Cigarette Affordability and the Impact of Tobacco Taxation on Health and Revenue

By Filomeno S. Sta. Ana III and Jo-Ann J. Latuja
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2010
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The heavy burden of tobacco consumption and the high smoking prevalence in the Philippines should compel policy makers to put in place appropriate regulations, including legislation that will effectively curb the growth of tobacco use. Price and tax measures are undeniably effective in reducing tobacco consumption.

Increasing the tobacco price through taxation has become even more critical and urgent in light of the declining real prices of cigarettes, arising mainly from a problematic and infirm Philippine excise tax system. Said differently, reforming the excise tax policy, which includes a tax increase, is key to meeting the government’s health objectives such as reducing smoking prevalence—the Philippines having one of the highest in the world—and saving lives and resources.

The need to increase tobacco excise tax is also linked to the government’s urgent need to increase tax effort. Despite the Bureau of Internal Revenue’s (BIR’s) laudable effort to improve tax administration, tax effort has remained low. This suggests that tax policy, including the reform of sin taxes, is indispensable in meeting revenue objectives, preventing a fiscal crisis, and ensuring sustainable growth for the country.

Towards contributing to the goal of improving tobacco control policies and increasing tax effort, this paper seeks to fortify the proposed legislative reforms to increase tobacco tax in the Philippines. Specifically, this paper aims to:

a. Present a background on the burden of tobacco, smoking prevalence, cigarette price and tobacco tax revenue trends and cigarette taxation system in the Philippines.

b. Determine the affordability of tobacco in the Philippines.

c. Estimate the immediate fiscal and public health impact of proposed tobacco tax increases in the Philippines.

Using the Blecher and van Walbeek (2009) and Kan (2007) models in measuring cigarette affordability, we conclude that cigarettes have become more affordable in the Philippines over the past ten years. This suggests that the **reform of tobacco tax policy must include tax increases based on inflation indexation, at the least, and beyond**, to meet health targets and generate additional hefty revenues to address the fiscal binding constraint.

Based on the results of the van Walbeek (2010) tobacco tax impact model, we conclude that due to the addictive nature of tobacco consumption and the inelasticity of demand for cigarettes, increasing the excise tax not only reduces tobacco consumption but also generates additional revenues for the government. Among the various tobacco tax bills in the 15th Congress, House Bill (HB) 3465 and House Bill (HB) 3489 are the most comprehensive in terms of reaching both health and revenue goals. Increasing the excise tax by 215 percent will increase the average cigarette price by 73 percent, reduce smoking prevalence to at least 27 percent, generate at least PHP26 billion additional excise tax revenues and save at least 310,000 lives.

We identify three major problems with the current Philippine tobacco tax system that have rendered the tobacco tax ineffective in both reducing tobacco consumption and improving tax effort in the Philippines. Hence, on policy recommendations, we highlight the essential features of the needed tobacco tax reforms, namely, **removal of the price classification freeze**, a **shift from the multi-tiered to the unitary tax system**, and **indexation of the specific tax to inflation**. Further, the **increase in tax rates will be unavoidably steep** to correct weaknesses in the existing law and to address health objectives, including the Philippine government’s commitment to meet WHO targets, and the revenue goal of substantially raising the Philippines’ tax effort in the medium term.
ACKNOWLEDGEMENTS

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LIST OF ACRONYMS

Actual Net Retail Price (ANRP)
Bureau of Internal Revenue (BIR)
Common Effective Preferential Tariff (CEPT)
Consumer Price Index (CPI)
Department of Health (DOH)
Department of Finance (DOF)
Family Income and Expenditure Survey (FIES)
Global Adult Tobacco Survey (GATS)
Global Youth Tobacco Survey (GYTS)
Gross Domestic Product (GDP)
Gross Retail Price (GRP)
House Bill (HB)
National Capital Region (NCR)
National Statistical Coordination Board (NSCB)
National Statistics Office (NSO)
National Wages and Productivity Commission (NWPC)
Net Retail Price (NRP)
Philip Morris Fortune Tobacco Corporation (PMFTC)
Relative Income Price (RIP)
Republic Act (RA)
Run After Tax Evaders (RATE)
Southeast Asia Tobacco Control Alliance (SEATCA)
Tariff Reform Program (TRP)
Value Added Tax (VAT)
Wage Order (WO)
World Health Organization (WHO)
World Health Organization Framework Convention on Tobacco Control (WHO FCTC)
INTRODUCTION

The heavy burden of tobacco consumption, the high smoking prevalence in the Philippines and its attendant costs to society should compel policy makers to put in place the appropriate regulations, including legislation that will effectively curb the growth of tobacco use. Price and tax measures are undeniably effective in reducing tobacco consumption.

In the Philippines, increasing the tobacco price through taxation has become more critical and urgent in light of the declining real prices of cigarettes, arising mainly from a problematic and infirm excise tax system. Said differently, reforming the excise tax policy, including a tax increase, is the key to meeting the government’s health objectives such as reducing smoking prevalence—the Philippines having one of the highest in the world—and saving lives and resources.

Figure 1: Price of Cigarettes\(^1\) and Smoking Prevalence Rates in Selected Southeast Asian Countries

\(^1\) Foreign exchange rate applied is USD 1 = PHP 44.
A steep increase in tobacco taxes is also contingent on government’s plan to increase tax effort from a dismal low of 12.8 percent in 2009 (the lowest ratio since 1989) to the level of 17 percent for the medium term. Tax effort—the amount of taxes collected as a proportion of gross domestic product (GDP)—has alarmingly dropped over the years. With the popular Noynoy Aquino assuming the presidency in the second half of 2010, tax effort inched up to 12.9 percent by year-end, hardly making a dent on revenue enhancement (figure 2).

The focus has been on tax administration, with the Bureau of Internal Revenue (BIR) relentlessly pursuing its Run After Tax Evaders (RATE) program, in which an average of one tax evasion case is filed every week. Despite the BIR’s laudable effort to improve tax administration, tax effort has remained low. This suggests that tax policy, including the reform of the sin taxes, is indispensable to meet revenue objectives, prevent a fiscal crisis, and make growth sustainable.

**Figure 2: Philippine Tax Effort, 1986-2010**

Towards contributing to the goal of improving tobacco control policies and increasing tax effort for development spending (including health expenditures) and for macroeconomic stability, this paper seeks to fortify the proposed legislative reforms to increase tobacco tax in the Philippines. Specifically, this paper aims to:

a. Present a background on the burden of tobacco, smoking prevalence, cigarette price and tobacco tax revenue trends and cigarette taxation system in the Philippines.

b. Determine the affordability of tobacco in the Philippines by first, establishing appropriate affordability measures and second, analyzing tobacco affordability trends based on the affordability measures.

Estimate the immediate fiscal and public health impact of proposed tobacco tax increases in the Philippines, particularly on excise tax revenue, tobacco industry revenue, cigarette consumption, smoking prevalence and smoking-related mortality.
2.1 Burden of Tobacco

In 1999, the World Health Organization (WHO) approximated that about 200,000 Filipino men and women would develop smoking-related diseases in their productive years of age. The WHO (2002) estimated that the healthcare costs for smoking-related diseases and the loss in productivity would cost Filipino taxpayers around PHP 43 billion for that year alone.

A more recent estimate on economic costs, which include healthcare costs and productivity losses from death and disease, related to four smoking-related diseases in 2003 ranged from USD 2.86 billion to USD 6.05 billion or PHP 148.47 billion to PHP 314.38 billion (USD 1=PHP 52 in 2003), an amount equivalent to seven to fifteen times the tobacco tax revenue for that year. The study nevertheless notes these approximations underestimate the smoking-attributable mortality, which only takes into account the underlying cause of death and ignores the contributory causes of death (World Health Organization et al. 2006).

Table 1: Summary of Economic Burden for Four Smoking-Related Diseases, 2003

<table>
<thead>
<tr>
<th>Method of Estimation</th>
<th>Peto-Lopez (PHP)</th>
<th>SAMMEC (PHP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lung Cancer</td>
<td>3,955,887,312</td>
<td>10,519,912,468</td>
</tr>
<tr>
<td>Cerebro-Vascular Disease</td>
<td>49,993,712,496</td>
<td>180,791,465,452</td>
</tr>
<tr>
<td>Coronary Artery Disease</td>
<td>65,911,644,968</td>
<td>85,209,679,672</td>
</tr>
<tr>
<td>Chronic Obstructive Pulmonary Disease</td>
<td>28,607,506,096</td>
<td>37,863,055,984</td>
</tr>
<tr>
<td>TOTAL FOR ALL FOUR DISEASES</td>
<td>148,468,750,924</td>
<td>314,384,113,628</td>
</tr>
</tbody>
</table>

Source: Tobacco and Poverty in the Philippines
2.2 Prevalence of Tobacco Use

The Philippines has one of the highest smoking prevalence rates in the world. It ranks ninth in the adult male smoking population and sixteenth in the adult female smoking population (Shafey, Eriksen, Ross and Mackay 2009).

Table 2: GATS Results, 2009

<table>
<thead>
<tr>
<th>Adult Tobacco Smokers</th>
<th>Overall (%)</th>
<th>Male (%)</th>
<th>Female (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Tobacco Smokers</td>
<td>28.3</td>
<td>47.7</td>
<td>9.0</td>
</tr>
<tr>
<td>Daily Tobacco Smokers</td>
<td>22.6</td>
<td>38.2</td>
<td>6.9</td>
</tr>
<tr>
<td>Current Manufactured Cigarette Smokers</td>
<td>27.0</td>
<td>46.6</td>
<td>7.5</td>
</tr>
<tr>
<td>Current Hand-rolled Cigarette Smokers</td>
<td>1.9</td>
<td>2.3</td>
<td>1.6</td>
</tr>
<tr>
<td>Current Smokeless Tobacco Users</td>
<td>2.0</td>
<td>2.8</td>
<td>1.2</td>
</tr>
<tr>
<td>Daily Smokeless Tobacco Users</td>
<td>1.4</td>
<td>1.8</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Source: 2009 Global Adult Tobacco Survey in the Philippines

The 2009 Global Adult Tobacco Survey (GATS) estimates that 17.3 million Filipinos aged 15 years old and over are smokers. This is equivalent to an adult smoking prevalence of 28.3 percent. Out of this smoking population, 14.6 million are males while 2.8 million are females. Eighty percent of the adult smoking population or 13.8 million Filipinos smoke daily, with men consuming an average of 11.3 cigarettes per day and women consuming an average of seven cigarettes per day.

Table 3: GYTS Results, 2003 and 2007

<table>
<thead>
<tr>
<th>Youth Tobacco Smokers</th>
<th>Overall (%)</th>
<th>Male (%)</th>
<th>Female (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2003</td>
<td>2007</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2003</td>
<td>2007</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2003</td>
<td>2007</td>
<td></td>
</tr>
<tr>
<td>Current Tobacco Smokers</td>
<td>19.6</td>
<td>27.3</td>
<td>26.5</td>
</tr>
<tr>
<td>Current Cigarette Smokers</td>
<td>15.0</td>
<td>21.7</td>
<td>21.8</td>
</tr>
</tbody>
</table>

Source: 2003 and 2007 Global Youth Tobacco Survey in the Philippines

The 2007 Global Youth Tobacco Survey (GYTS) estimated that about 27.3 percent of Filipino students aged 13 to 15 years old are smokers. This is almost a 40 percent increase in the youth smoking prevalence within a span of four years.
2.3 Cigarette Price Trends

Figure 3: Nominal Price Trend for the Most Popular Cigarette Brands

Source: National Statistics Office

The nominal prices of cigarettes in the Philippines have gradually increased over time (figure 3) but what matters is the real price. Compared to the increase in the overall consumer price index (CPI) or price level of goods and services in the country, the increase in retail prices of tobacco products is smaller. Hence, the real prices for the most popular cigarette brands of each price class have decreased (figure 4) by 9 percent, at the minimum, and 18 percent, at the maximum, from 2000 to 2010 or an average annual growth of -1.1 percent to -1.8 percent for the same period.

Figure 4: Real Price Trend for the Most Popular Cigarette Brands, constant 2000 prices

Source: Authors’ calculations

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2 The real prices of cigarettes are computed by dividing the nominal prices by the CPI (base year is 2000) as computed by the National Statistics Office and multiplying the quotient by 100.
2.4 Tobacco Tax Revenue Trends

The data further show a declining trend with regard to the contribution of tobacco taxes to government revenues in the Philippines for the past ten years (figure 5). While revenues from tobacco excise tax increased in nominal terms, real revenues from tobacco excise tax decreased by 12 percent for the same period. On the other hand, total government tax revenues in real terms increased by 36 percent, which means that the tobacco excise tax as a percentage of total tax revenues declined from 1999 to 2009.

Figure 5: Government Revenues from Tobacco Excise Taxes

![Figure 5: Government Revenues from Tobacco Excise Taxes](source)

Figure 5 shows that the contribution of the tobacco excise tax to total government revenue shrunk from 1999 to 2009. Tobacco tax revenues as a percentage of total government revenue peaked at about four percent in the year 2002 but significantly dropped to 2.5 percent in 2009.

Figure 6: Excise Tax on Tobacco as Percentage of Total Government Revenues

![Figure 6: Excise Tax on Tobacco as Percentage of Total Government Revenues](source)

Figure 6 shows that the contribution of the tobacco excise tax to total government revenue shrunk from 1999 to 2009. Tobacco tax revenues as a percentage of total government revenue peaked at about four percent in the year 2002 but significantly dropped to 2.5 percent in 2009.

Source: Authors’ calculations

---

3 The real values are computed by dividing the nominal values by the CPI (base year is 2000) as computed by the National Statistics Office and multiplying the quotient by 100.
2.5 Cigarette Taxation System

2.5.1 Description of Current Cigarette Tax System

As stipulated in Republic Act 9334 or the Sin Tax Law of 2004, a four-tier excise tax system is currently implemented for cigarettes. The amount of excise tax per pack of cigarettes depends on the net retail price (NRP) of the product. The stipulated increases in the excise taxes are scheduled every two years, beginning in 2005 and ending in 2011. Table 4 details the amounts of the current excise tax for cigarettes and the stipulated increase for 2011. (See table 5 for the complete schedule of excise tax increases.)

<table>
<thead>
<tr>
<th>Cigarettes</th>
<th>Amount of Excise Tax</th>
</tr>
</thead>
<tbody>
<tr>
<td>i) Cigarettes packed by hand (each pack with 30 pieces)</td>
<td>PHP 2.47</td>
</tr>
<tr>
<td>ii) Cigarettes packed by machine (each pack with 20 pieces)</td>
<td>PHP 2.47</td>
</tr>
<tr>
<td>NRP below PHP 5 per pack (low-priced)</td>
<td>PHP 2.47</td>
</tr>
<tr>
<td>NRP of PHP 5 to PHP 6.50 per pack (medium-priced)</td>
<td>PHP 7.14</td>
</tr>
<tr>
<td>NRP above PHP 6.50 to PHP 10 per pack (high-priced)</td>
<td>PHP 11.43</td>
</tr>
<tr>
<td>NRP of above PHP 10 per pack (premium-priced)</td>
<td>PHP 27.16</td>
</tr>
</tbody>
</table>

Table 4: Excise Taxes for Cigarettes, 2010 and 2011

<table>
<thead>
<tr>
<th>Cigarettes</th>
<th>Amount of Excise Tax</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2010</td>
</tr>
<tr>
<td></td>
<td>2011</td>
</tr>
<tr>
<td>i) Cigarettes packed by hand (each pack with 30 pieces)</td>
<td>PHP 2.47</td>
</tr>
<tr>
<td>ii) Cigarettes packed by machine (each pack with 20 pieces)</td>
<td>PHP 2.47</td>
</tr>
<tr>
<td>NRP below PHP 5 per pack (low-priced)</td>
<td>PHP 2.47</td>
</tr>
<tr>
<td>NRP of PHP 5 to PHP 6.50 per pack (medium-priced)</td>
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<tr>
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<td>PHP 11.43</td>
</tr>
<tr>
<td>NRP of above PHP 10 per pack (premium-priced)</td>
<td>PHP 27.16</td>
</tr>
</tbody>
</table>

Source: Republic Act 9344

The basis for the amount of excise tax levied is the NRP of cigarettes in 1996. This feature of the current tobacco tax system also known as the price classification freeze is further discussed in section 2.5.3.2.

Tariffs are also collected from imported tobacco products. Tariff rates are the same for tobacco leaves, cigars and cigarettes. Under the Tariff Reform Program (TRP), the tariff rate was five percent in 2004. However, the tariff rate for tobacco products under the Common Effective Preferential Tariff (CEPT) scheme of the ASEAN Free Trade Area has been pegged at zero percent since 2010.

Aside from these, the value-added tax (VAT) is computed at 12 percent of and added to the net retail price plus excise tax and import tariff.
2.5.2 Tax as a Major Component of the Retail Price of Cigarettes

The amount of tobacco excise tax is based on the schedule provided above. For the computation of the gross retail price of cigarettes (GRP), the following formulas are used:

**Locally Produced:**
\[
\text{Gross Retail Price} = (\text{Actual Net Retail Price} + \text{Excise Tax}) \times (1 + \text{Value-Added Tax Rate})
\]

**Imported:**
\[
\text{Gross Retail Price} = (\text{Actual Net Retail Price} + \text{Excise Tax} + \text{Import Tariff}) \times (1 + \text{Value-Added Tax Rate})
\]

To illustrate for locally produced cigarettes:

<table>
<thead>
<tr>
<th>BRAND</th>
<th>GIVEN (Actual Net Retail Price derived from 2010 prices)</th>
<th>COMPUTATION</th>
</tr>
</thead>
</table>
| Marlboro (Most Popular High-Priced Brand) | VAT rate = 12%  
ANRP = PHP 14.70  
Excise Tax = PHP 11.43  
Excise Tax/GRP = 11.43/29.27 = 39% | GRP = (14.70 + 11.43) x (1.12)  
= 26.13 x 1.12  
= PHP 29.27 |
| Fortune (Most Popular Low-Priced Brand) | VAT rate = 12%  
ANRP = PHP 8.93  
Excise Tax = PHP 2.47  
Excise Tax/GRP = 2.47/12.77 = 19% | GRP = (8.93 + 2.47) x (1.12)  
= 11.4 x 1.12  
= PHP 12.77 |

Note that the actual net retail price (ANRP) is different from the NRP in section 2.5.1. While the NRP, which is the basis for categorizing of cigarette brands according to tiers, is fixed by law at 1996 values, the ANRP changes as the GRP of cigarettes changes according to movements in demand.

Currently, cigarette excise tax as percentage of GRP ranges from 14 percent to 42 percent based on 2010 cigarette prices, way below the WHO’s recommended rate of at least 70 percent of the GRP (World Health Organization 2010). For the popular brands Marlboro and Fortune, the cigarette excise tax as percentage of GRP is 39 percent and 19 percent, respectively. On the other hand, the total taxes on cigarettes, which include the excise tax and VAT, as percentage of GRP ranges from 24 percent to 53 percent based on 2010 cigarette prices. For Marlboro and Fortune, the total tax on cigarettes as percentage of GRP is 50 percent and 30 percent, respectively.
2.5.3 Problems with the Current Tobacco Excise Tax System

The current tobacco excise tax system in the Philippines has three major weaknesses. These are the absence of indexation of taxes to inflation, the price classification freeze, and the multi-tiered tax structure.

2.5.3.1 Lack of Indexation

The excise tax rates under Republic Act (RA) 9334 are not indexed to inflation. The lack of inflation indexation manifests itself in two ways. The first is the price classification freeze for old cigarette brands based on 1996 net retail prices, which is further discussed in the next section. The second is the absence of a yearly upward adjustment on the tax rate to account for the inflation rate.

The combination of the price classification freeze and the absence of a yearly adjustment for inflation have diminished the real value of tobacco taxes over time. Automatic inflation adjustment is necessary to ensure the robustness of revenues from the specific tax for tobacco.

Although the law has been providing for a schedule of marginal increases in cigarette excise tax every two years since 2005, the schedule ends in 2011. This means that without a new law, government can no longer expect additional revenues in real terms from the specific tax for tobacco.

Even if we set aside for the moment the loss of revenues from the price classification freeze and just focus on the absence of a yearly automatic adjustment of the tax rate to the inflation rate, we arrive at the conclusion that for certain price categories of cigarettes (PHP 5.00 to PHP 6.50 and PHP 6.50 to PHP 10.00), the cumulative tax rate increase is below the cumulative inflation rate. (See table 5.)
### Table 5: Cumulative Inflation Rate vs. Cumulative Increase in Tobacco Tax Rates

<table>
<thead>
<tr>
<th>Year</th>
<th>Amount of Cigarette Excise Tax, PHP</th>
<th>Percentage Increase in Tax, %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Base</td>
<td>Under RA 9334</td>
</tr>
<tr>
<td>Packed by Hand</td>
<td>0.40</td>
<td>2.00</td>
</tr>
<tr>
<td>NRP below PHP 5 per pack (low-priced)</td>
<td>1.12</td>
<td>2.00</td>
</tr>
<tr>
<td>NRP of PHP 5 to PHP 6.50 per pack (medium-priced)</td>
<td>5.60</td>
<td>6.35</td>
</tr>
<tr>
<td>NRP above PHP 6.50 to PHP 10 per pack (high-priced)</td>
<td>8.96</td>
<td>10.35</td>
</tr>
<tr>
<td>NRP of above PHP 10 per pack (premium-priced)</td>
<td>13.44</td>
<td>25.00</td>
</tr>
</tbody>
</table>

| Headline Inflation⁴ | 41.7 |

Source: Department of Finance

---

⁴ See table below for the complete data on headline inflation.

### Headline Inflation, 2005-2011

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headline Inflation, %</td>
<td>7.6</td>
<td>6.2</td>
<td>2.8</td>
<td>9.3</td>
<td>3.2</td>
<td>3.8</td>
<td>3.0a</td>
</tr>
</tbody>
</table>

a. Projected
2.5.3.2 Price Classification Freeze

The price classification freeze, as provided by Section 145 of RA 8240 and amended by RA 9334, keeps the price classification of old cigarette brands, which make up 90 percent of the market and include the most popular cigarette brands in the country, fixed according to the brands' net retail prices as of October 1, 1996. This implies that even as the ANRP of a cigarette brand has increased and has exceeded the NRP range corresponding to its original price class, this brand will still remain in its original price class and will be taxed at a rate lower than if it were taxed according to its ANRP.

The freeze keeps the taxes and prices of majority of the cigarette brands low. Over time, as market-determined ANRPs increase while NRPs, on which excise taxes are based, remain fixed by law, the share of the excise tax to GRP decreases; hence, diminishing the effect of an increased excise tax on reducing cigarette consumption and, at the same time, depriving government of significant revenues. For illustration, see figure 7.

2.5.3.3 Multi-level Tax Structure

The multi-level tax structure, as described previously, provides different specific tax rates for each price classification. With this system, lower-priced cigarettes are taxed low while higher-priced cigarettes are taxed high, thus widening the price gap between higher and lower price classes of cigarettes.

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5 Section 145 of RA 8240 states:
"The classification of each brand of cigarettes based on its average net retail price as of October 1, 1996, as set forth in Annex 'D', including the classification of brands for the same products which, although not set forth in said Annex 'D', were registered and were being commercially produced and marketed on or after October 1, 1996, and which continue to be commercially produced and marketed after the effectivity of this Act, shall remain in force until revised by Congress. [Emphases supplied.]"

6 These are the cigarette brands that were classified on or before January 1, 1997 and are listed in Annex 'D' of Republic Act 8240 and amended by Republic Act 9334.
The effect of this, as the Department of Finance (DOF) argues, is to induce consumers to shift from higher-priced brands to lower-priced brands. Figure 8 below shows how consumption for low-priced cigarettes has been rising over time.\(^7\)

Is it possible that the shift in demand to low-priced cigarettes could be a result of technological innovation or efficiency gains? We believe otherwise. As figure 8 indicates, the increasing consumption for low-priced cigarettes occurred in the aftermath of the price classification freeze that was legislated in 1997. Moreover, the price classification freeze, favoring the old brands, is a disincentive for the dominant players to pursue innovation and, more importantly, abets monopoly or oligopoly behavior.

Another possibility that might explain the rise in consumption of low-priced cigarettes is the increase in the number of new smokers, but by itself, without the price classification freeze, this does not explain the significant increase in consumption of low-priced cigarettes. This is because the preference of new smokers will be randomly distributed among the cigarette brands with different price classifications. It is nevertheless likely that new smokers, especially from the low-income class, will prefer a brand that is much cheaper because of the low tax imposed. In that case, the price classification freeze induces new smokers to prefer the low-priced brands.

![Figure 8: Increasing Consumption for Low-Price Cigarettes](image)

Because of the availability of lower-priced cigarettes and the tempting option for smokers to shift to lower-priced cigarettes instead of quitting, this multi-level tax structure of the Philippine cigarette excise tax system diminishes the effectiveness of the excise tax as a tool to reduce consumption. The availability of cheaper cigarette alternatives also does not deter would-be smokers, especially from the poor and the youth, from starting to smoke.

In addition, the multi-level structure violates a cardinal principle of taxation, that of simplicity and ease of administration. Given the Philippine political economy and the weakness of institutions, a complex structure in conjunction with the price classification freeze leads to the misclassification of brands, resulting in huge foregone revenues.

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\(^7\) Information from the Department of Finance, through a PowerPoint Presentation in a Tobacco Tax Forum in December 2009.
3.1 The Role of Affordability

Affordability refers to the purchasing ability of an individual (Blecher and van Walbeek 2004). From this definition, it can be derived that affordability simultaneously takes into account the effect of price and income on consumer behavior (Blecher and van Walbeek 2009).

More recent studies claim that to effectively reduce the consumption of tobacco, countries should look at not just the price of tobacco but also the affordability of tobacco. These studies’ main premise is that increases in tobacco price may not necessarily lead to reduction of tobacco consumption if the change in income is not properly accounted for (i.e. the change in additional income is higher than the marginal tax increase).

Basic economic theory suggests that price and income affect consumer behavior. The relationship between price and demand is straightforward. An increase in a product’s price, holding other factors constant, leads to a decrease in the product’s demand. With respect to income, causality (that is, increased income predicting increased demand for a specific product like tobacco) is not clear-cut. What is fairly established is that an increase in income induces an increase in the demand for normal goods, including tobacco. How a rise in income influences demand for a specific product like tobacco is however an empirical question. While prices of tobacco directly affect consumer behavior, a change in income can alter the demand for specific goods like tobacco.

3.2 Affordability Method

In studying tobacco affordability, two models are used here. We draw from both Blecher and van Walbeek’s (2009) and Kan’s (2007) cigarette affordability models.

This first model uses the concept of the Relative Income Price (RIP) to analyze the affordability of cigarettes. Blecher and van Walbeek (2009: 168) define RIP as “the percentage of per capita GDP needed to purchase 100 packs of cigarettes.” Higher RIPs denote that cigarettes are becoming less affordable while lower RIPs indicate the opposite.
The second model calculates affordability as the percentage of daily minimum wage required to purchase a pack of cigarettes. This is similar to Kan’s (2007) model, which uses the average daily income of the lowest paid occupations (the seven lowest-paid out of fourteen occupations) as the income to which cigarette prices are compared to. Similar to the RIP, lower values of this measure imply increasing affordability of cigarettes.

The two models have their own advantages. While Blecher and van Walbeek (2008: 3) use “a more encompassing measure of income than average earnings of selected occupations,” Kan’s (2007) model focuses on the affordability of cigarettes for the poor, who spend a bigger portion of their income on cigarettes than those in the upper classes. Another advantage of the first model is that it facilitates a comparison of affordability across countries since measurement of GDP is the same for all countries.

3.3 Affordability Variables

3.3.1 Cigarette Price Data

Retail prices of various cigarette brands from 1999 to 2009 are obtained from the National Statistics Office’s (NSO) monthly price survey. The NSO monitors prices of goods from 88 provinces and key cities on a monthly basis for the computation of the CPI. Sample outlets, where prices are collected, are chosen based on their popularity, consistency and completeness of stock, permanency and accessibility.

In analyzing the affordability of cigarettes, only three cigarette brands are included. The three chosen brands are the most popular\(^8\) brands in each price classification, namely the low-, medium-, and high-priced classes. In sum, the most popular brands make up 50 percent of the market for cigarettes. The most popular premium-priced brand is not included due to lack of price data. Note that the premium-priced class of cigarettes only composes 1.2 percent of the total market; hence, including it in the analysis will not significantly affect the results of this paper (Economic Research Council 2007).

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\(^8\) A cigarette brand is considered the most popular in its price classification if it has the highest market share based on the Economic Research Council paper on World Cigarettes in 2007.
3.3.2 Income Data

Two measures of income are employed in measuring the affordability of cigarettes in the Philippines. First is the per capita GDP and second is the daily minimum wage.

The per capita GDP is derived by dividing the GDP by the total population of the Philippines. Both the GDP and the population data from 1999 to 2009 are obtained from the National Statistical Coordination Board (NSCB).

The daily minimum wage is based on the National Capital Region (NCR) daily wage of non-agricultural workers of companies with ten or more workers. We obtained the data for this from the National Wages and Productivity Commission (NWPC). Due to different dates and periods of effectiveness of the daily minimum wages as provided by the Wage Order (WO), we computed for the average daily minimum wage for each year starting from 1999 up to 2009.

3.4 Cigarette Affordability Results and Analysis

Cigarettes have become more affordable in the Philippines as indicated by the decreasing RIP trend (figure 9). From 1999 to 2009, the RIP decreased by 27 to 36 percent. Despite the regular excise tax increases, cigarettes have become less expensive and more affordable because of the greater increases in per capita GDP income. This means that cigarette prices have not been catching up with the increase in income, resulting from higher economic growth for the past years.

The cigarette affordability trend measured relative to the daily minimum wage strengthens even more the claim that cigarettes have become more affordable over the past decade. The price of a pack of cigarettes as percentage of daily minimum wage decreased by 16 to 26 percent from 1999 to 2009 (figure 10). The declining trend implies that the daily minimum wage has increased more than the increase in the price of a pack of cigarettes. (figure 10).

Figure 9: Relative Income Price (Price of 100 Packs as % of per Capita GDP)
Following the basic economic theory that price increases discourage consumption of cigarettes while income increases may induce higher demand for cigarettes, the results imply that a tax policy on tobacco has to be guided not only by price change but also by income change. Tobacco consumption has high costs not only to the individual but also to society. Hence, the price of tobacco consumption must likewise internalize the externality costs—the negative spillover effects on society as a whole. Nevertheless, the externality costs are still incomplete, for sin goods like tobacco and alcohol also inflict on an otherwise rational individual internality costs arising from time inconsistency, incomplete information, and lack of self-control.

**Figure 10: Price of a Pack of Cigarettes as % of Daily Minimum Wage**

In this light, tobacco taxation is not merely about generating revenues and making sure the revenues are maintained in real terms. The role of indexing the tax to inflation gains relevance in keeping revenues robust, but taxation must likewise capture the externality and internality costs of tobacco consumption. The excise tax must thus be designed in a way that will substantially reduce tobacco consumption. Hence, even as the change in price is significant in influencing consumer behavior, other variables that shift demand, such as income, must also guide tobacco tax policy.

Indexing tobacco tax to inflation means that the real price of the tax is maintained. At the very least, it prevents the erosion of revenues in real terms. Towards attaining the objective of effectively reducing smoking prevalence, inflation indexation has to be supplemented by periodic increases above the inflation rate, taking into consideration that consumer behavior is influenced by both prices and incomes.
To curb the tobacco epidemic, the World Health Organization Framework Convention on Tobacco Control (WHO FCTC) enumerates a range of public health measures. This includes smoke-free environments, comprehensive advertising bans, regulation of packaging and labeling of tobacco products, public education, product regulation, tax and price measures, curbing illicit trade, and alternative livelihood.

However, among all the tobacco control measures cited above, tax and price measures on tobacco products prove to be the most effective means to check the tobacco epidemic. A review of the literature on the relationship of tobacco tax or price and consumption is summarized below:

• Studies consistently show that an increase in tobacco price will result in a significant reduction of tobacco use such that a ten percent increase in price will reduce demand by about four percent in high-income countries and eight percent in low- to middle-income countries. As tobacco taxation effectively increases tobacco price, it has become an increasingly important measure to curb the tobacco epidemic and to advance public health (Chaloupka et al. 2000).

• Increasing tobacco prices is effective in discouraging the youth from smoking. Younger individuals are more responsive to changes in cigarette price. First, the addictive nature of cigarette smoking makes it easier for the youth to quit as they have been smoking for a relatively shorter period of time. Second, peer smoking affects youth smoking more than adult smoking, which implies that more young individuals will quit when their peers quit due to increase in cigarette prices. Third, the youth has less disposable income than the adults, making the former more price-sensitive (Lewit and Coate 1983; Grossman and Chaloupka 1996; Chaloupka et al. 2000).

• The poor are more sensitive to price changes than the rich. Thus, increasing tobacco taxes will significantly lower their
tobacco consumption (World Bank 1999). The reduction of the poor’s tobacco consumption means reduction in healthcare costs and productivity losses associated with smoking-related disease. Also, more of the poor’s resources can be used to spend for basic needs. A study in the Philippines found that a person’s reallocation of expenditure from tobacco to rice per se can generate additional 466 calories daily for the average low-income Filipino family. The average monthly expense for tobacco, if reallocated to food, can add about 750 calories daily. **In short, the freed-up resources from the poor's reduction of tobacco consumption and the resulting reduction in economic costs of smoking-related diseases will alleviate malnutrition, especially among children, and also improve the general welfare of the poor Filipino family (World Health Organization et al. 2006).**

### 4.2 Research Method

In measuring the fiscal and public health impact of tobacco taxes, a simulation model introduced by van Walbeek (2010) is used. This simulation model requires the following inputs for its fiscal impact analysis: average excise tax amount as a percentage of the average cigarette retail price, value-added tax, an estimate of the price elasticity of demand, the percentage increase in the excise tax, and the percentage increase in the net-of-tax or net retail price. The model requires additional inputs, namely smoking prevalence and smoking population, to analyze the impact of taxes on public health. The mathematical specification of the van Walbeek model is modified to reflect and fit each country’s situation.

The simulations are limited to a one-year period only, specifically for year 2011, to avoid computational errors attributable to changing variables in the more distant future. The model also assumes that the excise tax increase proposal is implemented immediately, i.e. overnight, and does not, therefore, take into account the changes in consumer and producer attitudes and behavior that might occur between the announcement and actual implementation of a tax increase. Readers are also encouraged to focus more on the general principles than the projected values of the model since the latter are sensitive to changing variables and, more importantly, are limited by the data available and inherent weaknesses on how the elasticities were estimated.

Another limitation of the model is that, by using a midpoint elasticity model, it assumes that the cigarette demand function of the Philippines is linear. However, a steep increase in tobacco taxes, as expressed in the proposed legislation, will be non-linear. To date, no empirical study on the shape of the Philippine cigarette demand function based on the proposed tax increases in the 15th Congress has been undertaken.
4.3 Tobacco Tax Impact Modeling Variables

4.3.1 Excise Tax Burden

We obtain the average for the current excise tax burden, given the existence of various cigarette brands, prices and excise taxes in the Philippines. Computations for the average cigarette price and average excise tax are needed to compute for the average excise tax burden. The excise tax burden is equal to the excise tax as a percentage of the GRP.

<table>
<thead>
<tr>
<th>Data</th>
<th>Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009 Volume Share</td>
<td>BIR Removals for 2009</td>
</tr>
<tr>
<td>Low</td>
<td>56%</td>
</tr>
<tr>
<td>Medium</td>
<td>13%</td>
</tr>
<tr>
<td>High</td>
<td>31%</td>
</tr>
<tr>
<td>2010 Average Retail Price</td>
<td>2010 BIR Price Survey (weighted average based on 2009 volume share)</td>
</tr>
<tr>
<td>2010 Average Excise Tax</td>
<td>BIR Removals (weighted average based on 2009 volume share)</td>
</tr>
<tr>
<td>2010 Average Excise Tax</td>
<td>BIR Removals (weighted average based on 2009 volume share)</td>
</tr>
<tr>
<td>Average Excise Tax Burden</td>
<td>Computed from 2010 Average Retail Price and Excise Tax</td>
</tr>
<tr>
<td>Value-Added Tax</td>
<td>RA 9337</td>
</tr>
<tr>
<td>Price Elasticity of Demand</td>
<td>DOF</td>
</tr>
<tr>
<td>Low</td>
<td>0.235</td>
</tr>
<tr>
<td>High</td>
<td>0.87</td>
</tr>
<tr>
<td>Excise Tax Increase Proposal</td>
<td>HB 3465 (Abad) HB 3489 (Tupas)</td>
</tr>
<tr>
<td>215</td>
<td></td>
</tr>
<tr>
<td>81</td>
<td></td>
</tr>
<tr>
<td>Net Retail Price Increase</td>
<td>Assumption</td>
</tr>
<tr>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>2009 Smoking Prevalence (%)</td>
<td>2009 Global Adult Tobacco Survey (GATS)</td>
</tr>
<tr>
<td>28.3</td>
<td></td>
</tr>
<tr>
<td>2009 Smoking Population</td>
<td>17.3 M</td>
</tr>
<tr>
<td>2010 Projected Cigarette Consumption by Removals (Packs of 20s)</td>
<td>BIR Removals</td>
</tr>
<tr>
<td>4.6 billion</td>
<td></td>
</tr>
<tr>
<td>2010 Projected Excise Tax Revenue</td>
<td>BIR Removals &amp; RA 9334 (based on 2009 volume share)</td>
</tr>
<tr>
<td>PHP27.1 billion</td>
<td></td>
</tr>
</tbody>
</table>
The weighted average price of cigarette in 2010 is derived by first, averaging the retail prices of brands per price class, excluding packs in thirties, and second, getting a weighted average of the average retail prices per price class based on the 2009 volume share of each price class computed from the BIR removals data. Data on the retail prices of brands and the price classifications of each brand were obtained from the nationwide price survey conducted by the BIR in December 2010. (See table 7 for the volume shares of each price class.)

We recognize that a more representative average cigarette price is a weighted average price of the different brands based on the volume share of each brand. However, the incompleteness of data on volume share for each brand prevents us from applying this. Moreover, the prices of premium brands are not included in the computation of the average retail price since data are not available for the volume share of the premium class.

The average excise tax is computed by dividing the total cigarette excise tax revenue in 2009 by the total number of packs consumed in 2009, with removals volume as proxy for packs consumed. Both the excise tax revenue and removals data are obtained from the BIR.

4.3.2 Price Elasticity of Demand

The DOF uses aggregate time series data and estimates that price elasticity of demand for cigarettes in the Philippines is equal to -0.235. However, along with weaknesses that are inherent in using aggregate time series data (Ciecierski and Chaloupka 2001), the DOF estimate suffers from the lack of data that can estimate consumer demand. The DOF uses a proxy for consumption—that is, the Bureau of Internal Revenue (BIR) removals data. Given that we want to obtain the response of consumers (the change in demand) to changes in prices resulting from the proposed steep and massive tax increase, what we really need are demand-side data. Furthermore, BIR removals (volume of cigarettes withdrawn from the factory, or "removals") only take into account sales volumes of cigarettes that have been appropriately taxed. Consumed smuggled or undeclared cigarettes in the market are not captured. Hence, the volume of cigarettes consumed and the price elasticity estimate are undervalued.

On the other hand, the study of Quimbo et al. (2008) uses household cross-section data and estimates that price elasticity of demand for cigarettes in the Philippines is equal to -0.87. This estimation, though higher, is more consistent with the World Bank estimate for developing countries, equal to -0.8. Nevertheless, the use of individual or household level data in estimating elasticity also has inherent weaknesses and limitations (Ciecierski and Chaloupka 2001). Specifically, we note that the Family Income and Expenditure Survey (FIES) data used by Quimbo et al. has a long reference period and the expenditure category is too broad. For example, no distinctions are made among the different brands that have varying prices (low-priced, medium-priced, high-priced,
and premium-priced brands). We also have to take into consideration the possible biases arising from the answers given by those interviewed, given that they (e.g. mothers) may lack information regarding the consumption of cigarettes by other household members.

Hence, mindful of the weaknesses of both price elasticity estimates, the authors generate projections using two price elasticities that represent two different scenarios for consumer behavior of smokers in the Philippines. The first is the “low elasticity of demand” scenario, which uses the DOF estimate equal to -0.235, while the second represents the “high elasticity of demand” scenario, which uses the Quimbo et al. (2008) estimate equal to -0.87.

One last caveat: the margin of error for our estimates can be significant. Two factors account for this, which we reiterate: first, the elasticity coefficients we use suffer from methodological and data problems; and second, and more importantly, the proposed bills pending in the current Congress call for very high increases (the tax increases in the House bills, specifically those bills endorsed by the DOF range from 81 to 215 percent). Hence, existing elasticity estimates cannot be used to project massive or steep increases in the tobacco excise tax.

At this point, a survey on the demand for cigarette consumption based on the tax increases contained in the legislative bills is the best means to arrive at fairly accurate projections on demand, sales, market share (or substitution effects), and government revenues. Given the absence of the survey (a logit model that takes into account the attributes of both the consumers and the cigarette brands), we have no choice but to adopt the second-best approach—the use of available low (DOF) and high (Quimbo et al. 2008) elasticity estimates.

### 4.3.3 Excise Tax Increase Proposal

If the main goal of increasing the excise tax is to curb the tobacco epidemic, then we face no constraint in reaching the upper limit on the magnitude of the increase in the excise tax. That is, from a health perspective, the ideal increase is to go as high as possible.

However, in reality, other factors, such as meeting the government’s desired revenue or securing the political feasibility of the tax increase, must also be considered. Determining the appropriate excise tax increase proposal, therefore, depends on balancing the different objectives of policy makers and is outside the scope of this paper.

The fact is, several bills on tobacco tax reform have already been introduced in the current 15th Congress. We thus limit the options of our study to these bills, particularly those that are endorsed by the DOF and the DOH.

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9 A logit model, also called logistic model or logistic regression, is a statistical tool used to estimate the sensitivity of demand for a particular good relative to changes in factors that affect demand, such as price and income.
Table 7 summarizes the features of these Congress bills, including the derived average percentage change in excise tax proposed by each bill. The similar reform features of these bills have merited the endorsement of both the finance and health departments. The details on the proposed excise tax rates and the derivation of the proposed percentage change in excise tax of each bill are found in the appendix.

Table 7: Excise Tax Increase Proposals Endorsed by DOF and DOH

<table>
<thead>
<tr>
<th>Features</th>
<th>Proposed Tax Reforms</th>
<th>Proposed % Change in Excise Tax</th>
<th>Proposed Year of Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Indexation</td>
<td>Removal of Price Classification Freeze</td>
<td>Moving to a Single-level Tax Structure</td>
</tr>
<tr>
<td>HB 3465 (Abad)</td>
<td>Uses overall CPI as basis for indexation</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>HB 3489 (Tupas)</td>
<td>Uses index for tobacco products as basis for indexation</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Although these House bills propose different dates of implementation for their first-year tax increases, the simulations are uniformly projected for year 2011 for simplification and comparability purposes. Here, we do not make any judgment on the merits and demerits of each House bill. Suffice it to say that the DOF supports the bills that provide not only for indexation to inflation but also for the removal of the price classification freeze and the move towards a single-level tax structure.

4.3.4 Increase in the Net Retail Price

The recent merger of Philip Morris Philippines Manufacturing Inc. and Fortune Tobacco Corporation in early 2010 gave birth to a new company, named Philip Morris Fortune Tobacco Corporation (PMFTC). The deal reportedly resulted in the new corporation’s control of 90 percent share of the Philippine cigarette market (Hedley 2010). This means that a single company holds a near-monopoly of the tobacco industry in the Philippines.

Market share, however, is not the defining characteristic of a monopoly. So long as markets are contestable, potential entry or the threat of competition can neutralize monopoly behavior. In the Philippines, though, the barrier to entry in cigarette manufacturing is high, arising from the bad law—i.e., the price classification freeze—that grossly favors old players and discriminates against new entrants. The removal of the price classification freeze is therefore a key reform to curb any monopoly behavior of PMFTC.

Past studies, both empirical and theoretical, on the relationship of the monopolistic or oligopolistic nature of the tobacco industry and tax and price increases, suggest that in countries where the tobacco industry is a monopoly or an oligopoly, increases in tobacco taxes lead to either increases or decreases in tobacco net retail prices depending on consumer responsiveness to prices. The less inelastic the demand for tobacco is, the more likely that monopolies or oligopolies will absorb the tax increase and decrease the net retail price to keep retail prices unchanged. On the other hand, increases in retail prices are likely to be greater than the tax increase in countries with very inelastic demand for tobacco as monopolies take advantage of the tax increase by increasing net retail prices to gain more profit (Chaloupka et al. 2000; van Walbeek 2003).
The new merger in the Philippines is expected to respond to tax increases in the same way as a monopoly. However, we lack confidence regarding the application of available elasticity coefficients used by other studies (see the section above regarding our critique of the DOF and Quimbo et al. studies) for large tax increases. So we cannot satisfactorily determine the degree of inelasticity of demand for tobacco in the Philippines. Moreover, the behavior of PMFTC can likewise change if the tax policy reform through legislation facilitates entry of new players.

The difficulty of determining the extent of inelasticity or elasticity of demand[^10] for tobacco in light of the proposed steep increases also makes it difficult to ascertain the effect on net retail prices of such sharp increases. We thus assume for the moment that demand for tobacco is relatively inelastic. This suggests that a monopoly or an oligopoly can pass on 100 percent of the burden of the tax increase to consumers and that net retail prices will not change. Nevertheless, we cannot discard the possibility that the steep increase in prices as proposed by the different bills will greatly affect consumer behavior, resulting in less inelastic demand. However, for the purpose of this exercise, we lean towards the assumption that demand is relatively inelastic.

We also consider another scenario, wherein the proposed legislative reform of removing the price classification freeze will lead to competition. In this case, consistent with competitive behavior, we can expect that 100 percent of the tax increase will be transferred to the consumers.

### 4.3.5 Smoking Prevalence

Data on smoking prevalence was obtained from the 2009 GATS, which is the most updated survey on tobacco. As previously mentioned, the current adult smoking prevalence in the Philippines is 28.3 percent, which is equivalent to a smoking population of 17.3 million Filipinos.

### 4.3.6 2010 Consumption and Excise Tax Revenue

Data on cigarette consumption are based on the BIR data on removals for cigarettes from 1993 to 2009. Since data on cigarette consumption for 2010 are not available, the authors make projections for cigarette consumption for the said years based on the historical growth of cigarette consumption. Figure 11 shows the trend for consumption of cigarettes in the Philippines based on the BIR data on removals.

[^10]: As discussed in an earlier section, elasticity of demand for tobacco in the Philippines ranges from -0.235 (the DOF estimate) which implies a very inelastic demand, to -0.87 (the Quimbo et al. estimate).
From 2004 to 2009, as RA 9334 took effect, a distinct trend shows how consumption based on removals responded to increases in taxes. (It is worth reiterating though that the DOF uses volume removals as a proxy for consumption.) The trend consistently shows that an increase in volume removals occurred prior to a marginal increase in the specific tax for tobacco and a drop in removals happened when the specific tax is marginally increased (2005, 2007 and 2009). According to the DOF, this indicates that front-loading\footnote{Front-loading, also called stockpiling, is the higher-than-the-average supply of products to the market by tobacco companies for at least one month prior to the year when a higher tax rate takes effect in anticipation (and temporary avoidance) of the tax hike.} is being done by tobacco companies in years prior to a cigarette tax increase in order to temporarily avoid such anticipated tax increase.

In order to account for the variance and front-loading based on the 2004 to 2009 trend for cigarette volume removals, the authors estimate consumption for 2010, by averaging the positive growth rates leading to all the peaks and applying this average to the actual 2009 consumption based on removals. (See figure 11 for the projected consumption for 2010.)

The estimation for government revenue is based on the projected cigarette consumption for 2010. To compute for excise tax revenue for each price class, the first step is to compute for cigarette consumption per price class. In computing for cigarette consumption per price class, the 2009 volume shares of each price class are applied to the projected 2010 aggregate cigarette consumption. Excise tax revenue for each price class is then computed by multiplying cigarette consumption per price class by the corresponding excise tax as stipulated in RA 9334.
4.4 Tobacco Tax Impact Modeling and Analysis

The results for the tobacco tax impact simulations using the model of van Walbeek (2010) are presented in table 8. All of the projections show that increasing the cigarette excise tax will reduce consumption without decreasing government revenues, even when we apply the higher elasticity of demand.

The simulations show that for HB 2687, HB 3465, and HB 3489, increasing the cigarette excise tax by 81 percent to 215 percent will increase the average cigarette retail price by 28 percent to 73 percent, respectively, which is less than half of the tax increase. Depending on the elasticity used, this increase will translate to decreases in cigarette consumption by at least six percent and as high as 39 percent, and decreases in smoking prevalence by at least two percent and as high as 19 percent. The number of lives that may be saved if any of the DOF-endorsed bills is enacted ranges from 140,000 to as much as 1,130,000.

In truth, the different excise tax increase proposals in Congress—i.e., those bills endorsed by the Finance and Health Departments—will save lives and generate additional revenues. However, in evaluating which among the various bills policy makers should pursue, it is important to gauge which among them will be the most effective in achieving two main objectives: 1) substantially reducing tobacco consumption to meet health goals and 2) generating additional government revenues to augment the country’s fiscal balance.

Among the House bills, HB 3465 and HB 3489 will meet both the short-term and long-term health objectives. These bills, when implemented, will reduce the smoking prevalence by at least 5 percent in the first year, which is two times greater than the short-term objective for the Philippines to reduce the smoking prevalence by at least 2.5 percent per year beginning 2011\(^\text{12}\) (World Health Organization 2009). The provisions of the bills that reform the current tax structure, such as the indexation of taxes to inflation based on the overall CPI, the removal of the price classification freeze and the transition to a single-level tax structure will address the long-term objective of further reducing tobacco consumption, catching up with countries with the best tobacco control policies and reaching the level of excise tax burden recommended by the WHO, i.e. at least 70 percent of the GRP.

The same bills that are consistent with the achievement of health goals will also generate the greatest additional revenues for the government. HB 3465 and HB 3489 can help the government generate an additional PHP26 billion of excise tax revenues at the least, in the first year alone, an amount that is close to the 2010 projected total excise tax revenue on cigarettes.

It must be clarified though that the additional revenues generated from the increase in tobacco tax are not equated with net revenues for government. The additional revenues from the increase in tobacco tax might mean collecting less taxes from other goods. More income spent for tobacco as a result of the tax increase will result in less spending for other goods (and hence less taxes collected from such goods). On the other hand, reduced spending for tobacco due to the increase in tobacco tax might also mean greater spending for other goods and, consequently, more taxes collected from those goods. In other words, we need to obtain the cross-price elasticity of other goods in order to determine the net effect of the tax increase on consumption and revenues.

Although simulations consistently show declining tobacco industry revenue, policy makers must bear in mind the long-run objective of increasing cigarette excise taxes is the substantial alleviation of health and economic burdens associated with tobacco consumption.

\(^{12}\) That is equivalent to the Department of Health (DOH) objective to reduce the smoking prevalence from 28 percent to 25 percent by 2014 in adherence to the Regional Action Plan for the Tobacco Free Initiative in the Western Pacific (World Health Organization 2009).
### Table 8: Impact of the Excise Tax Increase Proposals

<table>
<thead>
<tr>
<th></th>
<th>2010 Levels</th>
<th>Future Values</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>HB 3465 &amp; HB 3489</td>
</tr>
<tr>
<td>% Increase in Excise Tax</td>
<td></td>
<td>215%</td>
</tr>
<tr>
<td>Average Retail Price Per Pack (PHP)</td>
<td>19.27</td>
<td>33.38</td>
</tr>
<tr>
<td>Average Total Tax Per Pack (PHP)</td>
<td>7.92</td>
<td>22.04</td>
</tr>
<tr>
<td>Tax as % of Retail Price</td>
<td>41.1%</td>
<td>66.0%</td>
</tr>
<tr>
<td>% Increase in Retail Price</td>
<td></td>
<td>73.2%</td>
</tr>
<tr>
<td>Reduction in Number of Smokers (thousands)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price Elasticities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-0.235</td>
<td>870</td>
<td>390</td>
</tr>
<tr>
<td>-0.87</td>
<td>3,230</td>
<td>1,460</td>
</tr>
<tr>
<td>Number of Lives Saved (thousands)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price Elasticities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-0.235</td>
<td>310</td>
<td>140</td>
</tr>
<tr>
<td>-0.87</td>
<td>1,130</td>
<td>510</td>
</tr>
<tr>
<td>Total Number of Smokers (thousands)</td>
<td>17,300</td>
<td>16,430</td>
</tr>
<tr>
<td>Price Elasticities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-0.235</td>
<td>14,070</td>
<td>15,840</td>
</tr>
<tr>
<td>-0.87</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoking Prevalence</td>
<td>28.3%</td>
<td>26.9%</td>
</tr>
<tr>
<td>Price Elasticities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-0.235</td>
<td>23.0%</td>
<td>25.9%</td>
</tr>
<tr>
<td>-0.87</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Change in Smoking Prevalence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price Elasticities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-0.235</td>
<td>-5.0%</td>
<td>-2.3%</td>
</tr>
<tr>
<td>-0.87</td>
<td>-18.7%</td>
<td>-8.4%</td>
</tr>
<tr>
<td>Additional Excise Revenue (PHP million)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price Elasticities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-0.235</td>
<td>19,252</td>
<td>48,196</td>
</tr>
<tr>
<td>-0.87</td>
<td>12,604</td>
<td>26,008</td>
</tr>
<tr>
<td>% Change in Excise Revenue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price Elasticities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-0.235</td>
<td>177.7%</td>
<td>71.0%</td>
</tr>
<tr>
<td>-0.87</td>
<td>95.9%</td>
<td>46.5%</td>
</tr>
<tr>
<td>Total Cigarette Tax Revenue (PHP million)</td>
<td>36,683</td>
<td>89,916</td>
</tr>
<tr>
<td>Price Elasticities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-0.235</td>
<td>63,429</td>
<td>49,598</td>
</tr>
<tr>
<td>% Change in Tax Revenue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price Elasticities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-0.235</td>
<td>145.1%</td>
<td>57.8%</td>
</tr>
<tr>
<td>-0.87</td>
<td>72.9%</td>
<td>35.2%</td>
</tr>
<tr>
<td>% Change in Industry Revenue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price Elasticities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-0.235</td>
<td>-11.9%</td>
<td>-5.5%</td>
</tr>
<tr>
<td>-0.87</td>
<td>-37.8%</td>
<td>-19.1%</td>
</tr>
</tbody>
</table>
CONCLUSION AND RECOMMENDATIONS

The heavy economic and health burdens associated with high tobacco consumption in the Philippines are clear indications that policy makers must immediately act on improving tobacco control policies. Especially in a country where cigarette prices are very cheap, increasing cigarette prices through higher excise taxes is critical. To repeat, price and tax measures are the most effective means to reduce tobacco consumption.

The declining revenues from tobacco excise taxes, amidst a chronic fiscal problem mainly arising from low tax effort underscore the importance of increased tobacco taxation and associated reforms. Because of the addictive nature of tobacco consumption and the inelasticity of demand for cigarettes, increasing the excise tax not only reduces tobacco consumption but also generates additional revenues for the government.

The trends for affordability based on the Blecher and van Walbeek (2009) and Kan (2007) models both show that cigarettes have become more affordable in the Philippines for the past ten years. This suggests that the reform of tobacco tax policy must include tax increases based on inflation indexation and beyond. The point is to increase the tax not just to keep up with inflation but also to meet health targets by internalizing the costs of tobacco to the individual and society and generate additional hefty revenues to address the fiscal binding constraint.

The impact projections give more evidence in support of increasing cigarette excise taxes. Increasing the excise tax by as much as 215 percent will increase the average cigarette price by 73 percent. Depending on the elasticity used, this increase in excise tax will reduce cigarette consumption by 12 percent to 38 percent, save at least 310,000 lives and increase government’s gross revenues by at least 70 percent for the first year of implementation.

Using the tobacco tax impact model, we conclude that among the various tobacco tax bills, HB 3465 and HB 3489 are the most comprehensive in terms of reaching both short- and long-term health goals. These bills will help achieve the objective of reducing the smoking prevalence from 28 percent to 25 percent by 2014. These bills also have the complete set of tax reforms needed to further reduce tobacco consumption effectively, be at par with countries with the best tobacco control policies and reach the WHO recommendation of a 70 percent excise tax burden in the long run. Moreover, HB 3465 and HB 3489 will generate significant revenues for the government. The said bills will create at least PHP26 billion additional excise tax revenues in the first year alone.

The many complex problems that plague the current excise tax system in the Philippines lead us to support all the more bills like
HB 3465 and HB 3489, which remove the price classification freeze, introduce the indexation of the tax to inflation, and gradually adopt the unitary tax system.

In the succeeding years, the reform of the cigarette excise tax system includes the consolidation of a unitary tax system and the periodic increase in the tax rate beyond the gain from inflation indexation. Attaining the unitary tax system will simplify the tax administration and help prevent consumers from shifting to lower-priced cigarettes, while increasing the tax periodically will aid the government to reach the health targets without delay.

On policy recommendations, we reiterate the essential features of the needed tobacco tax reforms, namely, removal of the price classification freeze, a shift from the multi-tiered tax system to the simple unitary one, which can be done within a frame of three years, and indexation of the specific tax to inflation. Further, the increase in tax rates will be unavoidably steep to correct for the weaknesses in the existing law (namely, the price classification freeze and the lack of indexation to inflation) and to address the health objectives, including the commitment of the Philippine government to meet WHO targets, and the revenue goal of substantially raising the Philippine tax effort in the medium term.

The immediate goal is to secure the passage of the reform bills. This paper has attempted to estimate the revenue and health impact of the proposed bills. However, we lack the confidence in using existing elasticity estimates to project the revenue impact of bills that call for steep increases in the specific tax for tobacco.

Hence, an immediate task is to conduct a random sample survey on demand for cigarette consumption based on the proposed sharp increases, towards obtaining a more accurate estimation for the elasticity of demand for cigarettes. The model must be able to capture brand switching and the changes in amounts consumed resulting from the change in prices. Information on the many attributes or characteristics of consumers—smokers and non-smokers, including age, gender, income, marital status, occupation, etc.—and the different attributes of the cigarette brands will be gathered. Each respondent will be asked to make a choice of brand given a certain price (including the increase in tax). Such survey, guided by a logit model, can lead us to getting realistic coefficients for the two sets of determinants, namely the consumer characteristics and the brand attributes.

Note, too, that such a survey can be designed to address affordability, including the question of whether a change in income is a significant determinant of tobacco demand.

Also from the revenue perspective, a study on cross-price elasticity is welcome. This paper, notwithstanding its limitations, can only estimate the additional gross revenues that can be generated from the proposed tobacco tax increase. Estimating the net revenues, since demand for other goods will be affected by the change in consumer behavior with respect to an increase in tobacco prices, will require information about cross-price elasticity.
REFERENCES


Southeast Asia Initiative on Tobacco Tax Resource Center (2010). *ASEAN tobacco tax report card: Regional comparisons and trends*. Thailand: Southeast Asia Tobacco Control Alliance


### Details of the Tobacco Excise Tax Bills Endorsed by DOF and DOH

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
</tr>
</thead>
</table>
| **Raw tobacco and tobacco for chewing** | - Proposed to increase raw tobacco tax from P1 to P2.50; tobacco for chewing from P0.79 to P1.87  
  - Excise tax rate shall be adjusted annually to its present value using CPI starting 2013 |
| **Cigars**                       | - Proposed to increase excise tax to P200 per cigar.  
  - Excise tax rate shall be adjusted annually to its present value using CPI starting 2013 |
| **Cigarettes packed by hand**    | - Proposed to increase tax rates from P2.72 (2011 rate) to P14 per pack  
  - Excise tax rate shall be adjusted annually to its present value using CPI starting 2013  
  - Cigarette packs equal or less than thirty will have the same tax rate. |
| **Cigarettes packed by machine** | - Starting 2012, if NRP is P10 and below (low to medium-priced), excise tax is P14 per pack.  
  - If NRP is more than P10 (high to premium-priced), excise tax is P28.30 per pack.  
  - Starting 2013, if NRP is P10 and below (low to medium-priced), excise tax is P22 per pack.  
  - If NRP is more than P10 (high to premium-priced), excise tax is P30 per pack. Starting 2014, excise tax is P30 regardless of retail price.  
  - Starting 2015, excise tax rate shall be adjusted annually to its present value using CPI.  
  - Cigarette packs equal or less than thirty will have the same tax rate. |
| **Alternative Livelihood**       | - Promotes alternative livelihood to farmers and workers  
  - Provides fund for the implementation of alternative livelihood.  
  - The fund shall be taken from the 15% incremental revenue collected from the excise tax in tobacco products for burley and native tobacco-producing provinces under RA 8240. |
| **Earmarking for Health**        | - Earmarks 5% of the incremental revenue from excise tax on alcohol and cigarettes to Philhealth  
  - Earmarks 5% of the incremental revenue from excise tax on alcohol and cigarettes to DOH.  
  - The fund is constituted as a trust fund for its health promotion programs. |
- Proposed to increase raw tobacco tax from P1 to P2.50; tobacco for chewing from P0.79 to P1.87
- Excise tax rate shall be adjusted annually to its present value using CPI starting 2013

- Proposed to increase excise tax to P200 per cigar.
- Excise tax rate shall be adjusted annually to its present value using CPI starting 2013

- Proposed to increase tax rates from P2.72 (2011 rate) to P14 per pack
- Excise tax rate shall be adjusted annually to its present value using CPI starting 2013
- Prohibited cigarette packs not packed in thirties.

- Starting 2012, if NRP is P10 and below (low to medium-priced), excise tax is P14 per pack.
- If NRP is more than P10 (high to premium-priced), excise tax is P28.30 per pack. Starting 2013, if NRP is P10 and below (low to medium-priced), excise tax is P22 per pack.
- If NRP is more than P10 (high to premium-priced), excise tax is P30 per pack.
- Starting 2014, excise tax is P30 regardless of retail price. Starting 2015, excise tax rate shall be adjusted annually to its present value using CPI.
- Prohibited cigarette packs not packed in twenties

- Promotes alternative livelihood to farmers and workers
- Provides fund for the implementation of alternative livelihood.
- The fund shall be taken from the 15% incremental revenue collected from the excise tax in tobacco products for burley and native tobacco-producing provinces under RA 8240.

- Earmarks 2.5% of the total revenue from excise tax on alcohol and cigarettes to Philhealth
- Earmarks 2.5% of the total revenue from excise tax on alcohol and cigarettes to DOH.
- The fund is constituted as a trust fund for its programs on the prevention of alcohol-related and tobacco-related diseases.
Appendix B: DERIVATION OF THE PERCENTAGE CHANGE IN CIGARETTE EXCISE TAX

The percentage change in the cigarette excise tax based on HB 3465, HB 3489 and HB 2687 is computed by, first, getting a weighted average of the proposed excise tax for each price class and, second, dividing the difference between the average proposed excise tax and the average current excise tax by the average current excise tax. The weights for the excise taxes per price class are based on the 2009 volume share of each price class computed from the BIR removals data.

<table>
<thead>
<tr>
<th>Price Class</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
<th>Weighted Average (PHP)</th>
<th>Percentage Change in Excise Tax (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009 Volume Share —Weights (%)</td>
<td>56.13</td>
<td>12.64</td>
<td>31.23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current Excise Tax (PHP)</td>
<td>2.47</td>
<td>7.14</td>
<td>11.43</td>
<td>5.86</td>
<td>—</td>
</tr>
<tr>
<td>HB 3465 &amp; HB 3489 Proposed Excise Tax (PHP)</td>
<td>14.00</td>
<td>14.00</td>
<td>28.30</td>
<td>18.47</td>
<td>215</td>
</tr>
<tr>
<td>HB 2687 Proposed Excise Tax (PHP)</td>
<td>8.00</td>
<td>14.00</td>
<td>14.00</td>
<td>10.63</td>
<td>81</td>
</tr>
</tbody>
</table>
The Failure of the Real Property Tax in Local Governments

Cigarette Affordability and the Impact of Tobacco Taxation on Health and Revenue
Cigarette Affordability and the Impact of Tobacco Taxation on Health and Revenue