Taxes on Smoking, Smoking-Attributable Mortality and Government Revenue

Baseline Parameters		
Current smokers (millions)	15.2	
Premature deaths in current smokers (millions)	7.6	
Expected future smokers (millions)	7.7	
Premature deaths in future smokers (millions)	3.8	
Average cigarette excise tax	10.7	
Average cigarette price	21.2	
Excise tax as a percentage of price	50.7%	
Model projections		
Scenario	Scenario 1	Scenario 2
Increased cigarette tax levied on each pack (uniform specific tax), takas	17.5	34.0
Increased average cigarette pack price, takas	29.2	48.6
Cigarette excise tax as a percentage of price	60.0%	70.0%
Elasticity assumption	-0.535	
Reduction in number of current smokers (millions)	2.03	6.99
Reduction in premature deaths caused by smoking among current smokers (millions)	0.71	2.45
Percentage of premature deaths in current smokers averted by higher taxes	9.4%	32.3%
Reduction in number of future smokers (millions)	2.06	7.09
Reduction in premature deaths caused by smoking among future smokers (millions)	1.03	3.55
Percentage of premature deaths in future smokers averted by higher taxes	26.8%	92.1%
Total reduction in number of smokers (millions)	4.09	14.08
Total reduction in premature deaths caused by smoking (millions)	1.74	5.99
Percentage of premature deaths in current and future smokers averted by higher taxes	15.2%	52.4%
Additional excise tax revenues (billion taka)	50.2	15.1
Additional excise tax revenues (US\$ billions)	0.6	0.2

smokers and on future deaths caused by cigarette smoking among the current population cohort in Bangladesh. Estimates based on the range of elasticities described in this report are also presented in Table 7.1. Given current population and smoking prevalence estimates, almost 15.2 million persons ages 15 and older in Bangladesh are cigarette smokers. Estimates indicate that more than one in two lifetime smokers will die prematurely from diseases caused by cigarette smoking.¹¹ Given this evidence, we assume that half of long-term smokers will die prematurely as a result of their addiction. Given this assumption, we estimate that over 7.5 million adults in the current population cohort will die prematurely from a disease caused by smoking. Assuming that the current cohort of youth in Bangladesh will take up smoking at the same rates as in the current adult cohort, we estimate that almost 7.7 million youth ages 0 through 14 will become cigarette smokers as adults and that over 3.8 million of them will die prematurely from diseases caused by smoking.

Nargis and colleagues' (2010, 2011) estimates based on the ITC-Bangladesh survey data suggest that about two-thirds of the impact of price on overall cigarette smoking among adults results from a reduction in smoking prevalence.^{24,36,23} Given this, we estimate that the average prevalence elasticity implied by the estimates described in this report is -0.36 . Based on this estimate, the price increase resulting from replacing the current tax system with a uniform cigarette excise tax that accounts for 60% of average retail prices will reduce adult smoking prevalence by about 13.4%, amounting to a reduction of over 2 million adult cigarette smokers. Adopting a uniform specific cigarette tax that accounts for 70% of average cigarette prices would bring the total reduction in smoking prevalence to over 46%, or almost 7 million adult cigarette smokers.

Given the evidence on the health benefits of smoking cessation, we estimate that 70% of those who would have otherwise died prematurely from diseases

A uniform specific tax of 17.5 taka per 10 cigarettes will reduce the number of premature deaths among adult cigarette smokers by over 1 million. An excise tax to 34 taka per 10 cigarettes (amounting to 70% of average retail price) would reduce premature deaths in adults by almost 2.5 million.

caused by smoking avoid premature death by quitting. Based on the assumption that half of long term smokers will die prematurely, we estimate that the price increase that would result from a uniform excise tax that, on average, accounts for 60% of retail price will reduce the number of premature deaths expected among current adult cigarette smokers by just over 1 million. A further increase that raises the excise tax to 70% of average cigarette prices would bring the total reduction in premature deaths among current adult cigarette smokers to almost 2.5 million.

Considerable research shows that youth smoking is more responsive to price than adult smoking, with estimates from high-income countries, as well as emerging evidence from low- and middle-income countries, suggesting that price elasticity of cigarette demand among youth is two or more times higher than it is among adults.²³ Assuming that youth cigarette smoking in Bangladesh is twice as sensitive to price as is adult cigarette smoking, we estimate that a uniform excise tax accounting for 60% of retail cigarette prices, on average, will reduce youth smoking prevalence by 27%, preventing over 2 million Bangladeshi youth from taking up smoking. All smoking-attributable premature deaths will be avoided among youth prevented from starting. Based on the assumption that half of long-term smokers will die prematurely because of their smoking, this implies a reduction of over 1 million deaths among youth who do not initiate cigarette smoking as a result of this tax increase.

Further increasing the tax by taxing all brands at 34 taka per pack would raise the total reduction in youth smoking prevalence to over 90% and prevent over 7 million youth from taking up cigarette smoking. The health impact would be significant, with over 3.5 million deaths prevented among youth who do not initiate cigarette smoking as a result of this tax increase.

The simulations above consider the impact of replacing the existing complex system of multiple price slabs and *ad valorem* rates with a single uniform tax. In addition to increased tax revenues, a key advantage of such a system from a tobacco control perspective is the narrowing of price differences between the most and least expensive brands, since manufacturers of cheap cigarettes do not gain from keeping prices low. At the very least, there is a strong case for eliminating differential taxation based on price differences and countering the continued availability of very cheap cigarettes.

Impact of Bidi Tax Increases on Bidi Consumption and Tax Revenues

We conduct a similar set of simulations for the impact of bidi tax increases on bidi consumption. For the baseline, we assume that the average price of bidis is 6.75 taka (US\$ 0.08) per pack of 25; that, on average, bidi excise taxes are 10% of total retail price (0.675 taka or less than US\$ 0.01 per pack): and that total tax-paid bidi sales were 3.24 billion packs. At these values, total bidi excise tax revenues were estimated to be just under 2.2 billion taka (US\$ 26.8 million). Our first analysis simulates the impact of adopting a uniform specific bidi tax of 3.04 taka (US\$ 0.04) per pack of 25 and applying the VAT to the actual, tax-inclusive, price of bidis (rather than the lower “tariff value”). This excise tax would raise average bidi prices to 10.13 taka (US\$ 0.12), a 50% increase in price, and account for 30% of average retail bidi prices. Our second analysis simulates the impact

Taxing all bidis at a specific tax rate of 4.95 taka per pack (40% of average prices) would increase revenues by 7.2 billion taka (US\$ 87.5 million).

of levying a uniform, specific bidi excise tax of 4.95 taka (US\$ 0.06) per pack of 25 bidis and applying the VAT to the actual retail price of bidis. At this tax level, the average retail price of bidis, inclusive of taxes, would rise to 12.38 taka (US\$ 0.15) per pack, an over 83% increase in the average price over the baseline, and the tax would account for 40% of average bidi prices.

To simulate the impact of the tax and price increases, we use the midpoint (−0.69) of the elasticity range (−0.43 to −0.95) obtained from the limited studies on the price elasticity of bidi demand in Bangladesh and India described above. Given this elasticity, we estimate that a uniform specific tax accounting for 30% of the average bidi prices will reduce overall bidi consumption by more than one-third, while at the same time raising significant new revenues. At the new, lower level of consumption, we estimate that bidi tax revenues would increase by about 7.5 billion taka (US\$ 91.2 million). We estimate that taxing all bidis at a specific tax rate of 4.95 taka per pack (40% of average prices) would cut bidi consumption by 57.5% while increasing revenues by about 7.2 billion taka (US\$ 87.5 million) above the baseline. These estimates, as well as estimates based on the range of elasticities described in this report, are presented in Table 7.2.

Impact of Bidi Tax Increases on the Public Health Consequences of Bidi Smoking

As we did for cigarette tax increases, we simulate the impact of the two bidi tax increases described

Table 7.2: The Impact of Increasing Bidi Excise Taxes on Smoking, Smoking-Attributable Mortality and Government Revenue

Model parameters, baseline		
Current smokers (millions)		12.0
Premature deaths in current smokers (millions)		4.8
Expected future smokers (millions)		6.1
Premature deaths in future smokers (millions)		2.4
Average bidi excise tax		0.68
Average bidi price		6.75
Excise tax as a percentage of price		10.0%
Model projections		
Scenario	Scenario 1	Scenario 2
Increased average bidi tax levied on each pack (uniform specific tax), takas	3.04	4.95
Increased average bidi pack price (takas)	10.13	12.38
Bidi excise tax as a percentage of price	30.0%	40.0%
Elasticity assumption	-0.69	
Reduction in number of current smokers (millions)	2.07	3.44
Reduction in premature deaths caused by smoking among current smokers (millions)	0.58	0.96
Percentage of premature deaths in current smokers averted by higher taxes	12.1%	20.1%
Reduction in number of future smokers (millions)	2.10	3.49
Reduction in premature deaths caused by smoking among future smokers (millions)	0.84	1.40
Percentage of premature deaths in future smokers averted by higher taxes	34.5%	57.5%
Total reduction in number of smokers (millions)	4.16	6.93
Total reduction in premature deaths caused by smoking (millions)	1.42	2.36
Percentage of premature deaths in current and future smokers averted by higher taxes	19.6%	32.7%
Additional excise tax revenues (billion taka)	7.5	7.2
Additional excise tax revenues (US\$ millions)	91.2	87.5

above on the number of bidi smokers and on future deaths caused by bidi smoking among the current population cohort in Bangladesh. Estimates based on the range of elasticities described above are also presented in Table 7.2. Given current population and smoking prevalence estimates, about 12 million persons ages 15 and older in Bangladesh are bidi smokers. Estimates from Jha and colleagues (2008) indicate that about 40% of lifetime bidi smokers will die prematurely from diseases caused by bidi smoking.¹² Given this evidence, we assume that 40% of

long-term bidi smokers will die prematurely as a result of their addiction. Based on this assumption, we estimate that over 4.8 million adults in the current population cohort will die prematurely from a disease caused by bidi smoking. Assuming that the current cohort of youth in Bangladesh will take up bidi smoking at the same rates as in the current adult cohort, we estimate that 6.1 million youth ages 0 through 14 will become bidi smokers as adults and that 2.4 million of them will die prematurely from diseases caused by bidi smoking.

We assume that half of the overall impact of bidi prices on bidi smoking results from a reduction in prevalence, given the global evidence for cigarette demand and the lack of evidence specific to bidis.²³ As a result, we estimate that the average prevalence elasticity for bidis is -0.345 . Based on this estimate, the price increase resulting from replacing the current tax system with a uniform bidi excise tax that accounts for 30% of average retail prices after applying the VAT to the actual price will reduce adult bidi smoking prevalence by more than 17%, amounting to a reduction of over 2 million adult bidi smokers. Adopting a uniform specific bidi tax that accounts for 40% of average cigarette prices after applying the VAT to the actual price would bring the total reduction in bidi smoking prevalence to nearly 29%, or over 3.4 million adult bidi smokers.

Given the evidence on the health benefits of smoking cessation, we estimate that 70% of those who would have otherwise died prematurely from diseases caused by smoking avoid premature death by quitting. Based on the assumption that 40% of long term bidi smokers will die prematurely, we estimate that the price increase that would result from a uniform bidi excise tax that, on average, accounts for 30% of retail price will reduce the number of premature deaths expected among current adult bidi smokers by almost

580,000. A further increase that raises the bidi excise tax to 40% of average prices would bring the total reduction in premature deaths among current adult bidi smokers to almost 1 million.

Given the previously noted research that youth smoking is more responsive to price than adult smoking, we assume that youth bidi smoking in Bangladesh is twice as sensitive to price as is adult bidi smoking. Based on this assumption, we estimate that a uniform excise tax accounting for 30% of retail bidi prices, on average, will reduce youth bidi smoking prevalence by 35%, preventing over 2 million Bangladeshi youth from taking up bidi smoking. All smoking attributable premature deaths will be avoided among youth prevented from starting, implying a reduction of almost 840,000 million deaths among youth who do not initiate bidi smoking as a result of this tax increase. Further increasing the bidi tax to 40% of average retail prices would raise the total reduction in youth smoking prevalence to 58% and prevent over almost 3.5 million youth from taking up bidi smoking. The health impact would be significant, with about 1.4 million deaths prevented among youth who do not initiate bidi smoking as a result of this tax increase.

Impact on the Poor

Concerns about the impact of tobacco tax increases on the poor are often raised in opposition to higher tobacco taxes. As described above, Nargis and colleagues (2011) found that smoking in lower income Bangladeshi households was somewhat more responsive to changes in prices than is smoking in high income households.²⁴ Guindon and colleagues (2011) found similar evidence for India. These estimates imply that the reductions in smoking among the poor that result from higher tobacco taxes will be larger than those that occur among rich so that the health benefits that result from a tax increase will be progressive.²⁹ Moreover, the differences in price

A uniform specific bidi excise tax that accounts for 3.04 taka per 25 sticks will reduce the number of premature deaths expected among current adult bidi smokers by almost 580,000. A tax of 4.95 taka per 25 sticks (amounting to 40% of retail price) would reduce premature deaths among adult bidi smokers by almost 1 million.

sensitivity imply that the relative burden of an increase in the tax will fall more heavily on richer households, given that a tax increase will reduce smoking by more in poorer households than in richer households.

To the extent that concerns remain about the impact of tobacco tax increases on the poor, these can be at least partly addressed by spending the new tax revenues generated by the tax increase in a progressive manner. Using the new revenues to increase government spending on education, health care, and social assistance programs that benefit the poor can offset any negative impact of higher taxes on low income smokers who continue to smoke, as well as provide new benefits to low income, non-smoking households.

Illicit Trade

The tobacco industry and others argue that increased tobacco taxes result in extensive illicit trade, existing evidence indicates that a variety of other factors are important determinants of large scale, organized smuggling, individual tax avoidance, counterfeiting, and other illicit cigarette trade.²³ For example, while differences in cigarette taxes can contribute to the smuggling of cigarettes from low tax to high tax jurisdictions, pre-tax price differences are often substantial and create a financial incentive to smuggle. Other researchers have found that the level of corruption in a county explains at least as much of the extent of smuggling as is explained by tax and price levels.³⁹ Other important determinants include the presence of an informal distribution network for cigarettes within a country, poor technology and communications at customs, weak or non-existent enforcement, and minimal penalties for those caught trading illegally in cigarettes.^{23,38}

According to the ERC Group (2010), illicit trade in Bangladesh is lower than in neighboring countries and was effectively reduced by the adoption of a tax stamp.⁷

Nevertheless, cigarette and bidi tax increases of the magnitude described above would likely lead to increased tax avoidance and evasion that would reduce, but not eliminate the public health and revenue impact of tobacco tax increases. As described in WHO's *Technical Manual for Tobacco Tax Administration*, strengthened tax administration would help keep problems with increased illicit trade in tobacco products to a minimum.²⁵ One possible step is the adoption of the new generation of tax stamps that are being used in an increasing number of jurisdictions, that are more difficult to counterfeit, and that allow better tracking and tracing of tobacco products from the manufacturer to the retailer. Another potential strengthening of tax administration would be for tax authorities in Bangladesh to adopt production monitoring technologies for cigarettes and large scale bidi producers, such as those employed in Turkey and Brazil, coupled with other pack markings to facilitate tracking and tracing of these products through the distribution chain. In addition, imposing swift, severe penalties for those caught engaging in illicit trade, and substantially enhancing enforcement efforts, would be effective in deterring illicit tobacco trade. Requiring licenses for all engaged in tobacco product manufacturing, distribution, and retailing would facilitate such enforcement efforts. The additional revenues generated from these activities would almost certainly more than pay for them many times over.²⁵

Employment

As described above, a relatively small share of jobs in Bangladesh are dependent on tobacco, with tobacco farming accounting for less than 0.5% of total agricultural employment and tobacco manufacturing accounting for less than 1.0% of manufacturing employment. Together, tobacco farming and tobacco product manufacturing account for less than 0.4% of overall employment in Bangladesh. Given this,

reductions in tobacco use that result from tax increases or other tobacco control activities will have little impact on overall employment in Bangladesh. As funds once spent on tobacco products are increasingly spent on other goods and services, and as government spends new tax revenues on more labor intensive activities, the new jobs that are created offset any loss of tobacco-dependent jobs. This has been demonstrated empirically for many countries, where reductions in tobacco use that result in job losses in the tobacco

sectors are offset or more than offset by increases in jobs in other sectors.²³

To the extent that there are concerns about job losses in more tobacco-dependent sectors or regions, using a portion of new tobacco tax revenues generated by a tax increase to move tobacco farmers into other crops and/or to retrain those employed in tobacco product manufacturing for work in other sectors can alleviate these concerns.

Endnotes for Chapter VII

³⁹ Merriman D, Yurekli A, Chaloupka FJ. How big is the worldwide cigarette smuggling problem? In: Jha, P, Chaloupka FJ, eds. Tobacco Control in Developing Countries. Oxford: Oxford University Press. 2000.

VIII. Summary and Recommendations

Summary

Bangladesh is one of the largest tobacco consuming countries in the world, with over 46.3 million adults consuming cigarettes, bidis, smokeless tobacco, or some other tobacco product. Over 43% of men and 29% of women use tobacco, and 23% of adult Bangladeshis are smokers. A significant number of Bangladeshi youth consume tobacco products, and cigarette smoking among girls is higher than among women, raising concerns about significantly increased prevalence among women in future years. Given the high levels of tobacco use, Bangladesh faces considerable health and economic consequences from tobacco.

The growing recognition of these problems has led to changes in the tobacco control environment in Bangladesh, including the adoption of limits on tobacco advertising, some promotions, and sponsorship, some restrictions on tobacco use in public places, and textual warning labels on smoked tobacco products. However, these policies are not comprehensive, are often poorly implemented and enforced, and need to be strengthened to have a larger public health impact.

At the same time, cigarette prices in Bangladesh are among the lowest in the world, bidis are even cheaper, and real cigarette prices have been falling in recent years. Moreover, increases in real incomes over the past decade have made cigarettes increasingly affordable.

Extensive research from a growing number of countries has documented the inverse relationship between tobacco product prices and consumption. Bangladesh is no exception. Existing evidence as well as new estimates produced for this report clearly shows

that falling cigarette and bidi prices lead to increases in smoking, while rising prices will reduce smoking, all else constant. These estimates indicate that a 10% increase in average cigarette prices in Bangladesh will lead to an over 5% reduction in cigarette consumption, while a 10% increase in average bidi prices will reduce their consumption by almost 7%. In addition, both the existing and new evidence show that rising incomes will lead to significantly more smoking in Bangladesh.

The cigarette tax structure in Bangladesh is complicated, with a tiered structure that imposes different *ad valorem* taxes based on retail cigarette prices. Bidis are taxed at a much lower rate, with the effective rate reduced by taxing them based on “tariff value,” a notional amount rather than actual retail price. Cigarette excise taxes in Bangladesh account for just over half of retail cigarette prices on average, while total taxes on cigarettes account for almost two-thirds of retail prices. This is below the level in countries that have taken a comprehensive approach to reducing tobacco use, where taxes account for 70% or more of price.

Based on existing and new estimates, we estimated the impact of changes in the existing tax structure and rates. Eliminating the tiered tax structure and adopting a uniform specific excise tax of 34 taka per pack of 10 cigarettes, so that the cigarette excise tax would account for 70% of retail prices as recommended by WHO would raise average prices by almost 130% and reduce consumption by more than two-thirds. In addition, this tax and price increase will lead nearly 79 million current Bangladeshi cigarette smokers to quit smoking, while preventing over 7 million Bangladeshi youth from taking up cigarette smoking. Together, these reductions in smoking will prevent almost 6 million premature deaths caused by tobacco use in the current population cohort. At the same time, because of the inelasticity of cigarette demand, the tax increase will generate almost over 15 billion taka (US\$ 200 million) in new cigarette tax revenues.

Similarly, sharp increases in bidi taxes would also generate significant new tax revenues while reducing bidi smoking and its public health consequences. We estimate that levying a uniform specific excise tax of 4.95 taka per pack of 25 bidis and applying the VAT to the actual retail price of bidis would reduce the number of adult bidi smokers by over 3.4 million and prevent almost 3.5 million youth from taking up bidi smoking. These reductions in bidi smoking would prevent nearly 2.4 million premature deaths that will otherwise result from bidi smoking in the current Bangladeshi population cohort, while generating about 7.2 billion taka (US\$ 87.5 million) in new bidi excise tax revenues.

Recommendations

Given this evidence, we make the following recommendations:

(1) **Eliminate the use of price slabs as the basis for differential taxation.**

The current tax structure that applies different *ad valorem* taxes to cigarettes based on retail price and results in very low prices for some cigarette brands and very large differences in prices between high and low priced brands. One consequence of this is that increases in cigarette tax rates will have less of a public health impact than they would if a single specific tax were applied to all cigarettes, since the large price differences create an incentive to switch down to cheaper cigarettes in response to tax increases. Eliminating the differential taxation of cigarettes based on price slabs and applying a single tax to all cigarettes would reduce the price gaps between higher and lower priced brands and, as a result, reduce the opportunities to switch down to cheaper cigarettes when cigarette taxes increase. In addition, eliminating the use of price slabs as the basis for differential taxation would eliminate opportunities for tax avoidance through misclassification of brands.

(2) **Adopt a uniform specific cigarette excise tax that significantly raises cigarette prices and reduces tobacco use.**

Replacing Bangladesh's existing multi-tiered *ad valorem* excise tax structure with a uniform specific tax on all cigarettes would send the clear message that all cigarettes are equally harmful. Moreover, it would further reduce the differences in price between high and low price brands, further reducing the incentives for substitution to less expensive cigarettes in response to a tax increase.

An appropriate target is to adopt a uniform specific cigarette excise tax of 34 taka per pack which would result in the cigarette excise tax accounting for 70% of average retail cigarette prices, as recommended by WHO. This would significantly increase average cigarette taxes in Bangladesh, particularly those on the lowest priced products. By raising prices, such tax increases will prevent cigarette smoking initiation, promote cessation, lower consumption among continuing smokers, and reduce the death, disease, and economic costs that result from smoking. We estimate that this tax would encourage nearly 7 million adult cigarette smokers to quit, keep over 7 million young Bangladeshis from taking up cigarette smoking, and prevent almost 6 million premature deaths caused by cigarette smoking in the current population cohort, while at the same time reduce the economic burden caused by smoking in Bangladesh. At the same time, higher tobacco taxes will result in increased government revenues. Because of the inelasticity of cigarette demand, a tax increase of this magnitude will generate new revenues of over 15 billion taka (US\$ 200 million).

In the short run, Bangladesh can move towards this system of a uniform specific tax structure by reducing the number of existing tax tiers and adding a specific tax to the existing *ad valorem* tax. For example, as a first step, the top three tiers could be combined into a single tier at the current 60% tax rate and the rate applied to cigarettes in the lowest tier could be increased sharply. This could be followed by the introduction of a specific tax of 10 taka per pack of 10 cigarettes. Over time, the specific tax could be increased and the *ad valorem* tax rate reduced so that the total tax is rising in absolute terms and as a percentage of price, with a longer term goal of achieving a uniform specific tax that accounts for 70% of retail prices.

(3) Increase bidi taxes substantially through a high uniform specific bidi excise tax that significantly raises bidi prices and reduces use.

Bidis are currently taxed at very low levels and both the supplementary duty and VAT on bidis are applied to an artificial price well below their actual retail prices. The resulting low taxes on bidis, both absolutely and relative to cigarettes, appear to be the result of government efforts to protect the bidi industry. The current bidi tax scheme should be replaced by a high specific excise tax on bidis that uniformly to all brands and the VAT should be applied to the actual, tax inclusive, price of bidis. This would lead to significant increases in bidi use and reduce the incentives for cigarette smokers to switch to bidis in response to higher cigarette taxes. A reasonable short-run target is to levy a uniform bidi tax of 4.95 taka per pack of 25 bidis, a tax that would account for 40% of average bidi prices. This tax would encourage over 3.4 million Bangladeshi adult bidi smokers to quit and prevent almost 3.5 million young people from taking up bidi use, the combined effect of which would be to prevent almost 2.4 million deaths

from bidi smoking in the current population cohort. At the same time, this tax would generate an additional 7.2 billion taka (US\$ 87.5 million) in bidi excise tax revenues. Over time, the bidi excise tax should be further increased so that it eventually accounts for the same share of retail bidi prices as the cigarette excise tax accounts for in retail cigarette prices.

(4) Increase taxes on other tobacco products to be equivalent to cigarette taxes and to reduce the use of these products.

Equating taxes on all tobacco products reduces incentives to substitute from higher taxed products to lower taxed products, maximizing the health and revenue impact of these taxes.

Over time, these taxes should be regularly increased with the long run goal of tobacco excise taxes accounting for at least 70% of average retail prices, as recommended by WHO.

(5) Implement annual adjustments to the specific tax rates so that they retain their real value over time.

One caveat associated with the specific excise taxes on cigarettes and bidis recommended above is that the real value of these taxes is eroded over time by inflation unless they are regularly adjusted. In Bangladesh, despite periodic increases in *ad valorem* cigarette tax rates and increases in the price slabs to which they apply, real cigarette prices have been falling over time. These falling real cigarette prices result in higher levels of cigarette consumption, together with its health and economic consequences. Annually, or more frequently, adjusting the proposed specific cigarette and bidi taxes so that they maintain their real value over time will maximize the public health and revenue impact of the taxes.

(6) Implement annual adjustments to excise tax rates on tobacco products so that they result in increases in product prices that are at least as large as increases in incomes.

Previous research and new evidence provided in this study clearly shows that cigarette demand in Bangladesh rises with incomes. Over the past decade, the combination of falling real cigarette prices and rising incomes has led to cigarettes becoming much more affordable in Bangladesh. This increasing affordability results in more cigarette smoking than would have otherwise been the case. In addition to raising taxes to offset the effects of inflation, further increases in excise taxes that reduce the affordability of cigarettes are needed in order to improve public health by reducing smoking.

(7) Strengthen tobacco tax administration, increase enforcement, and tax duty free sales of tobacco products in order to reduce tax evasion and avoidance.

The complex tobacco tax structure in Bangladesh contributes to tobacco tax avoidance and tax evasion which costs the government revenue and adversely affects public health. Several steps should be undertaken to strengthen tobacco tax administration in Bangladesh. First, a well established monitoring system should be put in place that employs new technologies for monitoring the production and distribution of tobacco products. These new technologies include adoption of: a state-of-the-art production monitoring system; the new generation of more sophisticated, hard-to-counterfeit tax stamps; and a tracking-and-tracing system that can follow tobacco products through the distribution chain. The government's initial investment in these technologies would almost certainly more than pay for itself through the revenues collected on

products for which taxes would otherwise not have been paid.

Bangladeshi tax administrators' capacity for tracking and tracing should be further strengthened by licensing all involved in tobacco production and distribution, and resources should be allocated to enforcing tax policies. When done in combination with the adoption of the technologies discussed above, licensing would be highly useful in enforcement efforts and allow customs to more easily identify illicit product and to identify those higher up in the distribution chain that are responsible. Severe administrative penalties should be imposed on those caught engaging in tax evasion so as to significantly increase the swiftness and severity of these penalties, making them a greater deterrent. Again, the government's investment in enhanced enforcement efforts would almost certainly more than pay for themselves through the increased taxes collected from previously untaxed products.

All taxes should be applied to tobacco products sold in duty-free outlets. Doing so increases the public health impact of higher tobacco taxes by raising all tobacco product prices and by reducing opportunities for tax avoidance and evasion, while at the same time generating additional revenues.

(8) Earmark tobacco tax revenues for health purposes, including health promotion and tobacco control

Higher tobacco taxes will generate significant new revenues. Using these revenues to support programs that help existing tobacco users quit, particularly among the poor, and that support other programs targeting the poor will reduce any potentially regressive impact of the higher taxes on the large segment of the Bangladeshi population that lives in poverty. Moreover,

earmarking of tobacco tax revenues for health purposes increases public support for tax increases and adds to the impact of these tax increases on health and development. This includes dedicating a portion of tobacco tax revenues for comprehensive tobacco control

programs that include, but are not limited to, support for community level interventions, mass media public education campaigns about the harms from tobacco use, provision of support for smokers trying to quit smoking and efforts to prevent young people from taking up tobacco use.

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Bibliography

- Adioetomo SM, Djutaharta T, Hendratno. Cigarette Consumption, Taxation And Household Income: Indonesia Case Study. HNP Discussion Paper. Washington DC: The World Bank. 2005.
- Ali Z, Rahman A, Rahaman T. An Economic Analysis of Tobacco Control in Bangladesh. HNP Discussion Paper. Washington DC: The World Bank. 2003.
- Aloui O. Analysis of the Economics of Tobacco in Morocco. HNP Discussion Paper. Washington DC: The World Bank. 2003.
- British American Tobacco Bangladesh. About Us. 2012. Available at <http://www.batbangladesh.com>, accessed January 5, 2012.
- Centers for Disease Control and Prevention. Annual smoking-attributable mortality, years of potential life lost, and economic costs--- United States, 2000–2004. *Morbidity and Mortality Weekly Report*. 2006; 57(45):1226-1228.
- Engle RF, Granger CWJ. Co-integration and error correction: Representation, estimation and testing. *Econometrica*. 1987; 55(2): 251-276.
- ERC Group. World Cigarettes 1/2010. Suffolk, England: ERC-World. 2010.
- Euromonitor International. Bangladesh: Country Sector Briefings. London: Euromonitor International. 2011.
- FAOSTAT. Food and Agricultural Organization of the United Nations. 2011. Available at: <http://faostat.fao.org/site/291/default.aspx>; accessed December 30, 2011.
- Global Tobacco Surveillance System. Global Adult Tobacco Survey - Bangladesh Report 2009. Dhaka, Bangladesh: World Health Organization, Country Office for Bangladesh. 2009.
- Global Tobacco Surveillance System. Global Adult Tobacco Survey (GATS) - Fact Sheet, Bangladesh: 2009. Atlanta GA: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. 2009.
- Global Youth Tobacco Survey. Bangladesh (Ages 13-15) Global Youth Tobacco Survey (GYTS) Fact Sheet. Atlanta GA: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. 2008.
- Guindon GE, Nandi A, Chaloupka FJ, Jha P. Socioeconomic Differences in the Impact of Smoking Tobacco and Alcohol Prices on Smoking in India. National Bureau of Economic Research Working Paper Number 17580. Cambridge, Massachusetts: National Bureau of Economic Research. 2011.
- Guindon GE, Perucic AM, Boisclair D. Higher Tobacco Prices and Taxes in South-East Asia: An Effective Tool to Reduce Tobacco Use, Save Lives, and Generate Revenue. HNP Discussion Paper. Washington DC: The World Bank. 2003.
- Hu TW, Mao Z. Effects of cigarette tax on cigarette consumption and the Chinese economy. *Tobacco control*. 2002; 11(2):105–8.
- International Agency for Research on Cancer. Effectiveness of Tax and Price Policies for Tobacco Control: IARC Handbook of Cancer Prevention, Volume 14. Lyon, France: International Agency for Research on Cancer. 2011.
- International Agency for Research on Cancer. Tobacco Control: Reversal of Risk after Quitting Smoking. IARC Handbook of Cancer Prevention, Volume 11. Lyon, France: International Agency for Research on Cancer. 2007.
- ITC Project. ITC Bangladesh Report on Tobacco Warning Labels. Ontario, Canada and Dhaka, Bangladesh: University of Waterloo and University of Dhaka. 2011.
- Jha P, Chaloupka FJ, editors. Tobacco Control in Developing Countries. Oxford: Oxford University Press. 2000.
- Jha P, Chaloupka FJ, Moore J, Gajalakshmi V, Gupta PC, Peck R, Asma S, Zatonski W. Tobacco addiction. In: Jamison DT, Breman JG, et al. eds., *Disease control priorities in developing countries*. 2nd ed. Washington DC: International Bank for Reconstruction and Development/World Bank. 2006;869-885.
- Jha P, Chaloupka FJ. Curbing the Epidemic: Governments and the Economics of Tobacco Control. Washington, D.C.: International Bank for Reconstruction and Development/World Bank. 1999.
- Jha P, Jacob B, Gajalakshmi V, Gupta PC, Dhingra N, Kumar R, et al. A nationally representative case-control study of smoking and death in India. *New England Journal of Medicine* 2008; 358:1137-1147.
- Jha P, Musgrove P, Chaloupka FJ, Yurekli A. The economic rationale for intervention in the tobacco market. In: Jha, P, Chaloupka FJ, eds. *Tobacco Control in Developing Countries*. Oxford: Oxford University Press. 2000.
- John RM. Price elasticity estimates for tobacco products in India. *Health Policy and Planning*. 2008; 23:200-209.

- Karki YB, Pant KD, Pande BT. A Study on the Economics of Tobacco in Nepal. HNP Discussion Paper. Washington DC: The World Bank. 2003.
- Kyaing NN. Tobacco Economics in Myanmar. HNP Discussion Paper. Washington DC: The World Bank. 2003.
- Laxminarayan R, Deolalikar A. Tobacco initiation, cessation, and change: evidence from Vietnam. *Health Economics*. 2004; 13:1191-1201.
- Mathers CD, Loncar D. Projections of Global Mortality and Burden of Disease from 2002 to 2030. *PLoS Med*. 2006; 3(11): e442 Available at: <http://www.plosmedicine.org/article/info:doi/10.1371/journal.pmed.0030442>. Accessed March 31, 2010.
- Merriman D, Yurekli A, Chaloupka FJ. How big is the worldwide cigarette smuggling problem? In: Jha, P, Chaloupka FJ, eds. *Tobacco Control in Developing Countries*. Oxford: Oxford University Press. 2000.
- Nargis N, Ruthbah UH, Fong GT. Taxation of Tobacco Products in Bangladesh: Findings from the 2009 ITC Bangladesh Survey. ITC Project Working Paper Series. Waterloo, Ontario, Canada: University of Waterloo. 2010.
- Nargis N, Ruthbah UH, Hussain AKMG, Ashiquzzaman SM, Fong GT, Huq I. Pricing and Taxation of Tobacco Products in Bangladesh: Findings from Wave 1 (2009) and Wave 2 (2010) of the ITC Bangladesh Survey. ITC Project Working Paper Series. Waterloo, Ontario, Canada: University of Waterloo. 2011.
- Roy A, Efroymson D, Jones L, Ahmed S, Arafat I, Sarker R, FitzGerald S. Gainfully employed? An inquiry into bidi-dependent livelihoods in Bangladesh. *Tobacco Control*. TC Online First 10.1136/tc.2011.043000. 2011.
- U.S. Department of Health and Human Services. *The Health Consequences of Smoking: A Report of the Surgeon General*. Atlanta, Georgia: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. 2004.
- U.S. Department of Health and Human Services. *The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General*. Atlanta, Georgia: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. 2006.
- World Health Organization. *Impact of Tobacco-related Illnesses in Bangladesh*. New Delhi, India: World Health Organization, Regional Office for South-East Asia. 2007.
- World Health Organization. *WHO Framework Convention on Tobacco Control*. Geneva: World Health Organization. 2003.
- World Health Organization. *WHO Report on the Global Tobacco Epidemic, 2011: Implementing Smoke-Free Environments*. Geneva: World Health Organization. 2011.
- World Health Organization. *WHO Technical Manual on Tobacco Tax Administration*. Geneva: World Health Organization. 2010.

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