

# Tobacco Taxation in Vietnam

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“Introducing a specific tax of VND 1750 (US\$ 0.11) per pack of 20 cigarettes, indexed to inflation, would raise an additional VND 4.3 trillion (US\$ 268 million) in tax revenue annually and avert approximately 339,000 premature deaths.”



**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

Vietnam faces a high burden from non-communicable diseases (NCDs), which now account for the largest share of mortality and morbidity. Current estimates (2006) suggest that smoking prevalence among men in Vietnam exceeds 49%. Among young men (aged 25 to 45 years) the prevalence of smoking is even higher, at about 65%. Although smoking rates are low among women, at less than 2%, women are exposed to the hazards of secondhand smoke. The public health impact of children's exposure to secondhand smoke is also substantial.

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**Current estimates suggest that smoking prevalence among men in Vietnam exceeds 49%. Among young men (aged 25 to 45 years) the prevalence of smoking is even higher, at about 65%.**

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Even taking into account the addictive nature of smoking, consumer demand for cigarettes responds to changes in prices. Therefore, one of the most effective methods of reducing consumption of tobacco products is to increase prices. Higher prices deter individuals from taking up smoking in the first place, persuade current users to reduce consumption or quit, and can prevent former users from starting again.

An extensive review of the literature with geographic relevance to Vietnam that considered all studies examining the relationship between prices of or taxes on tobacco products, and the use of tobacco products, indicate a negative and significant association between tobacco prices and consumption, although the magnitude of these effects varied considerably across studies. The total price elasticity of the demand for cigarettes in Vietnam is likely not

higher than  $-0.50$ . That is, a 10% increase in the price of cigarettes can be expected to decrease cigarette consumption by at least 5%. Limited evidence is available on the association between prices and tobacco use across income or age. However, given generally accepted theory and robust international evidence, the young and the poor can be expected to be more responsive to price changes. There is some evidence that price increases may deter initiation of cigarette smoking in non-smokers and increase substitution across products in current smokers. Given the price elasticity of the demand for cigarettes and current tax rates in Vietnam, increasing tobacco taxes is expected to generate higher government tax revenue.

Despite evidence that higher prices for tobacco products reduce tobacco use and boost tax revenues, the price of tobacco products (in real terms) in Vietnam has not increased between 1995 and 2006. In fact, real prices have declined by about 5% on average over that decade. For example, a pack of Vinataba (Vietnam's most popular brand) that cost about VND 10 000 in 1996 (in 2006 VND) (US\$ 0.63) was priced at about VND 8500 (US\$ 0.53) 10 years later. This is in sharp contrast to the evolution of real income in Vietnam: real per capita GDP increased by more than

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**Tobacco taxes in Vietnam currently account for at most 45% of the tax-inclusive retail sale price of cigarettes, well below the 65–80% rate noted by the World Bank in countries with effective tobacco control policies.**

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**It is recommended that Vietnam introduce a high specific tax that is indexed to inflation or includes scheduled increases that meet or outpace inflation.**

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80% between 1995 and 2006, thus making tobacco much cheaper on average. Tobacco taxes in Vietnam currently account for at most 45% of the tax-inclusive retail sale price of cigarettes, well below the 65–80% rate noted by the World Bank in countries with effective tobacco control policies.

Tobacco control policies such as tax increases are unlikely to have a significant negative impact on employment in the tobacco cultivation and manufacturing industries, which account for only a very small share of total employment in Vietnam — about 0.3% of all jobs. A growing population and rising incomes are likely to sustain the absolute number of jobs in tobacco-related industries in the years to come.

It is therefore recommended that Vietnam impose annual increases to its special consumption tax so that prices of tobacco products increase by at least, and preferably in excess of, the rate of growth of the Vietnamese economy. Additionally, to significantly increase the prices of the cheapest tobacco products

and hence reduce opportunities for product substitution to cheaper products as taxes are increased, it is recommended that Vietnam introduce a high specific tax that is indexed to inflation or includes scheduled increases that meet or outpace inflation. Similarly, given that waterpipe tobacco is currently exempt from all taxes and to reduce product substitution from cigarettes to cheaper waterpipe tobacco as cigarette taxes are increased, it is recommended that a specific waterpipe tobacco excise tax be introduced.

Given that smuggling has the potential to diminish the effect of tax-driven price increases as well as reduce any expected increase in tax revenues, anti-smuggling measures should be strengthened. The tax stamp policy introduced in 2000 by the government of Vietnam should be maintained and reinforced, as the use of tax stamps can facilitate identification of illegally produced or imported products. Other anti-smuggling measures such as licensing requirements and better enforcement should be initiated. Finally, tobacco control should be integrated in broader poverty reduction efforts. As such, earmarking a portion of tobacco tax revenues for broad health programmes such as health insurance, health promotion, and tobacco control activities is recommended.

## I. Background

Vietnam had a population of 84,155,800 in 2006, more than 70 percent of which lived in rural areas.<sup>1</sup> The two most populated regions are the deltas of the Red River (north) and Mekong River (south). There are 54 different ethnic groups in Vietnam, and Kinh (Viet) people make up nearly 90% of the population. Vietnamese is the national language and is spoken by more than 80% of the population. Vietnam has been transitioning from a centrally planned economy to a socialist-oriented market economy since the economic reforms in 1986 known as *doi moi* (renovation). Over the past 10 years gross domestic product (GDP) has more than doubled. As the country has modernized, agriculture's share of GDP has declined relative to that of services and industry. Vietnam ranks high in human development considering its level of economic development. Life expectancy at birth (69 years for men and 74 years for women in 2005)<sup>2</sup> and adult literacy (90.3% in 2004)<sup>3</sup> are high compared to other nations.

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**Over the past 10 years gross domestic product (GDP) has more than doubled.**

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### Tobacco Use

In Vietnam, current smoking prevalence estimates (2006, see Appendix A, Table A1) are 49.2% or higher among men, but less than 2% among women.<sup>4</sup> This is lower than a decade earlier when more than 60% of men and 4% of women smoked tobacco products, although most of this reduction appears to

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have taken place between 1993 and 1998.<sup>4-6</sup> The World Health Survey conducted in 2003 shows a smoking prevalence of 51.2% and 2.8% among men and women, respectively. Smoking prevalence is evenly distributed between urban and rural areas, although tobacco users in different areas tend to smoke different products. Waterpipe smoking is more prevalent in rural areas while cigarettes are more popular in urban areas.

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**There is a positive correlation between cigarette smoking and income and a distinct negative relationship between waterpipe smoking and income.**

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Among male smokers in 2001–02, 69.1% smoked cigarettes only, 23.2% smoked waterpipe tobacco only, and 7.7% reported using both products. Among urban males, 48.6% smoked cigarettes only and 3.8% smoked waterpipe tobacco only. Among rural males, 35.6% smoked cigarettes only and 16.0% smoked waterpipe tobacco only. Of particular importance is the high smoking prevalence in young men (more than 65% of men aged 25 to 45 years smoked in 2006, see Appendix A, Table A1) and the correlation between smoking and income (Graph 1.1). There is a positive correlation between cigarette smoking and income and a distinct negative relationship between waterpipe smoking and income.

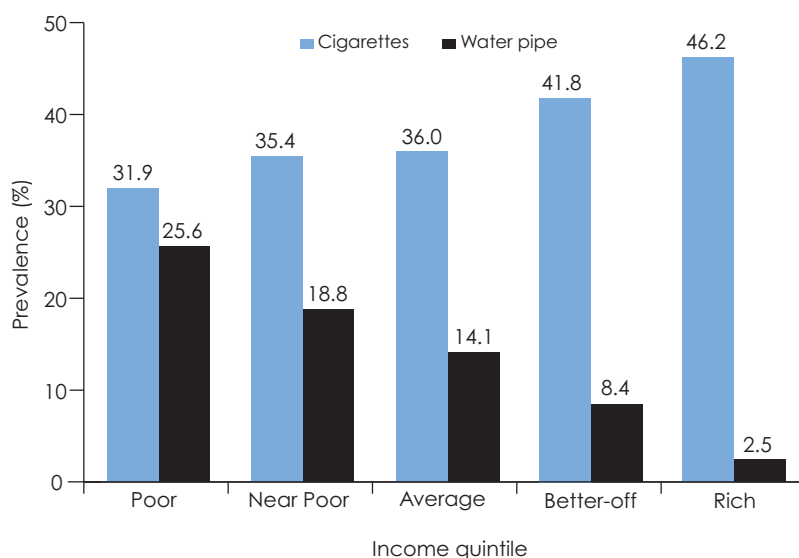
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**... in 2003, nearly 60% of school-attending youth reported being exposed to secondhand smoke at home, while 71% of children under age 5 lived in households with at least one smoker.**

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Vietnam's low smoking rates among women do not necessarily protect them from the hazards of tobacco smoke. In 2001–02, 63% of households had at least one smoker.<sup>4</sup> Similarly, in 2003, nearly 60% of

**Graph 1.1: Proportion of males aged 15 years and older who smoke, by living standard quintile, 2001–02**



Source:  
VNHS (2001–02)

school-attending youth reported being exposed to secondhand smoke at home,<sup>7</sup> while 71% of children under age 5 lived in households with at least one smoker.<sup>4</sup>

It is important to note that most surveys conducted in Vietnam have used different methodologies (e.g. definition of smokers, geographical coverage, sample size). Such differences in methodologies render comparability across surveys difficult. Appendix A presents a detailed overview of methods and principal results of all surveys, conducted in Vietnam, that examine smoking behaviour and related issues.

### The Health and Economic Burden of Tobacco Use

Vietnam faces a high burden from non-communicable diseases (NCDs), which now account

for the largest share of mortality and morbidity, more than communicable diseases, accidents and injuries combined.<sup>8</sup> In 2002 cardiovascular diseases (CVDs) accounted for nearly half of all deaths attributable to NCDs in Vietnam — or almost a third of deaths from all causes.<sup>8</sup> Estimates from a Vietnamese epidemiological field laboratory showed that CVDs accounted for 29% of recorded deaths over a five-year period (1999–2003), while neoplasms accounted for 15% of deaths and infectious diseases for 11%.<sup>9</sup>

The age-standardized death rate from malignant neoplasms in Vietnam was estimated at about 123 per 100 000 in 2002.<sup>8</sup> Tobacco use is a leading cause of

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**...nearly 40 000 deaths were attributed to smoking in 2008 — a figure set to rise above 50 000 deaths annually by 2023.**

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most of these conditions. A simulation model developed for Vietnam estimated that nearly 40 000 deaths were attributed to smoking in 2008 — a figure set to rise above 50 000 deaths annually by 2023.<sup>10</sup>

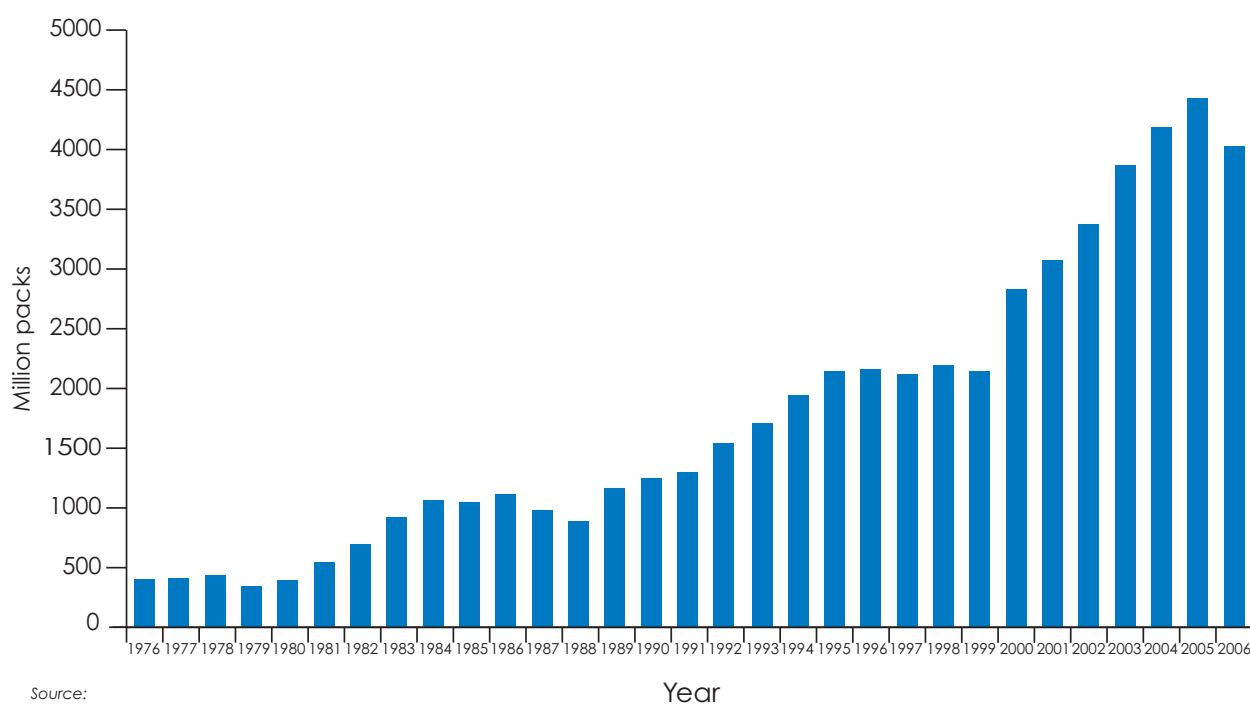
Tobacco use not only negatively affects health, but also imposes a burden on society and the healthcare system by consuming valuable resources. The costs of just three diseases (lung cancer, ischaemic heart disease, and chronic obstructive pulmonary disease [COPD]) attributable to tobacco use in Vietnam were estimated to be in excess of VND 1100 billion (about US\$ 75 million) in 2005.<sup>11</sup> Appendix B presents the results and discusses the methods of 10 studies that estimated the economic costs attributable to tobacco use in Asia, including eight studies from low- and middle-income countries.

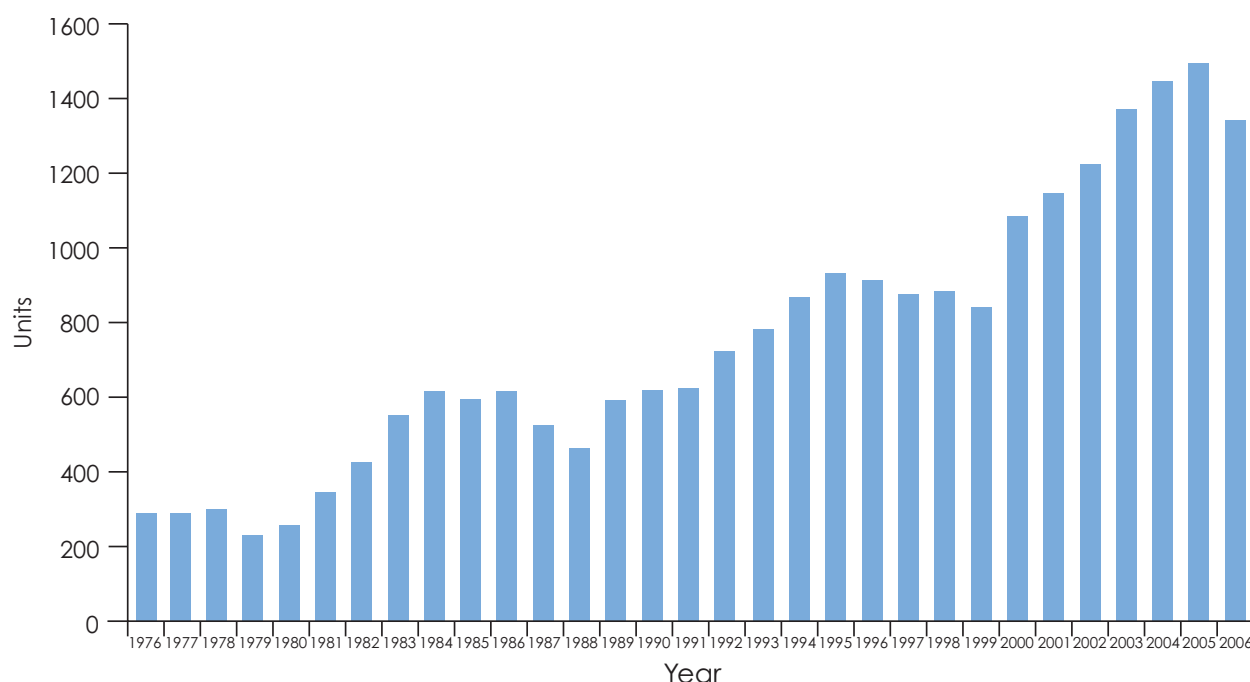
### A Brief Overview of the Tobacco Industry in Vietnam

The tobacco industry in Vietnam has a production capacity of about 5800 million packs per year, which is utilized at about 70%–80% of capacity. The sector's cigarette output has been increasing since 2000, even when accounting for population growth, primarily due to investments in tobacco growing, processing and cigarette production equipment and due to tighter controls to counter smuggling. It now stands at around 4000–4500 million packs per year (Graphs 1.2 and 1.3). In the period 2000–06, total cigarette production

**In the period 2000–06, total cigarette production increased by about 42%.**

**Graph 1.2: Cigarette Production, Total**



**Graph 1.3: Cigarette Production, Per Capita (15 years and above)**

Source:  
GSO (2007)

increased by about 42%. The introduction of tax stamps is one of the reasons behind the 32% growth in cigarette output in 2000 (i.e. the growth was due in part to more accurate reporting, not an actual increase in output).

The tobacco industry in Vietnam is largely under government control, with a renewed commitment expressed in a recent government decree. There are a few joint ventures with multinational companies involved in all stages of production, from tobacco growing and processing (joint venture with British American Tobacco) to cigarette manufacturing (joint venture with Philip Morris, formerly with Sampoerna) and accessory production (joint venture with New Toyo). Most cigarettes produced in Vietnam are made by the state-owned Vietnam Tobacco Corporation (Vinataba) and its subsidiaries, which currently own 11 of the country's 17 factories and produce more than 200 brands nationwide.<sup>12</sup> Other facilities are under

local management. The largest member of the Vinataba group is the Saigon Cigarette Company, which produces 25 brands in its Saigon and Vinh Hoi cigarette factories, resulting in about 26 billion sticks yearly — or 1.3 billion 20-piece packs. Saigon Cigarette Company manufactures the most popular foreign brands produced under license by Vinataba, such as 555 State Express and Marlboro,<sup>13</sup> which capture a significant share of the market (Table 1.1).

In 2005 more than 20% of cigarettes sold in Vietnam were linked to foreign brands (i.e. either produced by joint ventures or by the Vinataba group through business cooperation contracts).<sup>13</sup> This is up from a 5% share in 1998, and occurs in spite of the 2001 government decree\* implementing tobacco control measures and banning operations by foreign tobacco companies,<sup>14</sup> as well as the aforementioned renewed decree on cigarette production and trading.

\* Text available at: <http://vbqapl.moj.gov.vn/>

**Table 1.1: Brand Market Shares, 2002–2005 (%)**

2005 Rank	Brand	Local company	International group	2002	2003	2004	2005
1	Vinataba	Vinataba		6.3	6.7	6.7	6.8
2	White Horse*	Khanh Vier Corp	BAT	4.1	5.1	5.4	5.9
3	Craven A*	Ben Thanh Tobacco Co	BAT	4.4	4.7	5.0	5.8
4	Tourism	Vinataba		5.9	5.6	5.6	5.6
5	555 State Express*	Vinataba	BAT	2.7	3.1	3.8	4.8
6	Souvenir	Vinataba		2.9	2.9	2.9	2.9
7	Virginia Gold*	Hai Phong Tobacco Co	BAT	2.0	2.1	2.3	2.5
8	Tam Dao	Vinataba		2.4	2.3	2.3	2.4
9	Thang Long	Vinataba		1.4	1.3	1.3	1.3
10	Aroma	Vinataba		1.0	1.1	1.1	1.1
11	Marlboro*	Vinataba	Philip Morris	0.5	0.6	0.8	1.1
12	Hoan Kiem	Vinataba		0.9	0.8	0.8	0.9
13	Everest*	Khanh Viet Corp	BAT	0.6	0.7	0.8	0.9
14	Thu Do	Vinataba		0.6	0.6	0.6	0.6
15	Bastion	Vinataba		0.2	0.2	0.2	0.2
16	Mild Seven*	Vinataba	JTI	0.1	0.2	0.2	0.2
17	Dunhill*	Vinataba	BAT	0.1	0.1	0.1	0.1
	Other brands			63.9	61.8	60.1	56.9

Source:

Euromonitor (2007c) for the data, ERC 92007) for the brand/international group match.

Note: \* = Foreign brand produced under license.

This decree establishes Vinataba as the sector's administrator, acting as the core in arranging the sector's production activities, setting development strategy and maintaining the order of the market. British American Tobacco (BAT) is by far the most significant foreign player in Vietnam, a situation mainly brought about by the group's purchase of Rothmans in 1999.<sup>15</sup>

Whereas foreign-brand cigarettes are higher-grade products priced at VND 10 000 to VND 30 000 (US\$ 0.63 to US\$ 1.88) per pack,\* Vinataba concentrates on lower-grade products in the VND 1000 to VND 10 000 (US\$ 0.07 to US\$ 0.63) price range and produces most of the top-selling brands in the country, including the best-selling brand

Vinataba.<sup>12</sup> Vinataba's top-selling brands, including foreign brands produced under license, together account for more than 25% of the market (Table 1.1).<sup>14</sup> More than 73% of cigarettes produced in 2004 were low-grade brands (the rest included locally produced international brands), down from almost 78% in 2000. More than 90% of cigarettes sold in Vietnam in recent years were filtered, a share that has been constantly increasing and reached almost 98% in 2006.<sup>16</sup>

Tobacco cultivation, of which yellow tobacco makes up about three quarters, is increasing despite recent problems (such as tobacco leaf disease) and the ensuing large variations in cultivated areas. Between 2000 and 2005 Vietnam produced between 23 000 and 33 000 tonnes of tobacco leaves annually. Between

\* As of 1 January, 2008 US\$ 1 was valued at VND 16 000, Euro 1 was valued at VND 23 000, 1 KHR was valued at VND 4.2, LAK 1 was valued at VND 1.77 and CNY 1 was valued at VND 2 232.

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**On the whole, tobacco accounts for around 0.3% of all jobs in Vietnam, and the trend in the tobacco cultivation sector seems to have been declining for some years.**

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2001 and 2004, Vietnam imported between 12 000 and 15 000 tonnes yearly (about 40% to 50% of local production).<sup>1</sup> Currently the tobacco sector has four tobacco processing lines distributed in three areas of the country.<sup>16</sup>

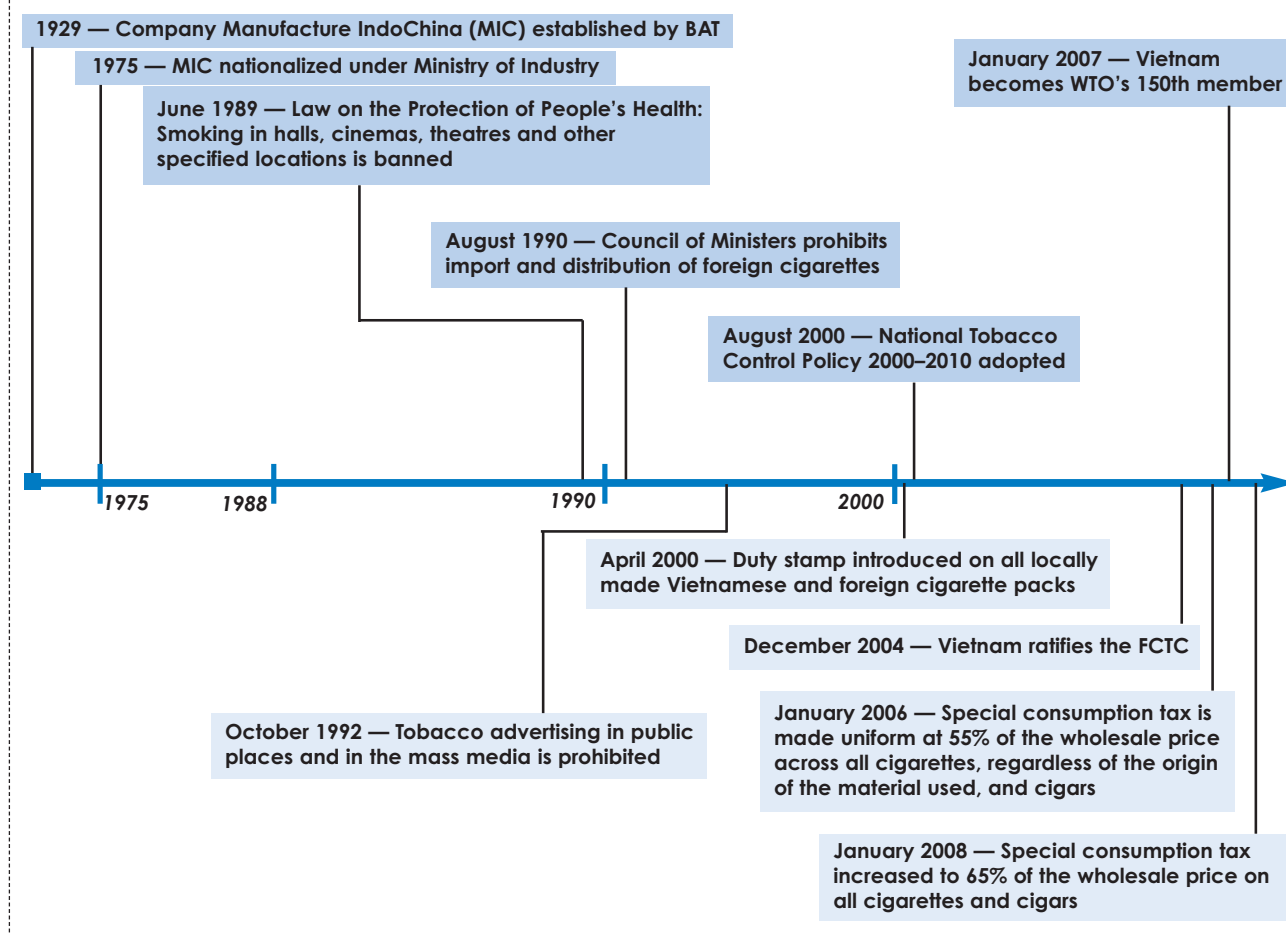
The government's expansion policy for the tobacco-growing sector aims to stabilize annual production by 2010 at around 40 000 hectares under cultivation and 80 000 tonnes of processed leaf, with a stated goal of "domesticizing tobacco supply" by 2015 so that all cigarette production companies will use only domestically processed tobacco.

Tobacco cultivation employed about 72 000 full-time equivalent (FTE) workers in 2006, or about 0.2% of the workforce (0.4% of agricultural workers).<sup>1</sup> Tobacco leaves are cultivated in 27 of 64 provinces throughout Vietnam.<sup>1</sup> Tobacco farmers receive wide support from Vinataba in the form of seeds, capital and rural infrastructure. As of 2006, cigarette production employed around 18 000 workers, or 0.05% of Vietnam's workforce — a share that appears stable over time.<sup>1</sup> Stable employment in cigarette manufacturing amidst increasing production suggests gains in production efficiency. Cigarette distribution employment is not included in the above figures, as the number of people involved is unknown despite the presence of an official licensing system. One estimate puts it at around 23 000 FTE.<sup>17</sup> It is worth pointing out that employment in cigarette distribution is typically not tobacco-dependent. On the whole, tobacco accounts for around 0.3% of all jobs in Vietnam, and the trend in the tobacco cultivation sector seems to have been declining for some years.<sup>1</sup>

## Vietnam's Tobacco Control Environment

This section briefly highlights the main events that define Vietnam's current tobacco control environment (Graph 1.4).

- 1975. The Ministry of Industry nationalizes Company Manufacture IndoChina (MIC), which was established by British American Tobacco in 1929. During the next decade, cigarette production nearly triples, fuelled by a rising population, increasing incomes, and a growing smoking prevalence among men.
- 1986. The government's reform programme, known as *doi moi*, is launched in order to revitalize the national economy. The *doi moi* reforms are characterized by a gradual move away from central planning and an opening to the world economy.
- 1989. First sign of commitment to tobacco control. The government of Vietnam bans smoking in designated public places. The "Law on the protection of people's health" includes (under article 15, chapter II) a ban on smoking in halls, cinemas and theatres. The law is reinforced in 1991 by a government decree. In May, the Ministry of Health establishes the Vietnam Committee on Smoking and Health (VINACOSH), a steering committee for tobacco control.
- 1990. The council of ministers bans the import of cigarettes. Import bans remain in place until Vietnam officially joins the World Trade Organization in January 2007. In September 1990, the government clamps down on the contraband market and virtually eliminates smuggling for 18 months.
- 1992. Vietnam's tobacco advertising ban goes into effect. The ban extends to sponsorship of sporting and cultural events in 1997. The ban covers direct and indirect advertising and promotions; sponsorship is banned only if linked with advertisement.

**Graph 1.4: Vietnam's tobacco control environment: Key events**

- 2000. Government introduces a duty stamp to clamp down on smuggling and tax evasion.
- 2000. Government of Vietnam furthers its commitment to tobacco control and adopts a national tobacco control policy, the overall objective of which is to reduce the male smoking rate from 50% to 20% and maintain the female smoking rate below 2%.
- 2004. Vietnam commits to global tobacco control. The Framework Convention on Tobacco Control (FCTC) is ratified in December.
- 2006. Vietnam's special consumption tax (SCT) on cigarettes is made uniform across cigarette and cigar types and set at 55% of the pre-tax ex-factory price. SCT is increased to 65% of the pre-tax ex-factory price in January 2008.
- 2007. The Ministry of Health fails to adopt strong health warning measures. Health warnings remain but without strong wording or pictorials (warnings to be 30% of the principal display areas).
- 2012. ASEAN Free Trade Area (AFTA) tariff reductions to be fully implemented.

**Endnotes for Chapter I**

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## II. Prices and Taxes of Tobacco Products

### Taxes

Cigarettes and other tobacco products can be taxed in a variety of ways, including excise taxes, other value-added taxes, and import duties.<sup>18</sup> Excise taxes can be either specific (based on quantity or weight) or *ad valorem* (based on value). In some cases, both specific and *ad valorem* elements are combined in a single excise duty.<sup>19</sup>

**To enable a specific tax to keep pace with inflation, automatic adjustments must be made with reference to a price indicator such as the consumer price index.**

The real value of excises over time depends on the type of tax levied and how it is administered. In an inflationary environment, an *ad valorem* excise tax will generally retain its value in real terms, assuming the price to which it is applied is changing at the same rate as prices for other goods and services.<sup>18</sup> In contrast, the real value of a specific excise tax will decline over time in the absence of regular increases to account for inflation, which will result in lower prices relative to other goods. This feature can be particularly problematic in countries or regions in which inflation rates are high. To enable a specific tax to keep pace with inflation, automatic adjustments must be made with reference to a price indicator such as the consumer price index.<sup>19</sup>

Another distinction between specific and *ad valorem* excises is their differential impact on the prices of various types of tobacco products. An *ad valorem* tax creates larger gaps between high- and low-priced products, so in response to a tax increase

**Specific excises are easier to administer because it is necessary to determine only the quantity of the product taxed, not its value.**

some consumers may substitute away from higher-priced products towards relatively more inexpensive products.<sup>19</sup> This substitution effect can dampen the public health impact of higher tobacco taxes, and for this reason specific taxes may sometimes be favoured over *ad valorem* excises. However, some countries opt for *ad valorem* excises if the cheaper brand of products is domestically produced and the more expensive products are imported.<sup>19</sup>

*Ad valorem* excises present challenges with respect to their administration, because the value of a tobacco product may at times be difficult to determine. For example, some firms may attempt to sell their products to intermediaries at artificially low prices in order to reduce their tax liabilities.<sup>19</sup> Specific excises are easier to administer because it is necessary to determine only the quantity of the product taxed, not its value.<sup>19</sup> Consequently, for countries with weak tax administration systems, ease of administration is another reason why specific excises (adjusted automatically for inflation) may be favoured over *ad valorem* taxes.<sup>19</sup>

In order to describe the structure and importance of taxes applied to tobacco products, detailed information on tax rates was obtained from reports and legal texts from the Vietnam Ministry of Justice and reports from the International Monetary Fund (IMF).

*Special consumption tax.* Tobacco excise (special consumption) tax rates in Vietnam are charged on the pre-tax, ex-factory\* price and were introduced in 1990. Prior to 1990, tobacco enterprises were subject to a 5% revenue tax. This revenue tax was repealed in 1990 and

\* For more details on the bases for the special consumption tax calculations, see Circular 168/1998/TT-BTC ([http://www.dncustoms.gov.vn/web\\_english/english/btc/TT168-BTC\\_98.htm](http://www.dncustoms.gov.vn/web_english/english/btc/TT168-BTC_98.htm)). Note that the International Monetary Fund (IMF) indicates the tax base is the tax-exclusive sale price (International Monetary Fund, 2007).



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### **Taxes on filtered cigarettes made primarily with imported materials decreased from 70% in 1994 to 55% in 2007.**

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replaced by a special consumption tax. The special consumption tax rates have not changed consistently for all types of cigarettes since 1990. Taxes on filtered cigarettes made primarily with imported materials decreased from 70% in 1994 to 55% in 2007. Rates on domestic filtered cigarettes were kept stable until 2006, when a rate increase was implemented. Unfiltered cigarettes enjoyed substantial tax breaks over the past 10–15 years before being subject to a large tax increase in 2006 (more than doubling the excise rate for this type of product). The special consumption tax was increased to 65% on all three types of cigarettes: 1) filter, made mainly with imported material; 2) filter, made mainly with domestic material; and 3) non-filter in January 2008.

Cigars, an unpopular tobacco product in Vietnam, enjoyed preferential taxation equivalent to that of unfiltered cigarettes until 1996. After a decrease in the tax rate from 40% to 32% in 1993, which followed that of unfiltered cigarettes, tax rates on cigars more than doubled to 70% in 1996. Since 1996, changes to the tax rates on cigars have mirrored those of cigarettes made with imported materials and, from January 2008, cigars will be taxed at the same new uniform rate of 65%.

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### **Waterpipe tobacco, despite its relative popularity, is not subject to taxation in Vietnam.**

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Waterpipe tobacco, despite its relative popularity, is not subject to taxation in Vietnam. Much of the tobacco consumed in this form is home-produced, which renders tax collection difficult. Additionally, the sector is very fragmented, with no standard format and packaging. This market fragmentation and the low

prices of waterpipe tobacco make tax collection difficult and costly.

The experience in India with excises on bidis may be informative in developing possible tax administration schemes on waterpipe tobacco in Vietnam. A bidi is shredded tobacco that is hand-rolled in a tendu leaf with a string fastening one end. Bidis account for the majority of tobacco smoked in India, with use relatively more prominent in rural areas. Much like the waterpipe tobacco industry in Vietnam, bidi production is highly fragmented. Bidis are undertaxed relative to standard cigarettes, and so there are issues around product substitution, excise evasion, and non-compliance. Given these challenges, recommendations have been put forward to prohibit the sale of unbranded products, to require informational reporting on the sale of processed tobacco to manufacturers, and to raise the excise on bidis to the same rate as for low-priced micro non-filter cigarettes.<sup>20</sup> Some similar strategies might be considered in the context of Vietnam. For example, under the Indian Excise Law, any person engaged in the production or manufacturing or any process in production or manufacture of goods subject to excise is required to register with the proper excise officer or file an annual declaration if production is less than 2 million bidis annually.<sup>20</sup>

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### **VAT is charged at a rate of 10% of the pre-VAT retail price of cigarettes. The VAT rate has not changed since 1999.**

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*Value-added tax (VAT).* A value-added tax was introduced in Vietnam on 1 January 1999. VAT is charged at a rate of 10% of the pre-VAT retail price of cigarettes. The VAT rate has not changed since 1999.

*Total tax as percentage of retail price.* Overall, total consumption tax (i.e. SCT and VAT) as a percentage of retail price has gradually increased since 1990. However, despite the recent excise tax rate



**Table 2.1: Tobacco Tax Rates, 1990–2008**

	Special Consumption Tax (SCT)				Value-Added Tax (VAT)
	Cigarettes				
	Filter, mainly made with . . .		Non-filter	Cigars	
	Imported material	Domestic material			
Oct. 1990–Aug. 1993	50	50	40	40	–
Sept. 1993–Dec. 1995	70	52	32	32	–
Jan. 1996–Dec. 1998	70	52	32	70	–
Jan. 1999–Dec. 2005	65	45	25	65	10
Jan. 2006–Dec. 2007	55	55	55	55	10
Jan. 2008– . . .	65	65	65	65	10

Note: Special consumption tax (SCT) tax base is pre-tax, wholesale price; VAT tax base is pre-VAT, retail price.

Source: Vietnam Ministry of Justice

increases on unfiltered cigarettes and filtered cigarettes made with domestic materials and the introduction of VAT in 1999, total taxes on tobacco in Vietnam remain well below the rates noted by World Bank in countries with successful tobacco control programs. These rates are in the 65–80% range as a proportion of the final retail price.<sup>21</sup>

Assuming conservative total distribution margins of zero (or 10%), tobacco taxes in Vietnam accounted for at most 41% (39%) of the tax-inclusive retail sales price of cigarettes in 2007. This proportion was brought to 45% (43%) in January 2008, which still falls well short of the preferred range of 65–80%.<sup>21</sup>

*Enterprise tax.* Tobacco companies are subject to a profit tax, the rate of which has been constantly decreasing since 1990. The rate was 40% until mid-1993, when it was reduced to 35%; after another decrease to 32% in 1999, it was eventually brought down to 28% in 2004.

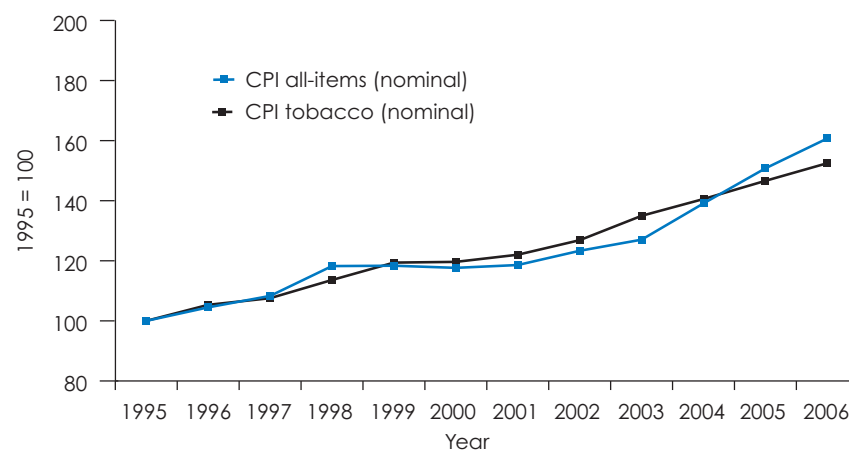
*Import tax.* Between 1990 and January 2007 (when Vietnam joined the World Trade Organization), Vietnam did not allow the importation of cigarettes and cigars. In January 2007, Vietnam removed its import ban for a period of three years (2007–09).

During this period, cigarettes and cigars may be imported only via Vietnam's state-owned Vinataba company. In January 2010, the government will reconsider its policy and may authorize other state-owned enterprises to import manufactured tobacco products such as cigarettes and cigars. Cigarettes and cigars are now subject to an import duty of 150% of the merchandise's cost, insurance and freight (CIF) value at the WTO "most favoured nation" rate (i.e. the normal non-discriminatory tariff charged on imports from WTO member countries) and of 225% of the CIF value for other countries.

## Prices

In order to assess the direction and magnitude of changes in the prices of tobacco products, average prices and price indices were obtained from the General Statistics Office of Vietnam (GSO). To calculate the consumer price index (CPI), GSO collects prices for nearly 400 goods and services on a monthly basis. The CPI is a relative indicator measuring the change in prices for goods and services. The number of outlets (e.g. shops or markets) from which prices are collected may differ across geographic areas and is based on the population size of each province. The

**Graph 2.1: CPI All-items vs. CPI Tobacco, 1995–2006 (in nominal terms; 1995 = 100)**



Source:  
GSO (2007)

weights used in calculating CPI indices are derived from large household surveys and are based on household expenditure patterns for households in each of the provinces.

Data for the decade 1996–2006 were obtained from the GSO including:

- CPI tobacco, by province ( $n = 30$ ) and for the whole country
- Price averages, by province ( $n = 30$ ) for:
  - 555 cigarettes (pack of 20), a popular foreign brand produced under license
  - Vinataba cigarettes (pack of 20), the most popular brand
  - Waterpipe tobacco (100 g).

To take into account general inflation (i.e. changes in overall prices) between 1995 and 2006, unless otherwise noted, all changes in tobacco prices are expressed in real terms (i.e. as if all other prices were constant in each year of the series) using the all-items

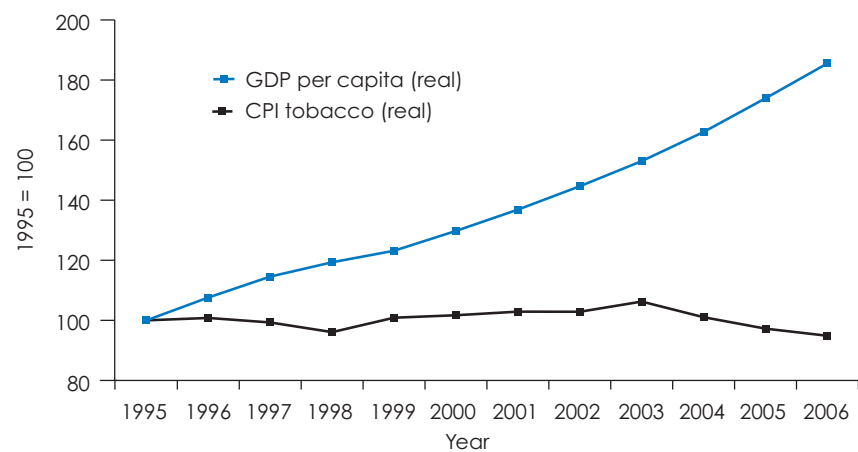
CPI also provided by GSO. Graph 2.1 shows the course of both all-items CPI and tobacco CPI and illustrates the importance of adjusting for inflation. In nominal terms, prices of tobacco products have increased by more than 50% between 1995 and 2006. However, during the same period, overall prices increased by more than 60%.

Graph 2.2 presents trends in both tobacco CPI and per capita GDP for the years 1995–2006. Graph 2.3 presents trends in the prices of three tobacco products, 555 and Vinataba cigarettes and waterpipe tobacco, for the period 1996–2006. All series have been adjusted for general inflation and are presented in real terms.

**In real terms, the prices of tobacco products in Vietnam have not increased between 1995 and 2006. On average, they have declined by about 5% over that decade.**

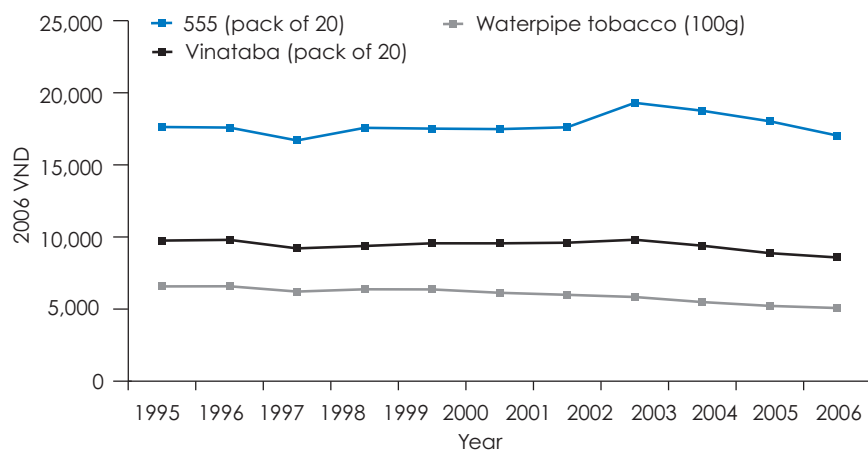
\* A predecessor of the Euro.

**Graph 2.2: CPI Tobacco and GDP per Capita, 1995–2006**  
(1995 = 100)



Source:  
GSO (2007) and IMF (2007)

**Graph 2.3: Prices of Tobacco Products, 1996–2006**



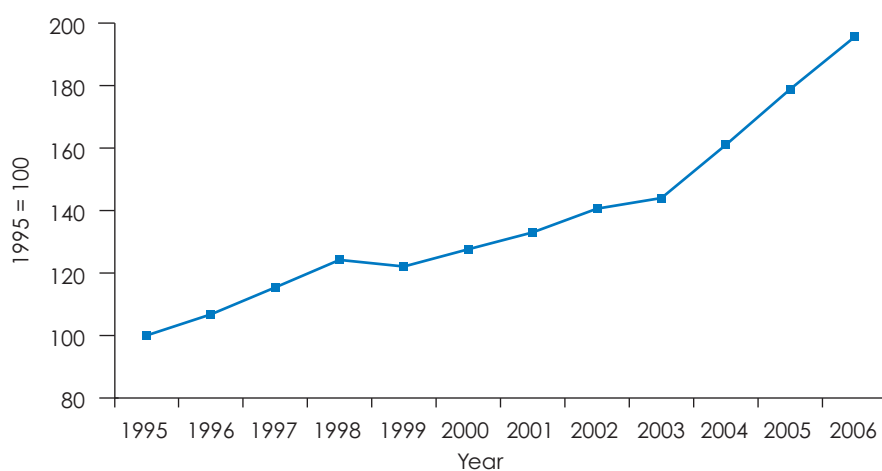
Source:  
GSO (2007)

### The increasing gap between income and tobacco prices has made tobacco increasingly affordable.

In real terms, the prices of tobacco products in Vietnam have not increased between 1995 and 2006. On average, they have declined by about 5% over that decade. More specifically, a pack of Vinataba (Vietnam's most popular brand) that cost around VND 10 000 in 1996 (in 2006 VND) (US\$ 0.63) was priced at about VND 8500 (US\$ 0.53) 10 years later. This is in sharp contrast to the evolution of real income in Vietnam: Real per capita GDP increased by more than 80% between 1995 and 2006, thus making tobacco a much cheaper good on average. The increasing gap between income and tobacco prices has made tobacco increasingly affordable (Graph 2.4). Considering the current trend in income, tobacco prices carry little deterrent effect in Vietnam.

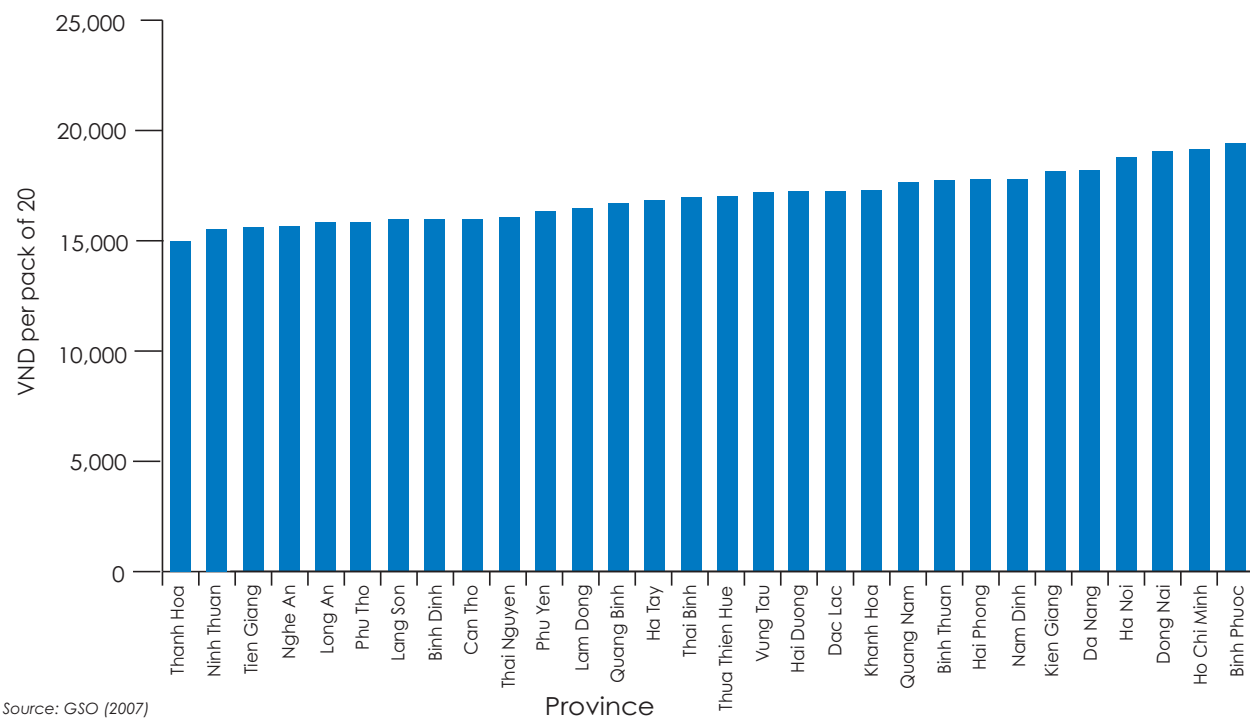
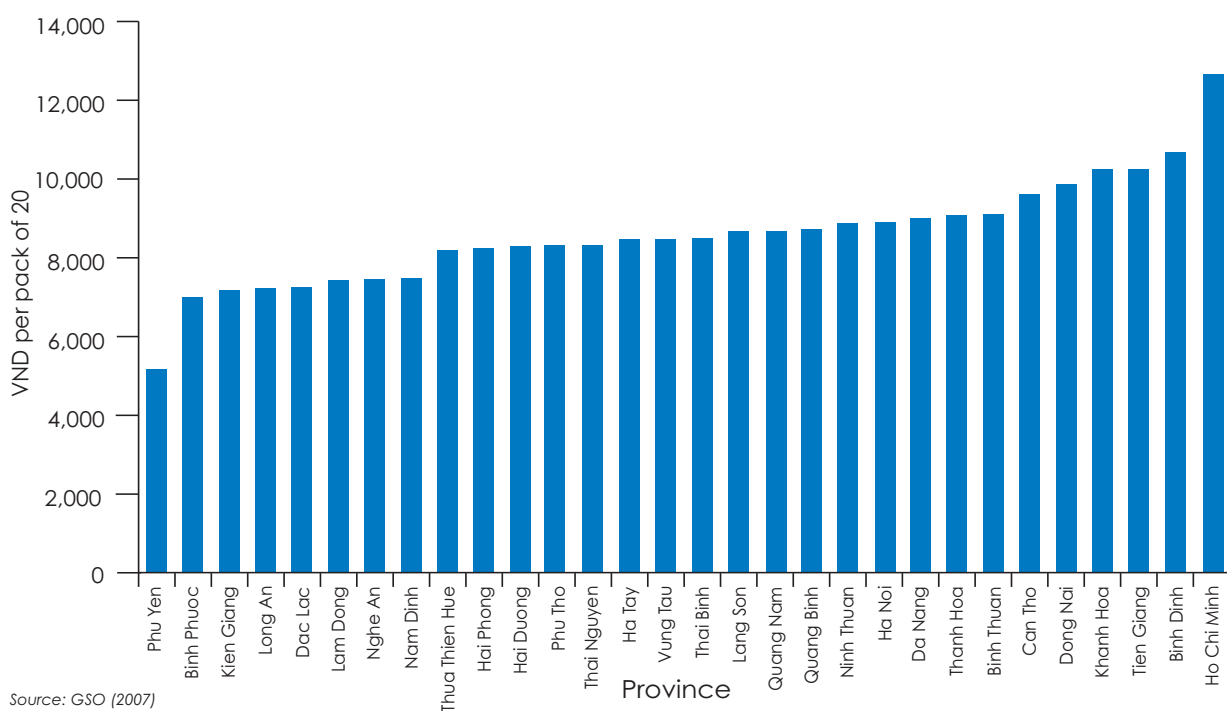
Graphs 2.5–2.7 present the most recent available tobacco price data for 30 provinces (of a total 64 provinces). These data show considerable differences across provinces. Prices per pack of 555 brand cigarettes vary from VND 15 000 (US\$ 0.94) in Thanh Hoa province to more than VND 19 000 (US\$ 1.19) in the provinces of Dong Nai, Ho Chi Minh and Binh Phuoc. Prices per pack of Vinataba cigarettes and waterpipe tobacco show even more differences across provinces. Prices of Vinataba cigarettes are as low as VND 5000 (US\$ 0.31) in Phu Yen province, as high as VND 10 000 (US\$ 0.63) in the provinces of Khanh Hoa, Tien Giang and Binh Dinh, and more than VND 12 500 (US\$ 0.78) in Ho Chi Minh province. Similarly, prices of waterpipe tobacco vary from a low of about VND 3000 (US\$ 0.19) per 100 g in Thua Thien Hue, Thai Binh and Hai Duong provinces to a high of about VND 9500 (US\$ 0.59) in Ho Chi Minh province. Price differences across provinces can be partly attributed to differences in transportation and other distribution costs, as well as local monopoly conditions.

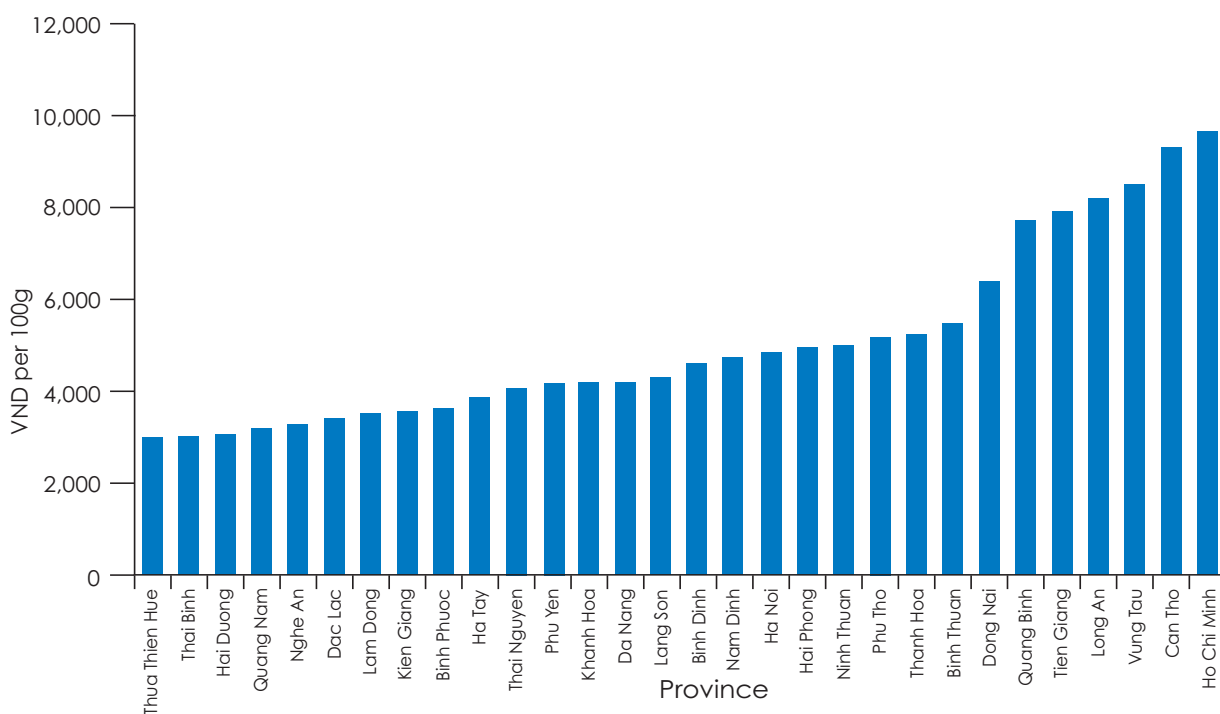
**Graph 2.4: Affordability of Tobacco Products, 1995–2006**



Note: Affordability = GDP per capita / CPI tobacco. A rising affordability index indicates tobacco products are becoming more affordable.

Source: GSO (2007)

**Graph 2.5: Prices of 555 Cigarettes, by Province, 2006****Graph 2.6: Prices of Vinataba Cigarettes, by Province, 2006**

**Graph 2.7: Prices of Waterpipe Tobacco, by Province, 2006**

Source: GSO (2007)

**Endnotes for Chapter II**

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### III. Price Increases and Smoking Behaviour

The single most effective method to reduce smoking prevalence and cigarette consumption is to increase tobacco prices. Higher prices for tobacco products can deter individuals who do not smoke from starting, thus preventing addiction, and can persuade current users to quit or reduce their consumption. Higher prices can also prevent former users from starting again. The young and the poor are more affected by an increase in tobacco prices than their older and wealthier counterparts.<sup>23</sup>

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**The single most effective method to reduce smoking prevalence and cigarette consumption is to increase tobacco prices.**

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In 1999 the World Bank concluded, after an extensive review of the evidence, that on average a price increase of 10% would be expected to reduce demand for tobacco products by about 4% in high-income countries and by about 8% in low- and middle-income countries.<sup>24</sup> In a meta-analysis of 86 studies (and more than 500 point estimates), Gallet and List find a mean price elasticity of  $-0.48$ .<sup>25</sup> Similarly, in an extensive review of both theoretical and empirical evidence, Chaloupka and Warner, in response to the claim that the demand for cigarettes may not follow one of the most fundamental laws of economics, the law of demand (i.e. a downward-sloping demand curve), write:<sup>23</sup>

As the now-substantial body of economic research demonstrates, however, the demand for cigarettes clearly responds to changes in prices and other factors, as found in applications of both traditional models of demand and more recent studies that explicitly account for the addictive nature of smoking.

An important limitation of the above reviews is the inclusion of a relatively small number of studies conducted in low- and middle-income countries. We proceed to systematically and critically review studies that examine the effect of prices (or taxes) on the use of tobacco products in Vietnam.

We considered all studies that examined the relationship between prices of or taxes on tobacco products and the use of tobacco products, regardless of date of publication, language of publication, or method of data collection. We limited studies to Asian countries most relevant to Vietnam. We include studies from Burma, Cambodia, China, Hong Kong, Laos, Malaysia, Mongolia, the Philippines, Thailand, Taiwan and Vietnam, regardless of the geographic coverage (e.g. state, province, municipality). Computerized bibliographic databases searched included MEDLINE via PubMed and EconLit. Searches were last conducted in October 2007. Unpublished literature was also searched via Google and Google Scholar. Four specialty journals were hand-searched (*Health Economics*, *Journal of Health Economics*, *Nicotine & Tobacco Research*, and *Tobacco Control*) and references of recent reviews were examined.<sup>23–28</sup> Overall, a total of 25 studies were included in this review.

Four studies explored the relationship between price and tobacco consumption using data from Vietnam.<sup>29–32</sup> Other studies were conducted in Burma,<sup>33</sup> China,<sup>34–43</sup> Malaysia,<sup>44</sup> South Korea,<sup>45,46</sup> Taiwan<sup>47–51</sup> and Thailand.<sup>52</sup> Additionally, one study used data from several South-East Asian countries (Bangladesh, Burma, Indonesia, Maldives, Nepal, Sri Lanka, and Thailand).<sup>53</sup>

Nearly all time series studies found that prices are significantly and negatively associated with tobacco consumption. Estimates of price elasticities (i.e. the sensitivity of demand to changes in prices), however, vary substantially across studies. Estimates from the most rigorous studies point to short- and long-run

demand price elasticities of  $-0.3$  to  $-0.6$  and  $-0.35$  to  $-0.7$ , respectively. Several studies that use cross-sectional individual-level data use a two-part model to estimate participation (i.e. prevalence) and conditional demand elasticities (i.e. the extent to which price impacts the amount smoked among smokers). Estimates of participation and conditional demand price elasticities vary substantially across studies (from  $-0.02$  to  $-1.3$  and  $-0.06$  to  $-0.64$ , respectively). On the whole, income is not found to be significantly associated with either participation or quantity of tobacco used. Eozenou<sup>30</sup> and Sarntisart<sup>52</sup> use a demand system approach (i.e. estimating a system of demands using spatial variations in prices) and find that both price and income are significantly associated with cigarette consumption. Price and income elasticities range from  $-0.39$  to  $-0.53$  and  $+0.34$  to  $+0.70$  respectively. There is some evidence that youth<sup>42</sup> and the poor<sup>43</sup> are more responsive to price increases. Estimates from higher-quality studies point to participation and conditional demand elasticities of  $-0.02$  to  $-0.20$  and  $-0.06$  to  $-0.30$ , respectively.

Only one study examines the association between the decision to initiate or quit smoking and prices of tobacco products. Using a sample of Vietnamese smokers and non-smokers, Laxminarayan and Deolalikar studied the association between the odds of quitting or initiating cigarette and waterpipe tobacco smoking between 1993 and 1998 and changes in the prices of the two tobacco products.<sup>32</sup> They find that changes in the price of cigarettes are significantly and negatively associated with the decision to initiate cigarette smoking (elasticity:  $-1.175$ ). Changes in the price of waterpipe tobacco, however, are not found to significantly affect the decision to initiate waterpipe tobacco smoking. Changes in the price of waterpipe tobacco are found to be significantly and negatively associated with the decision to quit cigarette smoking (elasticity:  $-1.41$ ) but not waterpipe smoking. Changes in the price of cigarettes are not found to have any significant statistical impact on the decision to quit

either cigarette or waterpipe smoking. Laxminarayan and Deolalikar also examine the possible effect that changes in prices may have on substitution between tobacco products and find that changes in the price of cigarettes are significantly and positively associated with the decision to switch from cigarette smoking to waterpipe smoking.<sup>32</sup> Changes in income are found to be significantly and negatively associated with the decision to initiate waterpipe smoking and to switch from cigarette smoking to waterpipe smoking. Among waterpipe smokers, changes in income are positively associated with the decision to switch to cigarette smoking or quit.

Similar to Laxminarayan and Deolalikar, Tsai et al.<sup>54</sup> examine the associations between prices and the decision to quit smoking, reduce the amount consumed, or switch brands in Taiwan. Prices are not found to be significantly associated with the decision to quit or to reduce smoking, but are significantly associated with the decision to switch brands (OR = 1.03 and 1.07, respectively). Monthly income is not found to be associated with either decision.

This review points to the following lessons:

- All studies reviewed find negative and significant associations between prices and the use of tobacco products. Effect sizes, however, vary substantially across studies. For example, in studies based on individual-level data, effect sizes range from trivial (total elasticities of  $-0.07$ ) to extraordinarily high (total elasticities near  $-1.5$ ).
- Little is known about the association between prices and tobacco use across income or age. However, given generally accepted theory and robust international evidence, the young and the poor can be expected to be more responsive to price changes.
- There is some evidence that price increases may deter cigarette smoking initiation in non-smokers and increase substitution across products in current smokers.



- The effect of income on the use of tobacco products is unclear. There are considerable conflicts in the findings. The studies reviewed, however, indicate that the effect is definitely non-negative and likely positive.
- There is considerable heterogeneity across studies in both their methodological approaches and limitations.

Limitations result from both the scarcity of data — particularly for studies using time series data — and inappropriate or incomplete estimation procedures. Of particular concern is the lack of attention given to the potential for non-stationarity and spurious regression (i.e. misleading correlations that arise from common trends in the data instead of a true relationship) in

studies using time series data. Two recent meta-analyses explore factors that may influence variations within and across studies in the price elasticities of cigarette or tobacco demand.<sup>25,28</sup> Of particular interest to this review, Gallet and List find that price elasticity is lower when demand is modelled as an almost ideal demand system,<sup>25</sup> while Laporte finds that studies that controlled for cross-border smuggling reported more elastic price elasticity estimates.<sup>28</sup>

We can conclude with some confidence that the price elasticity of the demand for cigarettes in Vietnam is likely not higher than  $-0.50$ . That is, a 10% increase in the price of cigarettes can be expected to decrease cigarette consumption by at least 5%.

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## IV. Tobacco Taxation: Complementary Health and Economic Considerations

### Household Budget: Increased Disposable Income, Diminished Health Shocks

Most people continue to perceive tobacco as a health issue only, failing to recognize its detrimental impact on the economy, especially its role in expanding poverty.<sup>55</sup> The World Bank defines poverty as the inability to attain a minimal standard of living.<sup>56</sup> In 2002, 29% of the Vietnamese population lived in poverty, with an additional 5–10% of the population vulnerable to falling below the poverty line.<sup>57</sup> Smoking can increase poverty levels both directly and indirectly by reducing disposable income. Money spent on tobacco products is no longer available for essential items such as food, shelter and education, and smoking also contributes to poor health status, which leads to increased medical expenditures. In addition, poor health can lead to increased illness, disability and death, which result in lower productivity. Lower productivity, higher medical expenditures and reduced disposable income all contribute to poverty.<sup>58</sup>

### Smoking can increase poverty levels both directly and indirectly by reducing disposable income.

A decrease in tobacco consumption could improve immediate health outcomes, such as the incidence of cardiovascular and respiratory diseases, as well as intermediate health outcomes that are mediated by poverty, such as child malnutrition. Parental tobacco use in households is associated with an increased risk of stunting, underweight, wasting and severe malnutrition in children under the age of 5 years.<sup>59</sup> Furthermore, the public health impact of children's exposure to secondhand smoke is substantial. Young

**For the “poor” and “poorest” Vietnamese households (i.e. lowest two income quintiles), annual spending on tobacco often constitutes a substantial share of annual spending on essential items such as food, clothing and education.**

children are especially vulnerable to environmental tobacco smoke exposure, which causes a variety of illnesses in children, including lower respiratory tract infections, fluid in the middle ear and a reduction in lung function.<sup>60</sup>

Household expenditures on tobacco are especially problematic in countries with low socio-economic status such as Vietnam, where households with smokers spend approximately VND 627 000 (US\$ 40) per year on tobacco. Tobacco expenditures can lead to poverty and exacerbate its effects by diverting household income away from essential needs. For the “poor” and “poorest” Vietnamese households (i.e. lowest two income quintiles), annual spending on tobacco often constitutes a substantial share of annual spending on essential items such as food, clothing and education.<sup>61</sup> If a portion of the money spent on tobacco by poor households in Vietnam were reallocated toward food purchases, approximately 11.2% of all food-poor smoking households could potentially be raised above the food poverty line.<sup>61</sup> While not all savings gained from eliminating tobacco purchases would necessarily be invested in food and other

**If a portion of the money spent on tobacco by poor households in Vietnam were reallocated toward food purchases, approximately 11.2% of all food-poor smoking households could potentially be raised above the food poverty line.**

essential items, it is certain that any money currently spent on tobacco is not going towards essential goods. Even if only a portion of tobacco users spent some of their savings on basic goods, the net gain could be very large.

Adverse health shocks, such as those caused by the development of smoking-related illnesses, reduce total household incomes as well as increase medical spending among the uninsured.<sup>62</sup> Out-of-pocket payments for health care are common in Vietnam and place a financial burden on poor and near-poor households. Bonu et al. report that in India, the likelihood of borrowing or distress selling (which they use as proxies for impoverishment) and the proportion of total expenditure met through borrowing or distress selling during hospitalization is greater among individuals who use tobacco and non-users from households that use tobacco.<sup>63</sup> Furthermore, illness and/or death and the consequent loss of the income of a wage-earner can be devastating to a family at or below the poverty line. The poorer, less educated and less skilled people are, the more likely it is that their livelihood entails physical work. When a wage-earner in a poor family becomes too ill to work, the family's food supplies and income often stop.<sup>64</sup>

### **Incidence of Consumption Taxes**

Consumption taxes, such as those imposed on tobacco, are sometimes described as regressive. A tax is said to be regressive if the ratio of tax paid to income is lower for higher-income groups. In low- and middle-income countries, the poor usually buy lower-priced cigarettes and smoke less,<sup>59</sup> making tobacco taxes less regressive than would otherwise be the case. This could apply even more strongly to Vietnam, where lower-cost waterpipe tobacco, mainly consumed by the poor (see Graph 1.1), is not currently taxed.

Given economic theory and the evidence (albeit limited) described above, an increase in tobacco taxes in Vietnam would probably lead to a relatively larger

reduction in cigarette use among the lowest income group (relative to higher-income groups) and generally encourage that group to reduce smoking and thus mitigate the large economic burden that it imposes, making tobacco tax even progressive. Additionally, there is some evidence that cigarette price increases in Vietnam may lead some cigarette smokers to quit cigarette smoking in favour of lower-cost waterpipe smoking, on which there is no tax burden.

The poor who did not quit or reduce smoking may be particularly hurt by a tax increase since they would end up paying more for tobacco at the individual level. This negative effect may be offset by the large positive health benefits the poorer group as a whole would reap. Additionally, as will be discussed, a portion of new tax revenues can be earmarked to helping poor smokers quit and/or other poverty reduction and social programs.

### **Tax Increases and Employment**

Given that higher tobacco prices (resulting from higher taxes) are expected to lead to a reduction in tobacco use, all other things equal, it is often argued that higher taxes on tobacco products necessarily lead to employment losses. However, this assertion ignores the fact that shifts in spending away from tobacco products are bound to generate new employment in other sectors, with the net impact generally positive.

Employment in tobacco cultivation and manufacturing accounts for a very small share of total employment in Vietnam. For a decline to occur in the tobacco growing or manufacturing sectors, absolute tobacco consumption must fall in response to the tax or price change. However, population growth and rising incomes in Vietnam will likely offset any

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**Employment in tobacco cultivation and manufacturing accounts for a very small share of total employment in Vietnam.**

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negative impact that higher taxes might have on overall tobacco employment. On average, Vietnam's population has grown by 1.5% per year since 1990, and real per capita GDP has been growing at 5.8% per year for the past decade.<sup>65</sup> Given these trends, tobacco control policies would be expected to have only a minimal impact on tobacco-related employment.<sup>66</sup>

Other factors that could affect tobacco employment in Vietnam are the government's explicit policy of expanding exports while at the same time domesticizing tobacco production (i.e. reducing imports by making the Vietnamese tobacco industry self-sufficient in terms of agricultural inputs; currently up to 50% of tobacco leaves and materials are imported). Since the tobacco cultivation sector in Vietnam is large and labour-intensive relative to the tobacco manufacturing sector, more workers may be affected by a reduction in tobacco use. And to the extent that legal and illegal imports might substitute for domestically produced cigarettes, domestic tobacco employment might be negatively affected. However, improvements in productivity that lead to reduced imports and higher domestic production may have the potential to more than offset any reduction brought about by tobacco tax increases. Furthermore, industry restructuring undertaken by the government — which has involved the closure of seven factories in recent years — might have already had a stronger impact on tobacco employment than any tax change could have in the near future.

### Product Substitution

The possibility of substitution between tobacco products caused by changes in relative prices is an important yet often overlooked issue. Product substitution, which occurs when tobacco users switch from one product to another, is likely to occur in Vietnam between the two main products used (waterpipe tobacco and cigarettes) or between different types of a same product (unfiltered vs. filtered cigarettes). The various changes in the special

consumption tax rates since 1990 may have generated some product substitution. For instance, because the tax rate for unfiltered cigarettes and filtered cigarettes made from domestic materials increased in 2006, while that for cigarettes made from imported materials decreased and waterpipe tobacco remained untaxed, there is a real chance of brand switching, or switching to waterpipe tobacco, however, specific tax limits this opportunity.

As seen earlier, there was evidence of product substitution in Vietnam in the 1990s. Laxminarayan and Deolalikar found that changes in the price of cigarettes are significantly and positively associated with the decision to switch from cigarette smoking to waterpipe smoking.<sup>67</sup> However, current smoking patterns indicate a move to cigarette smoking from waterpipe tobacco as income rises; hence, such substitution away from cigarettes will likely be dampened by rising income as tax and price changes paled in comparison to income changes over the past two decades.

### Increased Tax Revenue

Increasing tobacco taxes will nearly always generate higher government tax revenue.<sup>68</sup> Higher tobacco taxes, by and large, lead to higher prices. And higher prices, as seen earlier, reduce the quantity of tobacco products demanded. However, the percentage reduction in quantity is generally less than the percentage increase in price (i.e. price elasticity is less than 1, in absolute terms). Moreover, as taxes account for a small share of the price paid by smokers, a tax increase will translate into a smaller percentage change in retail price. For example, if tax constitutes 40% of the retail price (as is the case in Vietnam), doubling the tax rate (i.e. a 100% increase) would increase price by less than 60%.

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**Increasing tobacco taxes will nearly  
always generate higher government tax  
revenue.**

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Two factors can, however, mediate the expected positive relationship between higher taxes on tobacco products and increased government tax revenue. First, as discussed earlier, waterpipe tobacco is not taxed in Vietnam. Hence, some substitution away from cigarettes to waterpipe tobacco may offset the revenue-generating potential of higher tobacco taxes. Second, illicit cigarette trade is a common issue among emerging economies; options for addressing it are outlined below.

### Earmarking of Tobacco Tax Revenue

The World Health Organization recommends earmarking a portion of tax revenue on tobacco products to fund health promotion and poverty reduction activities.<sup>69</sup> Earmarking government revenues entails setting them aside, usually by law or through some constraining administrative mechanism, for spending on a pre-specified area or programme. For example, earmarked funds can be used to fund programmes to support the transition of poor tobacco farmers away from tobacco cultivation and into other vocations. Many countries earmark tobacco taxes for an array of different programs and services.

The Thai Health Promotion Foundation (ThaiHealth) is an example of a health-dedicated organization financed through earmarking: every year since 2001, 2% of the national tobacco and alcohol excise taxes collected in Thailand are channelled outside the normal budgetary process to ThaiHealth, whose action is directed at issues such as tobacco, alcohol and road traffic accidents. In Taiwan, NT\$ 5 per pack of cigarettes is dedicated to national health insurance (70%), tobacco control activities (10%), hygiene and health care work (10%) and social welfare programmes (10%). In the Philippines, 15% of excise taxes on tobacco are dedicated to agricultural programmes, while 5% of excise taxes on tobacco and alcohol are earmarked for the national health

insurance programme (2.5%) and health promotion activities (2.5%).

## Trade

### Imports

*Tobacco leaves.* Vietnam imports between 12,000 and 15,000 tonnes annually (or 40–50% of local production).<sup>65</sup> These imports originate primarily from China, and more recently but to a lesser extent India. Given the stated goal of domesticizing tobacco supply by 2015, the importance of tobacco leaf imports is expected to diminish gradually in the coming years.

*Cigarettes.* Cigarette and cigar imports were banned in Vietnam in 1990. Legal imports resumed as a result of the country's entry into the World Trade Organization (WTO) in January 2007, as removing the ban was part of Vietnam's commitment to the WTO. Imports are only allowed through the Vietnam Tobacco Import-Export Company, a trade-dedicated subsidiary of the state-owned Vinataba group. As seen earlier, cigarettes and cigars are subject to an import duty of 150% at the WTO "most favoured nation" rate, and of 225% for other countries.

*Tobacco materials (casings, blended tobacco, flavourings and other materials normally utilized in the production of cigarettes).* Most tobacco materials are only subject to a 30% import duty (45% for non-WTO members), and VAT is charged at a lower rate of 5% (compared to the standard 10% rate). Over the 2000–05 period, there was a considerable increase in the amount of legal material imports when the cigarette manufacturing sector sharply increased production and the available supply of domestic materials could not meet this increased demand. A decrease in cigarette production led to a reduction in material imports in 2006 — the proportion of material imports in the product import pattern of Vinataba was 25% in 2006, compared to 51% in 2005.<sup>70</sup>



## Exports

*Cigarettes.* Before 1998 Vietnam exported modest amounts of cigarettes. In 2001, the government put forth a goal of producing domestic cigarettes to substitute for smuggled ones as well as to increase exports. Over the 2001–05 period, the sector's exports rose annually by about 40%. In 2006, Vietnam exported 615 million packs valued at US\$ 46.5 million (about 15% of total production), 95% of which were accounted for by Vinataba. The main export markets are China and to a lesser extent the United Arab Emirates.

*Tobacco materials (casings, blended tobacco, flavourings and other materials normally utilized in the production of cigarettes).* Exports of tobacco materials in 2004 amounted to 6191 tonnes but were reduced to just a quarter of that the following year (1424 tonnes). This reduction was due to a transition from export of materials to domestic use to substitute for imports, as per government policies. The government of Vietnam stated explicitly its objective to make the tobacco manufacturing sector gradually more self-sufficient. The main export markets are currently the United Kingdom, Singapore, Malaysia, Sweden, Australia, Belgium and Greece.

## Smuggling

By its very nature, it is difficult to measure the extent of smuggling in any country. In Vietnam, for example, estimates of smuggling activity over the past decade range from as low as 20 million packs to 400 million packs per year. In a country with little or no legally imported cigarettes, this represents anywhere from 0.5% to 10% of market share.<sup>71</sup>

A number of possible explanations have been put forward to explain smuggling activity in Vietnam:

1. Perceived higher quality of illegally traded cigarettes not available in existing legal Vietnamese markets.
2. Lower taxes and less regulation in neighbouring countries (Laos and Cambodia).
3. Limited coordination between agencies (border patrol, customs, etc.).
4. Lack of incentives for state officers to combat smuggling.
5. Inappropriately low sanctions for smugglers.
6. Limited alternate employment or income opportunities for smugglers.
7. BAT pricing strategies that were cognizant of distribution channels.

Tobacco smuggling in Vietnam results in forgone tax revenue. One type of smuggling involves the illegal trade of lower-priced cigarettes, usually through the avoidance of tax. Since price is a prime determinant of smoking, the availability of lower-priced products has the potential to increase smoking and offset any potential health-related benefits associated with price increases of locally available cigarettes. Consequently, efforts such as regional price (and tax) changes may have greater potential to reduce smuggling activity of this nature.

The second type of illegal smuggling activity appears to be unrelated to price but instead is related to the perceived higher quality of illegal tobacco products. In 1994, BAT was given permission to locally produce the brand 555, which at the time dominated the market for smuggled cigarettes in Vietnam. Although the locally produced brand was significantly cheaper, smokers continued to prefer the illegal brand due its perceived higher quality. It would appear that BAT had significant influence over this perception<sup>72</sup> — company documents reveal that BAT controlled the pricing strategy of both products and promoted the “illegal” brand as superior, and their knowledge of smuggling routes allowed them to control supply to Vietnam. In curtailing this second type of smuggling activity, policy efforts need to focus on the behaviour of multinational tobacco companies.

**While there are several possible explanations for smuggling, there are also a number of measures that have the potential to mitigate illicit trade in tobacco products. One such strategy that has been implemented in Vietnam is the use of tax stamps.**

While there are several possible explanations for smuggling, there are also a number of measures that have the potential to mitigate illicit trade in tobacco products. One such strategy that has been implemented in Vietnam is the use of tax stamps. In 1999, a Prime Ministerial Decision required tax stamps to be placed on domestically manufactured cigarettes with the aim of differentiating these products from illegally imported cigarettes of the same trademark. This policy resulted in an increase in government revenue of VND 300–500 billion (US\$ 18.75–31.25 million) annually.<sup>71</sup> Another successful approach

involved simultaneous inspections in 61 provinces and cities. This 2002 project was aimed at controlling the transportation and trade of illegally imported foreign cigarettes, strengthening the organization of the domestic cigarette trading network, and handling violations relating to domestically produced cigarettes. One year after implementation, a significant decrease in the open display and trade of smuggled cigarettes was observed, although illegal activity was not eliminated entirely.<sup>71</sup>

Strategies that have been effective in jurisdictions outside Vietnam include the use of computerized record-keeping and tracking systems to monitor the movement of cigarettes, as was implemented in Hong Kong. Licensing requirements for firms involved in the tobacco manufacturing and distribution chain were introduced in France and Singapore, and mass media campaigns and public awareness-raising were used effectively in Germany.<sup>73</sup> Other possibilities are to develop stronger penalties for those who engage in smuggling, to devote more resources to enforcement, and to coordinate tax rates among neighbouring jurisdictions.<sup>73</sup>

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## V. Quantifying the Impact of Tobacco Tax and Price Increases

Tobacco tax increases are the most effective means to reduce tobacco use and also have the potential to increase government tax revenues. This section presents a brief overview of the potential impact of tobacco tax increases.

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**Tobacco tax increases are the most effective means to reduce tobacco use and also have the potential to increase government tax revenues.**

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Ranson et al. compute the cost and cost-effectiveness of various tobacco control interventions, including a worldwide 10% price increase.<sup>74</sup> The authors estimate the impact of a price increase in terms of the number of tobacco-related deaths avoided through reduced smoking prevalence and lower tobacco consumption levels. Price elasticities for smokers in 1995 are assumed to range between  $-0.4$  and  $-1.2$  in low- and middle-income countries and between  $-0.2$  and  $-0.8$  in high-income countries. In addition, the authors assume that half of the price responsiveness is due to a change in tobacco use prevalence and the other half is due to reduced consumption among existing smokers. To estimate the number of deaths avoided through price increases, it is assumed that the odds of avoiding a tobacco-related death is restricted to quitters and varies according to age (reduced consumption among existing smokers is assumed to have no effect on mortality). They find that a worldwide 10% real price increase through taxes would prevent between 5 million and 16 million deaths, 90% of which would be in low- and middle-income countries.

Levy et al. use a simulation model, SimSmoke, designed to predict the effect of tobacco control policies on tobacco use and premature mortality.<sup>75</sup> SimSmoke is applied to Vietnam to predict the effect of various tobacco control interventions on adult smoking

prevalence and mortality over a 30-year period from a 2002 base year. Included in the set of interventions considered are one-time tax increases of 10%, 30%, 50% and 100%, introduced in 2004, and maintained thereafter. Assuming age-specific price elasticities ( $-0.6$  for individuals aged under 24 years;  $-0.5$  for those aged 25–34;  $-0.4$  for those aged 35–44; and  $-0.3$  for those aged 45 years and above) and a relative risk of death for smokers of 1.35, a 10% tax increase is expected to reduce male and female smoking prevalence by 3.6% and 2.1% respectively. A 100% increase would reduce prevalence by 24.5% and 14.5% for men and women, respectively. The number of tobacco-related deaths avoided annually ranged from 1,386 to 9,490 for tax increases of 10% and 100%, respectively.

Guindon et al. forecast government revenue to 2010 (from various base years) using different elasticity assumptions in six countries in WHO's South-East Asia Region (Bangladesh, Indonesia, Maldives, Nepal, Sri Lanka and Thailand).<sup>76</sup> Using price and income elasticities of  $-0.75$  and  $+0.50$ , respectively, the authors forecast the difference in government revenue due to changes in consumption patterns with a 5% real price increase through taxes compared to constant real prices. Their results indicate that the price increase would reduce tobacco consumption and significantly increase government revenue in all countries. For example, a 5% real price increase could increase revenue over the forecast period by an extra US\$ 440 million in Nepal, US\$ 725 million in Sri Lanka and US\$ 994 million in Bangladesh.

Following the methodology of Ranson et al.,<sup>74</sup> we estimate the impact of tobacco price increases on tobacco-related deaths for Vietnam (see Appendix C for methodology and assumptions). For cigarettes, using a lower-bound elasticity of  $-0.25$ , we find a 33% increase in cigarette prices would lead to a reduction in tobacco related deaths of 170,000 by 2050 while a price increase of 70% would prevent 360,000 tobacco-related deaths. If such price increases were applied to all tobacco related products, the reductions in tobacco-related deaths would range from 100,000 to 500,000.

Using an upper-bound elasticity of  $-0.75$ , a 33% increase in cigarette prices would lead to a reduction of 508,000 tobacco-related deaths by 2050, rising to nearly 1 million fewer deaths for a cigarette price increase of 70%. If such price increases were applied to

all tobacco products, the reductions in tobacco-related deaths would be in the order of 710,000 and 1.4 million by 2050, respectively.

Table 5.1 presents the estimated impact of increasing cigarette prices by 10%, 33% and 50% in

**Table 5.1: The Impact of Increasing Cigarette Prices on Tobacco-attributable Mortality and Government Revenue**

	Base values	Projected values (approximate % increase in Retail Price)		
		10%	33%	50%
Retail Price (per pack of 20)	5,250	5,850	7,000	7,800
Special Consumption Tax (SCT) (%)	65%	85%	125%	150%
Total Tax (as % of Retail Price)	42.6%	48.5%	57.7%	61.5%
<b>Reduction in Number of Smokers (thousands) by 2050</b>				
Price Elasticities				
-0.25		-152.0	-501.4	-759.8
-0.50		-303.9	-1,002.9	-1,519.5
-0.75		-455.9	-1,504.6	-2,211.4
<b>Number of Lives Saved (thousands) by 2050</b>				
Price Elasticities				
-0.25		-51.3	-169.4	-256.7
-0.50		-102.7	-338.8	-513.4
-0.75		-154.0	-508.3	-744.3
<b>Additional Total Tax Revenue (millions of VND)</b>				
Price Elasticities				
-0.25		2,152,183	5,463,498	7,173,110
-0.50		1,903,335	4,293,086	5,069,394
-0.75		1,654,487	3,122,674	2,965,679
<b>Additional Total Tax Revenue (millions of USD)</b>				
Price Elasticities				
-0.25		134.5	341.5	448.3
-0.50		119.0	268.3	316.8
-0.75		103.4	195.2	185.4
<b>Total Tax Revenue (millions of VND)</b>	<b>7,552,900</b>			
Price Elasticities				
-0.25		9,705,083	13,016,398	14,726,010
-0.50		9,456,235	11,845,986	12,622,294
-0.75		9,207,387	10,675,574	10,518,579
<b>Total Tax Revenue (millions of USD)</b>	<b>472</b>			
Price Elasticities				
-0.25		606.6	813.5	920.4
-0.50		591.0	740.4	788.9
-0.75		575.5	667.2	657.4

Note: Total tax revenue includes revenue from the Special Consumption Tax and from Vietnam's 10% VAT. The Total Tax Revenue base value is from 2008. For total cigarette sales, a base value of 3,510 million packs is used (based on 2008 production and export figures). See Appendix C for additional details regarding methodology and assumptions of the projection model.

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**...a modest 10% increase in cigarette prices is expected to reduce the number of smokers by about 300,000, avert more than 100,000 premature deaths and generate more than VND 1,900,000 million (US\$ 119 million) in additional tax revenue.**

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terms of changes in the number of cigarette smokers, changes in the number of premature deaths averted and new revenues generated from cigarette taxes. Three scenarios using different price elasticity estimates are presented (low, mid and high, representing total price elasticity estimates of  $-0.25$ ,  $-0.50$  and  $-0.75$ , respectively). Simulation estimates presented in Table 5.1 represent the effect of cigarette price changes and hence their impact on tobacco-attributable mortality and government revenue only through changes in the number of cigarette smokers and total cigarette sales.

When assuming a mid-range total price elasticity estimate of  $-0.50$ , a modest 10% increase in cigarette prices is expected to reduce the number of smokers by about 300,000, avert more than 100,000 premature

deaths and generate more than VND 1,900,000 million (US\$ 119 million) in additional tax revenue.

The estimates of changes in the number of cigarette smokers and changes in the number of premature deaths averted presented here are likely conservative for a number of reasons. First, only the 2005 cohort of smokers is used, hence ignoring the potential impact of higher prices on future cohorts of smokers. Second, reduced consumption in smokers that do not quit is assumed to have no impact on mortality. Third, we assume that only 4 in 10 current smokers will eventually be killed by their tobacco use.<sup>74</sup>

Our simulation of new revenues generated from increased taxes has limitations that merit discussion. First, because of lack of data on total consumption or sales of waterpipe tobacco, we are unable to model the impact of waterpipe tobacco price increases on tax revenue. We are able, however, as discussed above, to model the impact of waterpipe tobacco price increases on the number of waterpipe tobacco users and the number of premature deaths averted using available prevalence data. Second, we assume that all factors, that may influence the use of tobacco products other than price, including income, remain constant. Given the expected growth of Vietnam's economy and the likely positive income elasticity, our revenue estimates are likely conservative.

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## VI. Implementation of Tobacco Tax Increases

Changing taxes on tobacco involves a series of legal and administrative steps or actions. These are described here as they apply in Vietnam and include a short discussion of the administrative costs associated with changing tobacco taxes.

### Administration

#### Tobacco tax management

The Vietnamese Ministry of Finance is responsible for tax issues, including drafting tobacco tax policies and related documents such as policy implementation guidelines, managing tobacco tax collection and spending, and overseeing enterprises' financial administration. Tobacco tax payments are collected by the Ministry of Finance, deposited into a government budget fund, and subsequently assigned to government expenditure.

The Vietnam National Assembly sets rates for the tobacco special consumption tax, the enterprise profit tax and the value-added tax. The prime minister sets the cigarette import tax; the Ministry of Finance defines the base price in order to calculate the tax applied to imported materials. The tax bureau is responsible for collecting all tobacco taxes. It has tax collection units at the province and district levels and tax collection teams in communities.

#### Process for changing the tobacco tax

A tobacco tax law is drafted by the Ministry of Finance, and then sent to related ministries — such as the Ministry of Industry and Trade and the Ministry of Justice — for comment. The draft law is then rewritten as necessary, and a new draft is submitted to the National Assembly for a vote approval.

In order to reach the National Assembly meeting, the tobacco tax law must be on the National Assembly's working agenda, for which the Ministry of Justice is partly responsible.\* The Ministry of Finance should therefore work closely with the Ministry of Justice in drafting and submitting new tobacco tax laws. Once the tax law is approved, the Ministry of Finance is responsible for drafting a guideline decree to implement the tobacco tax, which should be signed by the prime minister. The Ministry of Finance would then issue instructions or guideline documents to detail the implementation of the tobacco tax law, which are to be signed by the Minister of Finance.

The Vietnam Committee on Smoking and Health (VINACOSH) plays an active and important role in the process for changing tobacco taxes. VINACOSH is in regular dialogue with Ministry of Finance, organizes workshops with the National Assembly (NA) and supports a number of mass media activities.

#### Tax collection issues

A few measures are currently in place to combat cigarette tax evasion and cigarette smuggling, including tax stamps and various sanctions for individuals convicted of cigarette smuggling. Cigarette tax stamps were introduced in 1999 and applied beginning 1 April 2000. Although not the policy's primary purpose, all enterprises since then have had to declare their exact output, whereas in previous years they had been able to underreport production in an attempt to reduce their tax burden. The introduction of tax stamps is one of the reasons behind the 32% increase in cigarette production in 2000 (i.e. the growth was due in part to more accurate reporting, not growth of actual output). Moreover, it is reported that the measure has increased government revenue by about VND 300 billion to VND 500 billion annually (US\$ 18.75 to US\$ 31.25 million).<sup>77</sup>

\* The Ministry of Justice is responsible for setting up the agenda for developing laws and ordinances on the issues belonging to government and follow-up to ensure the legal consistency with existing legislations and to ensure that deadlines are met.

In general, existing sanctions for smuggling seem to be ineffective. For petty smugglers (usually small cross-border cigarette carriers), the fine varies according to number of cigarette packs being smuggled. But since most petty smugglers are poor and are caught carrying less than the threshold amount (1500 packs), financial penalties might not be the most effective way to curb smuggling of this nature. Penalties for large-scale criminal smugglers can be quite high, with fines of VND 3 million to VND 100 million (US\$ 187.5 to US\$ 6250), in addition to lengthy jail sentences and in extreme cases even the death penalty. Although such stringent sanctions should act as a deterrent, these seem to be ineffective because the probability of being caught is low. The ringleaders of most smuggling networks have yet to be arrested and convicted, as this would require resource-consuming investigations by enforcement officials.<sup>77</sup>

It is important to note that costs associated with various tax payment methods differ significantly between a uniform tax and a tax differentiated by product type (multi-level tax). It is simpler and cheaper to charge a uniform tobacco tax since calculations are based on enterprise revenue, where the total tax payment is equal to the company's revenue times the tax rate. In contrast, with multi-level taxes such as those applied in Vietnam prior to 2006,

the calculation is complicated and easily distorted because it is a function of the share of imported materials in the total cost of a cigarette pack. This calculation is costly and creates room for corruption in determining an enterprise's cigarette tax payment. The tax collection fee is similar for both types (uniform and multi-level) since the collection process is similar.

Currently there is no specific excise tax applied to cigarettes in Vietnam, thus, the tax reform most likely to be effective for tobacco control would be to introduce a specific excise tax for the following reasons:

- Specific excises taxes limit brand switching to cheaper cigarettes and thus are more effective in reducing smoking prevalence, as opposed to ad valorem excises, which generally simply lead to a greater spread in prices between cheaper and more expensive cigarettes.
- Specific excises taxes are also simpler to administer because it is only necessary to determine the quantity of the product and not necessary to determine its value.\*
- To maintain effectiveness, specific excises should be adjusted each year automatically, thereby keeping pace with inflation and increased purchasing power.

#### Endnote for Chapter VI

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\* Determining the value can be very difficult when the cigarette manufacturer chooses to sell to distributors at an artificially low price, in order to reduce the cigarette tax liability.

## VII. Recommendations

Taxes on manufactured tobacco products should be increased regularly and uniformly across all tobacco-types.

- Prices of tobacco products, relative to other goods and services, should become less affordable over time.
- It is important that taxes be increased uniformly across all product types so as not to encourage substitution among tobacco products.
- Waterpipe tobacco, currently exempt from all taxes, should be taxed.

More specifically, given:

- a. The relatively low level of current taxes on tobacco products as a proportion of retail price in Vietnam.
- b. The inelastic demand for tobacco products in Vietnam.
- c. The rate of growth of the Vietnam economy (in excess of 8% annually in recent years).
- d. Recent, current and projected relatively high inflation rates (in excess of 7% since 2004 and expected to reach 18% in 2008 and 10% in 2009).<sup>78,79</sup>
- e. Recent changes introduced to simplify the taxation structure of tobacco products in Vietnam and the fact that no specific excise taxes are currently applied on tobacco products.
- f. The market for tobacco products in Vietnam is characterized by a broad range of brands available at widely varying prices.

1. **Increase the *special consumption tax* annually so that prices of tobacco products increase by at least, and preferably in excess of, the rate of growth of the Vietnam economy.**

The *Special consumption tax*, set at 65% since 1 January 2008, should be increased annually by 20% (i.e. to 85% in 2009, 105% in 2010, etc.) thereby automatically raising prices by approximately 10% annually. A one time adjustment would not be adequate due to the excessive rate of growth of the Vietnam economy. Such an increase can be expected to raise an additional VND 1.9 trillion (US\$ 119 million) in tax revenue annually and avert approximately 103 000 premature deaths.

2. **With the objective to significantly increase the prices of the lowest-priced tobacco products and hence reduce opportunities to substitute down to cheaper products as taxes are increased, introduce an effective specific tax, indexed to inflation or with scheduled increases to meet or outpace expected inflation.**

Given expected high inflation rates in future years, it is imperative to prevent the new specific tax from being eroded by rising overall prices. It is also imperative that the new specific tax does not come at the expense of a reduced or stagnant *special consumption tax*. A specific VND 1750 (US\$ 0.11) tax per pack of 20 cigarettes, indexed to inflation or with scheduled increases to meet or outpace expected inflation, should be introduced. Such a tax would raise average prices by approximately 30% and can be expected to raise an additional VND 4.3 trillion (US\$ 268 million) in tax revenue annually and avert approximately 339,000 premature deaths.

3. **Given that waterpipe tobacco is currently exempt from all taxes, and with the objective to reduce opportunities to substitute from cigarette to cheaper waterpipe tobacco as cigarette taxes are increased, it is recommended that a specific waterpipe tobacco excise tax be introduced.**



A specific excise of VND 1000 (US\$ 0.06) per 100 grams of waterpipe tobacco, indexed to inflation or with scheduled increases to meet or outpace expected inflation, should be introduced.

4. **Strengthen anti-smuggling measures.**

While difficult to assess, some estimates put the share of smuggling in Vietnam at nearly 10% of total sales.<sup>80</sup> The tax stamp policy introduced in 2000 by the government of Vietnam should be maintained and reinforced, as the use of tax stamps can facilitate the identification of illegally produced or imported products. Other anti-smuggling measures such as licensing requirements and better enforcement should be initiated.

5. **Integrate tobacco control in broader poverty reduction efforts.**

The considerable health impact of tobacco use is well documented. However, the contribution of tobacco use to poverty is often under-appreciated. As the burden of disease attributable to tobacco use is increasingly borne by low- and middle-income countries such as Vietnam, tobacco control should be integrated in broader poverty reduction efforts.<sup>81</sup>

Earmarking a portion of the revenue from tobacco taxes for broad health programmes such as health insurance, health promotion and tobacco control activities is recommended.

#### Endnotes for Chapter VII

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<sup>80</sup> Ha NTT, Thuy PM, Anh NS, et al. Cigarette smuggling in Vietnam: Problems and solutions. *Journal of Practical Medicine* 2006;533:117-125.

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## Appendix A: National Surveys of Tobacco Use in Vietnam

### Background

Between 1992 and 2006, four national surveys were undertaken to measure the extent and distribution of tobacco use in Vietnam. The 1992–93 *Vietnam Living Standards Survey* (VLSS) surveyed 4800 households. Twenty percent of the sample was selected from urban areas and geographical stratification was applied in order to be representative of the Vietnamese population as a whole. Questions were included on whether the type of tobacco product used was cigarette, pipe, or chewing tobacco. The amount of tobacco consumed was measured in terms of grams smoked or chewed per day, and tobacco expenditure information was gathered at the household level. The VLSS was conducted for a second time in 1997–98, using a larger sample of 6000 households. A section of the household questionnaire was revised to provide more detail on health-related issues, and questions were modified to capture the usage of self-rolled tobacco products. The inclusion of home-made cigarettes may increase the reported prevalence of tobacco use, especially for the southern regions of the country. The amount of tobacco used was measured in terms of the number of cigarettes smoked per day, and expenditure on tobacco products was asked at the individual as opposed to household level.

In 2001–02, the *Vietnam National Health Survey* (VNHS) was conducted based on a sample which covered all 61 provinces including urban and rural areas and coastal and mountainous areas, for a total of 36 000 households. Whereas the previous two VLSS surveys asked “Do you currently smoke cigarettes?”, the VNHS identified current smokers as those who consumed more than seven cigarettes/hand-rolled cigarettes/hits from a water pipe in a week. Expenditure was measured by asking how much

money the individual spent buying tobacco for smoking.

The 2006 *Vietnam Household Living Standards Survey* (VHLSS) component that measured tobacco use was conducted using a sample of 9189 households and is nationally representative as well as representative across Vietnam’s eight regions, urban and rural strata and provinces. VHLSS measures tobacco use by asking the following questions: Have you ever smoked cigarette or pipe tobacco?; Now do you smoke every day, sometimes or already quit smoking? Unlike VLSS and VNHS, VHLSS does not differentiate between cigarette and waterpipe tobacco use.

Because the four surveys differ slightly in terms of sampling technique and questions asked, direct comparisons of the data should be made with caution. However, the information gathered is valuable in that it presents a general portrait of trends in tobacco use in Vietnam.

### Key Trends

Overall, between 25 and 30% of the Vietnamese population is estimated to use tobacco products. However, the prevalence of tobacco use differs greatly according to sex. Among females\* the estimated prevalence of tobacco use ranges from 1.8% of the population (VNHS ‘01) to 4.1% (VLSS ‘93). Among males, estimates range from 50.7% (VLSS ‘98) to 61.3% (VLSS ‘93) (see Table A1). In general, the prevalence of tobacco use is higher in rural areas relative to urban areas for both males and females. In terms of differences across age groups, for females, prevalence is higher among older cohorts. Among males, prevalence is highest in the 35–44 age group. All three surveys indicate that for both males and females, the overall prevalence of tobacco use decreases in progressively higher income quintiles.

With respect to the quantity of tobacco used, the mean number of cigarettes smoked per day was found

\* All figures refer to individuals aged 15+ unless otherwise specified.

**Table A1: Prevalence of Tobacco Use by Sex and Residence, Age Group, and Income Quintile**

		VLSS 1993		VLSS 1998		VNHS 2001		VHLSS 2006	
		Males	Females	Males	Females	Males	Females	Males	Females
Total aged 15+		61.3	4.1	50.7	3.2	56.1	1.8	49.2	1.5
Urban		56.6	2.7	47.4	1.9	55.1	1.4	46.9	1.2
Rural		62.6	4.6	51.7	3.6	56.4	2	50.0	1.6
Age	15–24	38.7	0.5	25.5	0.2	31.6	0.3	21.5	0.5
	25–34	74.6	1.6	65.6	0.9	69.8	0.7	59.4	0.8
	35–44	79.2	3.9	69.0	1.9	72.2	1.3	68.9	0.9
	45–54	71.3	8.2	66.1	5.2	67.9	3.6	66.7	2.0
	55–64	66.5	10.3	58.9	9.7	57.0	5.8	56.1	2.8
	65+	56.3	11.6	44.9	11.8	46.1	4.8	43.0	3.6
Income quintile	Q1: Poorest	65.1	8.1	57.0	4.8	62.3	4.3	55.4	3.6
	Q2	63.7	4.4	53.5	4.5	59.8	1.7	53.2	1.3
	Q3	63.8	4.3	52.9	2.7	55.7	1.4	48.8	0.8
	Q4	58.9	2.5	48.0	2.5	54.3	1.3	47.2	1.0
	Q5: Richest	56.3	2.2	42.1	1.5	50.7	0.9	43.3	0.9

to be around 11 or 12 for men, and around 8 or 9 for women. Men in rural areas tended to have a higher mean number of cigarettes smoked per day compared to men in urban areas. However, the same trend was not observed for women. Among smoking households, mean yearly household expenditure on tobacco products ranged from 185.67 thousand VND (VLSS '93) to 490.05 (VLSS '98). Mean household tobacco expenditure rises with income quintiles.

### Cigarette vs. waterpipe tobacco usage

The prevalence of waterpipe tobacco use is higher in rural areas. Among males in urban areas, between

3.8% (VNHS '01) and 12% (VLSS '93) were estimated to use waterpipe tobacco. In rural areas, between 16% (VNHS '01) and 23% (VLSS '98) of males used these alternate types of tobacco products.

Although the overall prevalence of tobacco use decreases in progressively higher income quintiles, among males, the prevalence of cigarette use increases and the use of waterpipe tobacco decreases in higher income quintiles. For females, the prevalence of waterpipe tobacco use decreases in higher income quintiles, but cigarette use does not increase correspondingly.

**Table A2a: Proportion of Males Aged 15 and Over who Smoke by Tobacco Product, and Residence, Age Group, and Income Quintile**

		VLSS 1993		VLSS 1998		VNHS 2001	
		Cigarette	Waterpipe	Cigarette	Waterpipe	Cigarette	Waterpipe
Total aged 15+		43.9	19.7	34.9	19.4	38.8	13.0
Urban		47.4	12.0	43.1	6.9	48.6	3.8
Rural		42.9	21.9	32.6	23.0	35.6	16.0
Age	15–24	32.0	8.6	21.1	5.9	26.6	2.7
	25–34	51.3	27.1	48.1	22.4	50.6	13.3
	35–44	55.9	26.7	45.0	29.7	46.9	18.8
	45–54	47.8	24.8	42.5	28.5	43.8	19.9
	55–64	44.9	22.4	34.7	27.8	32.8	21.0
	65+	37.9	18.4	25.2	22.2	24.2	20.0
Income quintile	Q1: Poorest	37.7	29.1	28.6	33.1	31.9	25.6
	Q2	39.2	27.1	32.4	25.5	35.4	18.8
	Q3	42.3	24.0	36.5	20.4	36.0	14.1
	Q4	46.6	15.0	37.3	14.2	41.8	8.4
	Q5: Richest	51.1	7.5	39.4	5.4	46.2	2.5

**Table A2b: Prevalence of Females Aged 15 and Over who Smoke by Tobacco Product, and Residence, Age Group, and Income Quintile**

		VLSS 1993		VLSS 1998		VNHS 2001	
		Cigarette	Waterpipe	Cigarette	Waterpipe	Cigarette	Waterpipe
Total aged 15+		2.3	1.9	1.0	2.3	0.9	0.9
Urban		1.8	1.0	0.9	1.0	1.1	0.3
Rural		2.4	2.2	1.1	2.7	0.8	1.1
Age	15–24	0.3	0.2	0.1	0.2	0.2	0.1
	25–34	1.4	0.2	0.4	0.6	0.5	0.4
	35–44	2.3	1.7	1.0	1.0	2.2	2.2
	45–54	5.5	2.9	2.2	3.2	2.2	2.2
	55–64	4.9	5.4	3.3	6.4	1.9	2.8
	65+	4.4	7.4	2.0	10.0	1.9	2.8
Income quintile	Q1: Poorest	4.6	3.6	1.3	3.7	1.2	2.9
	Q2	1.7	2.8	1.1	3.5	0.9	0.8
	Q3	2.4	2.0	0.6	2.2	0.8	0.5
	Q4	1.5	1.1	1.1	1.5	0.8	0.5
	Q5: Richest	1.6	0.7	1.0	0.5	0.7	0.2

## Appendix B: Estimating the costs attributable to tobacco use for Asian and low- and middle-income countries

Illnesses and deaths attributable to tobacco use place a financial burden on individuals and on society. A number of studies have been undertaken to estimate the macro-level costs of tobacco use for high-income countries, but there has been relatively little research into the magnitude of such costs for low- and middle-income countries. The following is an overview of key findings from the existing literature regarding the costs of tobacco use for Asian and low- and middle-income countries. Also discussed are the methodological considerations associated with research in this area.

### Measuring the costs of tobacco use

The literature estimating the costs of tobacco use could be based principally around two main perspectives: costs to the health-care system, and costs to society more broadly.

#### Health care perspective

The health-care system perspective looks at the mortality- and morbidity-related health care expenditures attributable to tobacco use and exposure to second hand smoke. Examples of expenditures which may be included are the costs of hospitalization, outpatient/ambulatory care, physicians' services, services of other health care professionals, prescription drugs for treatment, and home care. Within this perspective, there are two broad approaches for measuring the health-related costs attributable to smoking. The first is the relative risk (RR) method, which uses epidemiological evidence to ascertain the risk of smokers developing particular diseases, relative to the risk borne by non-smokers. The second

approach is the analytic method (also referred to as the econometric, all diseases or top-down approach), which compares the health services utilization of smokers and non-smokers. The analytic approach is able to capture the fraction of medical costs attributable to tobacco use, irrespective of particular diseases.

#### Societal perspective

The societal perspective is broader in that it considers, in addition to health care costs, indirect costs associated with tobacco use, notably productivity losses.\* This involves estimating the costs to society as a result of forgone income stemming from tobacco-attributable illnesses and deaths. There is, however, a lack of consensus surrounding methodologies for calculating productivity losses attributable to tobacco use — various methods used include the human capital approach, demographic approach, and friction method. It is important to note that the approach taken has a significant impact on the magnitude of the costs.†

#### Key findings of studies

Although there is a scarcity of formal literature examining the costs of tobacco use for Asian and low- and middle-income countries, a number of studies have examined these issues in Bangladesh, Burma, China, India, Mexico, Thailand, and Vietnam.

Overall, estimated costs attributable to tobacco use range from a low of \$2 million USD, in the case of Burma, to upwards of \$5 billion for China (Tables B1–B3). In terms of health-care costs, estimates ranged from \$2 million to \$1.8 billion (again, for Burma and China respectively). All studies looked at the hospitalization costs associated with tobacco use, but there was substantial variation in terms of the other health care components considered. For example, a study of Thailand (Sarntisart, 2003) only

\* Indirect societal costs also include intangible costs such as the psychological effects on the individual associated with his/her own tobacco-related illness or premature death and the pain and suffering incurred by others from the tobacco-related illness or death of the user.

† Costs estimated using the human capital approach are often significantly higher.

considered outpatient/ambulatory care costs in addition to hospitalization expenses, whereas a Vietnamese study (Ross et al. 2007) looked at the costs of prescription drugs, home care, and ambulance/transportation expenses. Studies of high-income countries also exhibited a wide variation in the diseases and health-care services considered. Given that most studies do not examine the full range of diseases and services, the costs presented may represent low estimates.

Only a small number of these studies have looked at the tobacco-attributable productivity costs for low- and middle-income countries with significant variation in the findings. For China and Bangladesh, the magnitude of tobacco-attributable productivity costs was estimated to be approximately twice that of health-care costs (WHO, 2005; Sung et al. 2006). In contrast, studies for India and Vietnam found productive losses to constitute significantly less than half of total costs (Rath and Chaudhry, 1995; Ross et al. 2007). This variation may stem from the fact that the studies of China and Bangladesh included mortality-related productivity losses, whereas India and Vietnam only considered morbidity. Furthermore, the study of Vietnam included only a limited number of diseases.

On average, the productivity losses attributable to tobacco use are lower for low- and middle-income countries relative to high-income countries. This finding could be linked to lower wage levels in low- and middle-income countries. Since wage levels are an important basis for the productivity loss calculation, the lower starting point would lower the overall estimates.

### High-income Asian countries

Although Hong Kong, Korea, Taiwan and Singapore are considered high-income countries, data from studies on these countries could potentially be used to inform models for low- and middle-income Asian countries. For example, in Hong Kong, the use of sensitivity analysis revealed that costs are quite sensitive to changes in parameters (McGhee et. al.,

2006). By varying the smoking attributable fraction, the authors demonstrated that costs could vary from a low of \$6 billion up to \$12 billion. These studies also confirm the relative importance of productivity losses and the relationship with income. For example, studies of Korea, Taiwan and Singapore found that productivity costs represent a significant share of the total costs attributable to tobacco use, i.e. more than three-quarters (Kang et al. 2003; Yang et al. 2005; Quah et al. 2002).

### Methodological considerations

The small number of studies estimating the costs of tobacco use for low- and middle-income countries is itself a limitation in attempting to inform policy in this area. Furthermore, the results of the existing studies should be considered in the context of their methodological constraints. In terms of estimating the health-care costs of tobacco use for low- and middle-income countries, one major challenge is the scarcity of detailed data on illnesses and costs. All studies used the relative risk (RR) approach to measure health-care costs attributable to smoking - yet limited survey data makes it difficult to construct accurate relative risk profiles and present the data in a transparent manner. In addition, the RR approach is limited in that it captures only the costs of interventions for specific diseases. Utilization of the analytical approach might facilitate a more comprehensive analysis. In this respect, it is also important to note that the diseases considered by each study were varied, and in some cases, the particular illnesses being examined were not made explicit.

In terms of interpreting data on productivity losses, it is important to note that different methodological approaches to productivity can yield widely varying results. Some studies, such as those for India and Vietnam, likely under-estimate productivity losses by including only morbidity-related costs and not those stemming from mortality (Rath & Chaudhry, 1995; Ross et al. 2007).

Also of concern is the general absence of sensitivity analysis, which creates uncertainty with respect to the robustness of results. For example, of the

studies estimating productivity costs for low- and middle-income countries, sensitivity analysis was conducted only in the case of China (Sung et al. 2006).

**Table B1: Tobacco Use Related Health Care Costs**

Study	Year of data	Approach <sup>a</sup>	Source of RR <sup>b</sup>	RR reported	Diseases included <sup>c</sup>	Services included <sup>d</sup>	Sensitivity analysis <sup>e</sup>	Health care costs (million)		
								LCU	Currency unit	2000 PPP <sup>f</sup>
Low and middle income countries										
Bangladesh WHO (2005)	2003	RR	–	y	M,C,R,T	H,OP,HC	n	8,540	BTD	647
China Sung et al. (2006)	2000	RR	–	y	M,C,R,T	H,OP,D,T	y	1,828	USD	1,828
India Rath & Chaudhry (1995)	1990	RR	–	n	M	H, P, T	n	833	INR	198
Mexico — Morelos Reynales et al. (2006)— medium	2001	RR	US	y	Is	H,OP,D	y	2	USD	2
Reynales et al. (2005)— medium	2001	RR	US	y	M,Is,R	H,OP,D	y	124	MXN	18
Myanmar Kyaing (2003)	1999	RR	China	y	M,C,R,T	H,OP,D	n	85	MMK	2
Vietnam Ross et al. (2007)	2005	RR	–	Y	M,Is,R	H,D,HC,T	n	1,094,675	VND	308
High income countries										
Hong-Kong McGhee et al. (2006)— medium	1998	RR	–	y	M,C,R,D,T,S	H,OP,P,N,HC	y	459	USD	485
McGhee et al. (2002)— medium	1998	RR	–	y	S	P	y	32	USD	34
Korea Kang et al. (2003)— base	1998	RR	–	y	M,C,R,D,F	H,OP,P,T	y	221	USD	234
Singapore Quah et al. (2002)— low	1997	RR	US,UK, Aus	y	M,C,R,F	H	y	74	SGD	44
Taiwan Yang et al. (2005)	2001	RR	–	y	M,C,R,D	H,OP	n	398	USD	387

Notes: n.a. = not applicable; n.r. = not repeated; y = yes; n = no

a. RR=Relative Risk (synthetic); A= All diseases (econometric/analytic)

b. If not from 'own' country

c. M=malignant neoplasms; C=cardiovascular and circulatory diseases (includes Is); Is=ischemic heart disease; R= nonmalignant respiratory disease; D= digestive diseases; F= injuries due to fire; P= perinatal conditions; Pc = pregnancy, childbirth conditions; S= secondhand smoke; T= tuberculosis  
Bangladesh: chronic bronchitis only.

Mexico (Reynales et al. 2005): lung cancer, acute myocardial infarction, chronic obstructive pulmonary disease only

Vietnam: lung cancer only

d. H= Hospitalization; OP= Outpatient/ambulatory care (e.g., visits/clinics); P=Physician costs (not included in hospitalization and outpatient care); PS=professional services other than physicians; d= Prescription drugs for treatment; HC= Home care; N= Nursing home stay; T= Ambulance/Transportation; O=Other

e. sensitivity analyses relevant to cost of health care conducted.

f. In order to gauge the magnitude of the costs presented, for each cost category, values are first converted to U.S. purchasing power parity (PPP) dollars for the year of the study and then brought forward (or backward) to the year 2000 using relevant Consumer Price Index (CPI) figures for the U.S.

**Table B2: Productivity Losses Attributable to Tobacco Use**

Study	Year of data	Approach <sup>a</sup>	Diseases included <sup>b</sup>	Components <sup>c</sup>	Method <sup>d</sup>	Sensitivity analysis <sup>e</sup>	Discount rate	Growth rate (earnings)	Productivity losses (million)		
									LCU	Currency unit	2000 PPP <sup>f</sup>
Low and middle income countries											
Bangladesh WHO (2005)	2003	RR	M,C,R,T	M	HC	n	5	–	18,865	BTD	1,428
China Sung et al. (2006)	2000	RR	M,C,R,T	M,Mb	HC	y	3	–	3,206	USD	3,206
India Rath & Chaudhry (1995)	1990	RR	M	Mb	n.a.	n	n.a.	n.a.	334	INR	79
Vietnam Ross et al. (2007)	2005	RR	M,Is,R	Mb	n.a.	n	n.a.	n.a.	67,154	VND	19
High income countries											
Hong-Kong McGhee et al. (2006)—medium	1998	RR	M,C,R,D,IS	M,Mb	HC	y	3	–	230	USD	243
Korea Kang et al. (2003)—base	1998	RR	M,C,R,D,F	M,Mb	HC	y	8.42	7.73	2,735	USD	2,889
Singapore Quah et al. (2002)—low	1997	RR	M,C,R,F	M,Mb	HC	y	4.38	5	600	SGD	356
Taiwan Yang et al. (2005)	2001	RR	M,C,R,D	M	HC	n	3	6	1,390	USD	1,352
Tsai et al. (2003)	1997	n.a.	n.a.	Mb,O	R	y	0	0	740	USD	794

Notes: n.a. = not applicable; n.r. = not repeated; y = yes; n = no

a. RR=Relative Risk (synthetic); A= All diseases (econometric/analytic)

b. If not from 'own' country

c. M=malignant neoplasms; C=cardiovascular and circulatory diseases (includes Is); Is=ischemic heart disease; R= nonmalignant respiratory disease; D= digestive diseases; F= injuries due to fire; P= perinatal conditions; Pc = pregnancy, childbirth conditions; S= secondhand smoke; T= tuberculosis

Bangladesh: chronic bronchitis only.

Mexico (Reynales et al. 2005): lung cancer, acute myocardial infarction, chronic obstructive pulmonary disease only

Vietnam: lung cancer only

d. H= Hospitalization; OP= Outpatient/ambulatory care (e.g., visits/clinics); P=Physician costs (not included in hospitalization and outpatient care); PS=professional services other than physicians; d= Prescription drugs for treatment; HC= Home care; N= Nursing home stay; T= Ambulance/Transportation; O=Other

e. sensitivity analyses relevant to cost of health care conducted.

f. In order to gauge the magnitude of the costs presented, for each cost category, values are first converted to U.S. purchasing power parity (PPP) dollars for the year of the study and then brought forward (or backward) to the year 2000 using relevant Consumer Price Index (CPI) figures for the U.S.

Finally, caution must be exercised when comparing results across countries. The range of diseases and health services available varies considerably from country to country, as do the costs of particular interventions. Furthermore, the

difference in wage levels and inflationary pressures across low- and middle-income countries affects the discount rate involved in productivity calculations. To obtain more reliable estimates, an appropriate discount rate should be applied to reflect country specific characteristics.



**Table B3: Estimates of Costs Attributable to Tobacco Use (million 2000 PPP)\***

Study	Year of data	Health care costs	Productive losses	Total costs
<b>Low and middle income countries</b>				
Bangladesh WHO (2005)	2003	647	1,428	2,075
China Sung et al. (2006)	2000	1,828	3,206	5,034
India Rath & Chaudhry (1995)	1990	198	79	460
Mexico — Morelos Reynales et al. (2006)— medium	2001	2	n.a.	2
Reynales et al. (2005)— medium	2001	18	n.a.	18
Myanmar Kyain (2003)	1999	2	n.a.	2
Vietnam Ross et al. (2007)	2005	308	19	327
<b>High income countries</b>				
Hong-Kong McGhee et al. (2006)— medium	1998	485	243	9,880
McGhee et al. (2002)— medium	1998	34	n.a.	34
Korea Kang et al. (2003)— base	1998	234	2,889	3,123
Singapore Quah et al. (2002)— low	1997	44	356	400
Taiwan Yang et al. (2005)	2001	387	1,352	1,739
Tsai et al. (2003)	1997		794	794

Note: \* Total may exceed sum of health care expenditures and productivity losses since in a few cases total costs also include, where relevant, intangible and indirect costs (such as costs of fire).

A number of other costs and savings related to tobacco use are included in the study (e.g. social security, life insurance, health effects on others and morbidity, disability and work loss) but could not be accurately separated into the relevant categories.

In order to gauge the magnitude of the costs presented, for each cost category, values are first converted to U.S. purchasing power parity (PPP) dollars for the year of the study and then brought forward (or backward) to the year 2000 using relevant Consumer Price Index (CPI) figures for the U.S.

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## Appendix C: Methodology and assumptions

1. Estimate the number of smoking-attributable deaths in Vietnam by age group and sex at baseline. Tobacco prevalence figures are derived by age group (15-19, 20-29, 30-39, 40-49, 50-59, 60+), sex and tobacco products using the 2001-02 Vietnamese National Household Survey (VNHS). Tobacco related deaths are calculated by applying these figures using a conservative estimate of 40% tobacco mortality.
2. Age- and gender-specific price elasticities are calculated using overall elasticity assumption of -0.25 and -0.75 (based upon the review presented in Chapter 3) and assuming that:
  - a) youths (aged 15-19 years) are 3.1 times more sensitive and young adults (aged 20-29) are 1.5 times more sensitive to price changes than older adults (aged 30+);
  - b) price changes impact tobacco-attributable mortality solely through changes in smoking prevalence (prevalence impact is assumed to be 50%).
3. Reductions in tobacco-related deaths associated with price increases are calculated by multiplying the respective price increase (33%, 50% and 70%) by age- and gender-specific price elasticities and applying those to baseline estimates of tobacco-related deaths. Not all quitters avert tobacco deaths in the model. For example, 95% of quitters aged 15-19 years avert tobacco deaths but only 25% of those aged 60 years and older do. For additional information the reader is referred to Ranson MK, Jha P, Chaloupka FJ, Nguyen SN. Global and regional estimates of the effectiveness and cost-effectiveness of price increases and other tobacco control policies. *Nicotine Tob Res* 2002;4: 311-319.

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