

# The Economics of Tobacco and Tobacco Taxation in Turkey

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Raising the specific tax to 3.10 TL per pack and the *ad valorem* tax to 65% will lead 0.9 million current smokers to quit and prevent 0.7 million young people from initiating smoking, preventing 0.5 million premature deaths among Turkey's population. Further, it would generate an additional 4.1 billion TL in tax revenue.



- 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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*An Annex to this report containing supplemental tables and figures is available at:  
<http://www.tobaccofreeunion.org/content/en/217/#Turkey>*

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## Abbreviations

CPI:	Consumer Price Index
DALY:	Disability Adjusted Life Year
EU:	European Union
FCTC:	Framework Convention on Tobacco Control
GATS:	Global Adult Tobacco Survey
GYTS:	Global Youth Tobacco Survey
SCT:	Special Consumption Tax
TAPDK:	Tobacco and Alcohol Market Regulatory Agency
TL:	Turkish Lira
VAT:	Value added tax
WTO:	World Trade Organization

## Executive Summary

### Tobacco Use and its Consequences

In 2008, 31.3% of Turkish adults 15 years and older (47.9% among males and 15.2% among females) smoked cigarettes. Based on its 2008 adult population of 55 million, this implies that about one-third of Turkish adults — 17.3 million people — smoke, and 15.2 million are daily smokers. In recent years, the smoking prevalence rate for women has increased sharply. Male smoking prevalence in Turkey is higher than in any Western European country and among the highest in Central Asia. When analyzed by age groups, cigarette smoking is the highest among younger adult populations — 40% of those of those aged 25 through 44 currently smoke.

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**Male smoking prevalence in Turkey is higher than in any Western European country and among the highest in Central Asia.**

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The diseases caused by smoking impose a substantial burden on Turkey's health care system. According to the Ministry of Health, of the 5 million patients hospitalized in 2000, 20% suffered from a disease caused by tobacco. Moreover, 23% of total patient days and 52% of total hospital deaths resulted from diseases caused by tobacco use. Smoking was responsible for some 54,700 deaths in Turkey in 2003 — 13% of total deaths — and 596,684 years of life lost. If current smoking prevalence rates continue, tobacco will be responsible for over 127,000 deaths in 2050. Effective tobacco control and a reduction in prevalence to 10% by 2050 would save nearly 47,000 lives annually.

### Tobacco Control Policy in Turkey

As a signatory to the WHO Framework Convention on Tobacco Control (FCTC) since 2004, Turkey has

displayed a strong commitment to controlling the tobacco epidemic. In 2009, Turkey became a smoke-free country by implementing comprehensive tobacco control policies. Turkey is often held up as example for its neighbors and can potentially play an even larger catalytic role in tobacco control among Middle Eastern and Central Asian countries.

### Tobacco manufacturing, trade, pricing and demand

Turkey is one of the ten largest cigarette producing countries in the world, accounting for 1.7% of global production in 2006. It is also one of the world's largest exporters of tobacco leaf, and the 26th largest exporter of manufactured tobacco products. Turkey's current cigarette market has evolved from a government-owned monopoly to one dominated by a small number of relatively large firms, led by Philsa (a joint venture of Philip Morris International and Sabanci Holding Company, with a market share of 41% in 2008), British American Tobacco, and Japan Tobacco (35% and 18% market shares respectively).

Cigarette prices in Turkey have increased steadily in nominal terms since 1980; adjusting for inflation, real cigarette prices have also risen over time, although with significant fluctuations. There is a three-tier price structure for cigarettes in Turkey, where premium brands retail at almost two times the prices of the lowest priced brands, and at about 45% higher than the prices of brands in the middle price tier. By the end of 2009, the average retail price per pack of cigarettes was 4.06 Turkish Lira (TL) (US\$ 2.70\*). With a new tax increase introduced in January 2010, it is expected that average retail price will increase by 29% to 5.25 TL.

Cigarette prices and income are two key determinants of cigarette demand. New analysis

\* Applying an exchange rate of 1 TL=0.66 US\$ in 2009.

conducted for this report confirmed that cigarette prices have a negative and significant impact on cigarette demand in Turkey, with estimated price elasticities ranging from  $-0.33$  to  $-0.44$  and an average price elasticity of  $-0.39$ , implying a 10% increase in prices can reduce consumption by nearly 4%. Income is found to have a positive and significant impact on cigarette demand, with an average estimated income elasticity of 0.56.

### Cigarette taxes

Turkey administers a cigarette excise tax regime consisting of an *ad valorem* tax with a specific floor value. Effective January 1, 2010, the *ad valorem* rate is 63% of retail price. If a brand's per-pack excise tax using the *ad valorem* rate is less than 2.65 TL (the specific floor value), the excise tax of 2.65 TL is applied instead of the *ad valorem* rate of 63%.

The January 2010 tax rates build on developments in 2009, when the specific excise was increased to 2.05 TL per pack from the 2008 level of 1.55 TL per pack. The *ad valorem* rate of 58% had carried over from 2008 to 2009. The effect of these changes is that the share of excise taxes in average retail price increased from 58.1% in 2008 to 58.8% in 2009, and is expected to rise to 63.4% in 2010. The changes have also resulted in the share of total taxes\* increasing from 73.3% in 2008 to 74.1% in 2009, and an expected 78.7% in 2010.

Cigarette taxes are an important source of revenue for the Turkish government. In 2008, excise and value added taxes on cigarettes generated an estimated 14 billion TL in tax revenues, (11.1 billion TL excise and 2.9 billion TL VAT revenues), a little over 8% of overall tax revenues and 6.9% of all government revenues. The industry increased retail prices in March 2009 and the government increased the specific excise to 2.05 TL in

June 2009. With the resulting price increases, cigarettes are estimated to have generated a total tax revenue of 15.9 billion TL (US\$ 10.5 billion) in 2009 with an excise share of 12.6 billion TL (US\$ 8.3 billion).

Turkey is an associate member of the European Union. Total and excise tax share in retail price in Turkey are consistent with EU levels. However, despite having a similar share of price accounted for by tax, the average retail price of cigarettes in Turkey was the lowest among all high income EU member countries in 2009, and in the middle of the range of prices observed in new EU member states.

### Simulation analysis of tax policy

This report examines projected government revenues, smoking prevalence, and health outcomes under two tax scenarios, each compared with the 2009 baseline situation. The first (Scenario 1) is based on the government's 2010 tax increase. The second (Scenario 2) explores a tax regime where the *ad valorem* excise rate is increased to 65% while the specific excise floor increases to 3.10 TL per pack. The minimum specific floor tax of 3.10 TL per pack is selected for the simulation because it is the highest specific excise that the cabinet can currently implement without parliamentary approval following the most recent increase to 2.05 TL per pack.<sup>†</sup> A comparison of these scenarios provides an understanding of the potential impact on average cigarette prices, the reduction in the price gaps between price bands, and their impact on consumption and lives saved if further tax increases are implemented.

Analysis of the first scenario (specific tax increased to 2.65 TL per pack, *ad valorem* to 63% of retail price) indicates that with the tax rates implemented on January 1 2010, the government can be expected to raise about 15.5 billion TL in excise tax revenues and 19.2 billion TL in total tax revenues.

\* Total taxes = Excise taxes (whether specific or *ad valorem*) plus the value added tax of 15.25% of retail price of cigarettes.

† We set the *ad valorem* rate as 65% to have the average excise rates (specific or *ad valorem*) and the value added tax add up to the 80% total tax share that has been suggested by the Turkish National Tobacco Control Program. The 80% total tax share in retail price is also in line with the tax rates prevailing in countries with strong tobacco control policies.

Excise revenues would rise by 22.5% and total tax revenues would rise by 20.6% over their 2009 levels. Average cigarette retail price would rise by 29% over 2009 levels (to 5.25 TL per pack), consumption would fall by 12.2% from 2009 levels, adult and youth smoking prevalence would fall by 3.4 and 7%, respectively, and about 340,475 premature deaths expected to be caused by smoking would be averted.

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**Increasing the *ad valorem* rate from 63% to 65%, and raising the specific floor to 3.10 TL would generate 16.8 billion TL in excise tax revenues and 20.7 billion TL in total tax revenues.**

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However, given the inelastic demand for cigarettes, the Turkish government can generate still higher revenues and save more lives by increasing excise tax rates further. Increasing the *ad valorem* rate from 63% to 65%, and raising the specific floor to 3.10 TL (Scenario 2) would generate 16.8 billion TL in excise tax revenues and 20.7 billion TL in total tax revenues. Excise tax revenues would rise by 32.4%, while total tax revenues would rise by 29.7% over their 2009 levels. Under this scenario, average cigarette retail price would increase by 48% over 2009 levels (to 6.02 TL per pack), cigarette consumption would fall by 19.7%, adult and youth smoking prevalence would fall by 5.6% and 11%, respectively, and over 560,783 premature deaths expected to be caused by smoking would be averted.

Strengthening ongoing efforts to curb smuggling would maximize the revenue and health impact of a cigarette tax increase.

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**(With higher taxes) cigarette consumption would fall by 19.7%, adult and youth smoking prevalence would fall by 5.6% and 11%, respectively, and over 560,783 premature deaths ...would be averted.**

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If 10% of total cigarette excise tax revenues under Scenario 2 (1.68 billion out of 16.8 billion TL) are dedicated or earmarked towards the health sector, the remaining 15 billion TL in excise revenue from cigarettes would still be higher than the 12.7 billion TL in excise revenues that are expected to have been raised in 2009.

### Recommendations

Given the evidence, we make the following recommendations:

1. Increase the specific excise tax periodically and ensure it is automatically adjusted to keep pace with inflation. Further, in line with best practice, the rate of price increase should be higher than the inflation rate.
2. More generally, increase excise taxes over time so that they account for at least 70% of retail cigarette prices. Given the inelasticity of cigarette demand, a tax increase of this magnitude will increase government revenues from cigarettes while at the same time encouraging many adult smokers to quit and preventing several young people from taking up smoking, reducing the health and economic burden caused by smoking in Turkey.
3. Raise revenues through excise tax increases rather than relying on cigarette manufacturers to increase the price of their brands.
4. Consider dedicating a portion of the increased tobacco tax revenues for financing the health care system and supporting tobacco control programs. For the recommended tax increase, 10% of the resulting excise tax revenues would cover about 5.6% of total public health expenditures.
5. Strengthen ongoing efforts to curb illicit trade in tobacco products. Reducing illicit trade will maximize the revenue and health impact of cigarette excise tax increases. These efforts should include a prominent role for Turkey in ongoing negotiations of the FCTC protocol on illicit trade, in order to develop and strengthen regional partnerships for reducing contraband.

## I. Introduction

In January 2008, Turkey adopted comprehensive tobacco control legislation making all enclosed public places and private workplaces smoke free and banning all tobacco advertising, promotion and sponsorships effective May 2008. On July 19, 2009, the smoke-free policy was extended to include all hospitality sector establishments, including hotels, restaurants, bars and Turkish cafes. In 2008, 31.3% of Turkish adults (ages 15 years and older) smoked cigarettes, with 27.4% of adults smoking daily.<sup>1</sup> In addition, over 8% of youth ages 13 to 17 years are tobacco users, according to the 2004 Turkish Global Youth Tobacco Survey (GYTS).<sup>2</sup> Per capita cigarette consumption rose steadily for several decades, before beginning to slowly decline in recent years.

Turkey has unique characteristics that have important implications for tobacco control policies and their implementation and effectiveness. It is one of the world's leading oriental tobacco leaf producing countries. Until its recent privatization, cigarettes had been produced by a government owned company, TEKEL. Beginning in the 1990s, multinational tobacco companies have become increasingly important players in Turkey's tobacco market. The privatization of TEKEL, long on the government's agenda, was completed in February 2008. The long privatization process indirectly affected the level and structure of tobacco excise taxes, which generate significant

revenues in Turkey. In addition, Turkey has been involved in accession negotiations with the European Union for four decades. In order to become a member state, Turkey will have to amend many of its laws to conform to EU requirements, including those that apply to excise taxes on tobacco products.

This report begins with a brief description of tobacco use patterns and the tobacco control environment in Turkey. This is followed by a discussion of tobacco product excise taxes and prices, with a focus on cigarette taxes and prices. In order to assess the impact of higher cigarette taxes on prices, cigarette smoking, and government revenues, econometric analyses using aggregate annual and monthly time series data are then presented. Results from these analyses are used in simulations that predict how much cigarette consumption would decline and government tax revenues would rise if cigarette taxes were increased, taking into account potential increases in cigarette smuggling in response to tax increases. In addition, we estimate how many fewer adults and youth would smoke in response to tax increases and, as a result, how many fewer premature deaths would be caused by tobacco use. The distributional effects of increases in cigarette excise taxes are then analyzed using data on household cigarette expenditures by income level. The report concludes with recommendations on the use of taxation as an effective policy to reduce tobacco consumption in Turkey.

### Endnotes for Chapter I

<sup>1</sup> Global Adult Tobacco Survey (GATS), Turkey, 2009.

<sup>2</sup> Centers for Disease Control and Prevention. Global youth tobacco surveillance, 2000—2007. *Morbidity and Mortality Weekly Report, Surveillance Summaries* 2008; 57(SS01); 1-21.



## II. The Tobacco Environment in Turkey

### Adult and Youth Smoking Prevalence

#### Adult Smoking

In 2008, 31.3% of Turkish adults (47.9 % of males and 15.2% of females) 15 years older smoked cigarettes daily or less frequently, with 27.4% smoking daily.<sup>1</sup> Based on an adult population of 55 million in 2008, about 17.3 million adults smoke, and 15.2 million are daily smokers.

**In 2008, 31.3% of Turkish adults 15 years older smoked cigarettes ...with 27.4% smoking daily.**

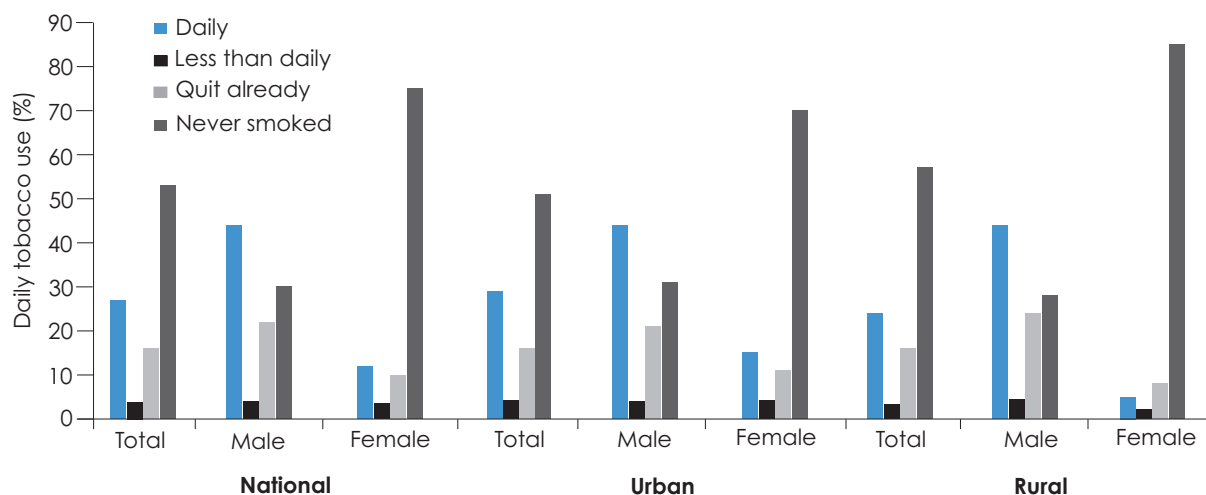
Tobacco use patterns in Turkey are consistent with those of other countries in the earlier stages of the tobacco epidemic, with male smoking prevalence well

above female prevalence. Almost half of adult Turkish males (47.9%) smoke, while about one in six adult women (15.2%) smoke.<sup>1,3</sup>

In many low and middle income countries, it is not considered acceptable for women to smoke. While this has been historically true in Turkey, there have been rapid changes — between 1997/98 and 2009, the smoking prevalence rate of women increased nearly 40%, from 10.9% to 15.23%.<sup>1,4</sup> Prevalence is much higher among females in urban areas (18.7%) compared with the females in rural areas (7.2%). Male prevalence continues to be high in both urban and rural areas at 47.8% and 48.1% respectively (see Graph 2.1).

The age standardized prevalence of male smoking in Turkey is higher than in all Western European countries and is among the highest in Central Asia (see Annex Graphs A1-A3).<sup>5</sup> Turkey’s female smoking prevalence rate is lower than in most Western European countries and new EU member states, but falls in the middle of the range observed in Central Asian countries (see Annex Graphs A4-A6).<sup>5</sup>

**Graph 2.1: Adult daily tobacco use by gender and rural and urban residence in Turkey, 2008**



Source: Global Adult Tobacco Survey, Turkey, 2009.

Cigarette smoking prevalence is highest among younger adult populations in Turkey; with about 40% of those ages 25 through 44 years currently smoking (see Annex Table A1). Smoking prevalence is somewhat higher in urban areas (33%) than in rural areas (27.2%).<sup>1</sup> According to the 2003 National Household Survey,<sup>\*</sup> smoking prevalence is the highest in Central and Western Turkey (37.4% and 34.8%, respectively) and lowest in Southern Turkey (30%) (see Annex Table A2).

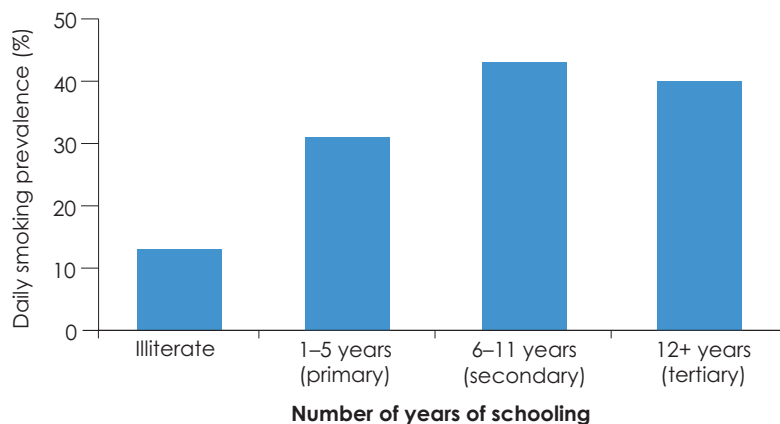
Adult Turkish smokers average 17 cigarettes per day, with male smokers (19.4 cigarettes per day) consuming more than female smokers (12.2 cigarettes per day). Average consumption rises with age, until age 65, with those 45 to 64 consuming about one pack per day. Rural smokers consume slightly more cigarettes each day than urban smokers — 18 and 16.5, respectively (see Annex Table A3).

### Prevalence by Education, Occupation, and Income

In contrast to patterns in many other countries, smoking prevalence is relatively high among the more educated. Over 43% of those with some secondary level education (6 to 11 years of schooling) smoke, and 40% of those with at least a high school education smoke, as compared to 13% of uneducated adults and 31% of those with primary level education (see Graph 2.2).

Smoking prevalence is relatively high in occupations that are considered “role models” in society — 43.9% of physicians, 50.8% of teachers, and 27.1% of parliamentarians reported current smoking (see Annex Table A4).<sup>6</sup> Similar, but less pronounced patterns are observed with respect to smoking prevalence by income.<sup>†</sup> As Graph 2.3 shows, household-level smoking prevalence in 2003 was

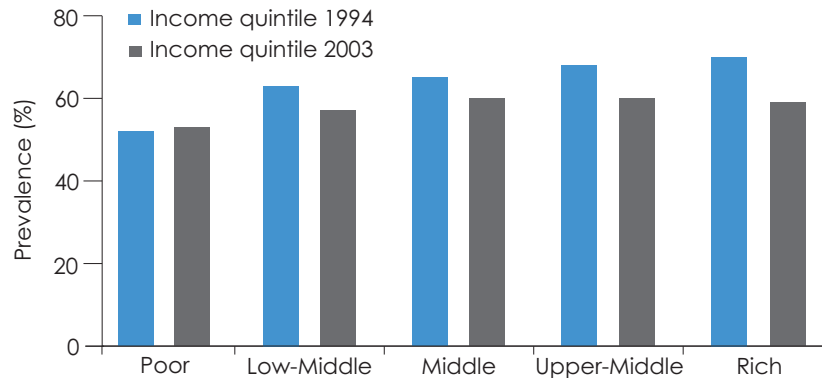
**Graph 2.2: Smoking prevalence rate (%) by education level, 2003**



Source: National Health Survey, 2003.

\* The GATS survey results do not include prevalence rates by region. The National Household Survey (NHS) examined the smoking behavior of individuals along with other household expenditures. It used the 1990 and the 2000 population censuses and the 1997 population survey to determine the sample of households to provide estimates for the nation, five geographical regions, urban/rural areas and by gender. A face-to-face interview method was used. The sample covers 12,000 households and the survey is completed by the head of the household or someone at least 18 years old if the head of the household was not available. See Annex Table A2 for detailed prevalence data.

† Household smoking prevalence rates by income quintile are computed from the 1994 and 2003 Household Expenditure Surveys. If a household reports positive cigarette expenditures in a given month, the household is defined as a smoking household.

**Graph 2.3: Household smoking prevalence by income quintile, 1994 and 2003**

Source: Önder (2002) & Önder and Yürekli (2007).

lowest among households in the poorest income quintile (53%) and lower middle income quintile (57%), and about the same among households in the top three quintiles (approximately 60%).

Between 1994 and 2003, prevalence fell most among households in the highest quintile (from 70 to 59%), while remaining almost unchanged among the poorest households (rising slightly from 52 to 53%). Similar patterns have been observed in high income countries, where smoking prevalence fell fastest among more educated, higher income populations in response to pioneering research on the harmful effects of tobacco use, together with tobacco control policies and other interventions.<sup>7,8</sup>

### Youth Smoking Prevalence

The prevalence of youth tobacco use among 13 to 15 year old students in Turkey is 8.4%.<sup>9</sup> Most of this is accounted for by cigarette smoking, with 9.4% of boys and 3.5% of girls reporting current cigarette smoking.<sup>2</sup> Youth prevalence rises rapidly with age and grade, increasing more than 1.5 times from the 7th grade to the 9th grade (from 6% to 15.2%).<sup>10</sup> Youth smoking has also been rising in Turkey over time, with prevalence for 7th grade students estimated to be 3.5% in 1996.<sup>6</sup>

Average consumption is high among young smokers; young male smokers consume about 13 cigarettes per day, while young female smokers consume 11 cigarettes per day.<sup>9</sup> Almost two-thirds of young Turkish smokers, however, also indicate that they would like to stop smoking.<sup>2</sup>

### Smoking Initiation

Initiation at increasingly early ages is a concern for many low and middle income countries, particularly those where young people are a relatively large share of the population. This is certainly the case for Turkey, the fifteenth most populous nation in the world and the third most populous in the Central and East Asia region. 30% of Turkey's total population of over 75 million is under 15 years of age. According to the 2003 GYTS, 35% of young males and 22% of young females reported having tried smoking; among those, 33% of boys and 22% of girls first tried smoking before they were ten years old. By comparison, among current adult smokers, the average age of initiation was 19 years (18

**35% of young males and 22% of young females reported having tried smoking.**

years among males and 21 years among females) and rising for older age cohorts (see Annex Table A3).

Given the lag between smoking initiation and the onset of diseases caused by smoking, future tobacco-attributable disease, deaths, and economic costs depend on current and future smoking patterns. Given the large share of youth in Turkey's overall population, high youth smoking prevalence and intensity, and increasingly early initiation, Turkey will face unprecedented health and economic consequences from smoking in coming years if effective interventions to prevent initiation and promote cessation are not adopted.

### Exposure to Second Hand Smoke

The health risks that result from exposure to second hand tobacco smoke are poorly understood in Turkey. Based on data from a 1997 survey in Ankara, the vast majority of Turkish smokers reported smoking at home (e.g. 97% of mothers, 90% of teachers, and 100% of parliamentarians).<sup>6</sup> Similarly, most respondents indicated that they smoked in front of children (e.g. 85% of mothers, 63% of teachers). Data from the 2004 GYTS suggest that little has changed, with 81.6% of youth reporting being exposed to smoke from others at home and 85.9% reporting exposure in public places in the week preceding the survey.<sup>2</sup>

### Tobacco Consumption Patterns and Trends

As Table 2.1 indicates, cigarettes are the most commonly consumed tobacco product in Turkey. Over the past several years, total cigarette consumption has been relatively flat with small declines from 2002 through 2006 offset by small increases through 2008. From 2004, there is an increasing trend in smoking tobacco that includes loose tobacco, water-pipe and pipe tobacco. Water pipe tobacco use appears to account for this rise, given the increased popularity of flavored water pipe tobacco use among young people and the increasing availability of water pipe cafes in Turkey.

From 1980 through 1999, both overall and per capita apparent cigarette consumption (based on tax-paid production) rose steadily, with per capita consumption peaking at 87 packs per capita in 1999. After falling from 87 packs per capita in 1999 to 72.5 packs in 2006, consumption rose to 75 packs per capita in 2008 (see Graph 2.4). There are several possible reasons for the recent increase in apparent consumption.\* First, due to on-going unrest in the southeast part of Turkey, cigarette smuggling from Syria, Iran and Iraq became increasingly difficult; consequently, the demand for legally obtained cigarettes increased. Second, some of the observed rise in packs consumed per capita might be an artifact of how data is reported, since consumption figures reflect

**Table 2.1: Volume of tax-paid sales of tobacco products in Turkey<sup>a,b</sup>**

Tobacco Products	2002	2003	2004	2005	2006	2007	2008
Cigarettes (billion pieces)	115.5	113.5	110.2	107.5	105.7	107.2	112.1
Cigars (million units)	1.6	1.0	0.8	0.6	0.7	0.8	0.8
Smoking: Pipe and loose-tobacco (tons)	68.0	37.3	45	77.9	88.2	97.8	103.7

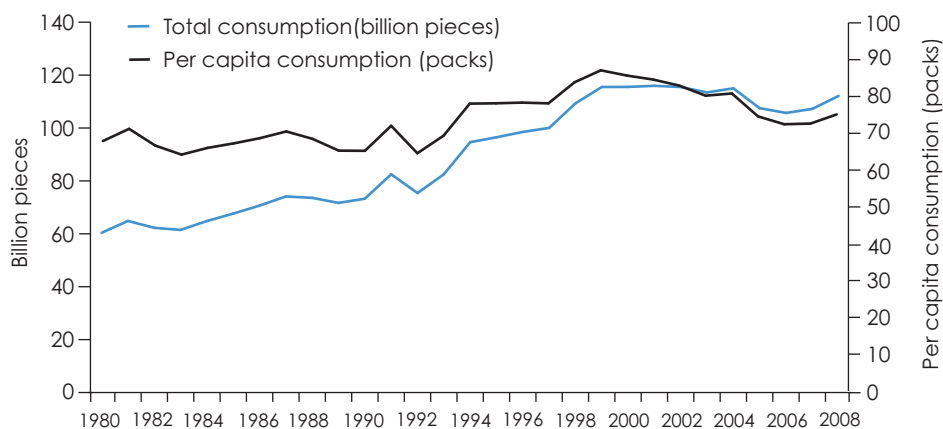
Source: Ministry of Finance, 2004-2008, and Euromonitor International, 2002-2003.

Notes:

<sup>a</sup> Tax-paid sales are sales for which excise tax has been collected.

<sup>b</sup> Sales volumes measured in pieces (billions of cigarettes, millions of cigars) and tons (other tobacco).

\* Personal communication with Turkish Customs and Ministry of Finance officials.

**Graph 2.4: Cigarette consumption in Turkey, 1980-2008**

Sources: USDA; Ministry of Finance Turkey; ERC 2009

tax-paid production. When cigarettes are unsold, the industry requests the return of taxes paid on unsold cigarettes. These returns are reflected in the data with some lag, so that the tax-paid production figures for the most recent years are likely to overstate actual sales and consumption. Finally, excise rates were expected to increase in early 2009; given the expected increase, manufacturers may have increased production in order to avoid the full effects of the tax increase the next year.

As per capita cigarette consumption fell from 1999 to 2006 there also appears to have been a change in the types of cigarettes consumed by Turkish smokers; specifically, smokers appear to have switched back and forth between low and mid-priced brands while the sales of premium (high-priced) brands increased (see Graph 2.5). Between 2007 and 2008, sales of low-priced cigarettes declined while both mid and high-priced brand sales increased.

Cigarette prices and consumers' income are two key determinants of cigarette demand. Economic theory predicts that increases in cigarette prices will lead to

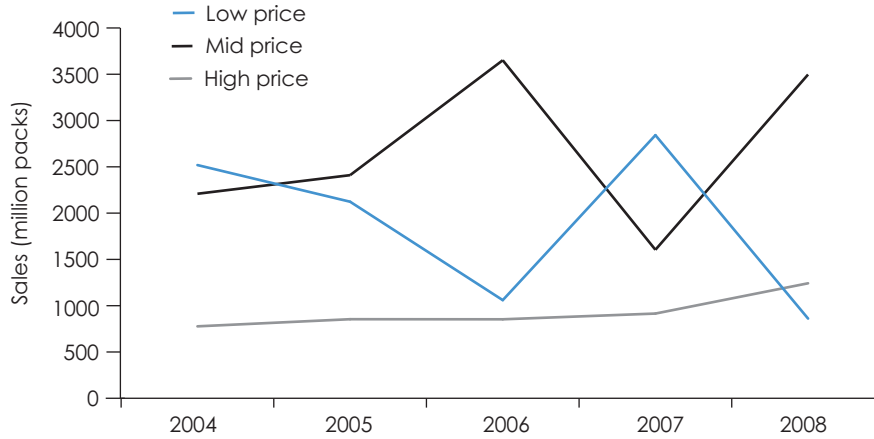
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**The decline in per capita cigarette consumption over 1999-2006 appears to have been, at least in part, the result of increases in real cigarette prices.**

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reductions in the quantity of cigarettes demanded, while the impact of changes in income is unclear. Graph 2.6 illustrates trends in inflation adjusted cigarette prices and per capita income and per capita cigarette consumption in Turkey from 1995 through 2008. The decline in per capita cigarette consumption over 1999-2006 appears to have been, at least in part, the result of increases in real cigarette prices through most of this period until 2006. The real price per pack leveled off between 2006 and 2008. Interestingly, the impact of income on cigarette demand appears to be changing in Turkey, with the decline in consumption from 1999 through 2002 associated with declining per capita income, but continuing from 2002 through 2006 as incomes increased.

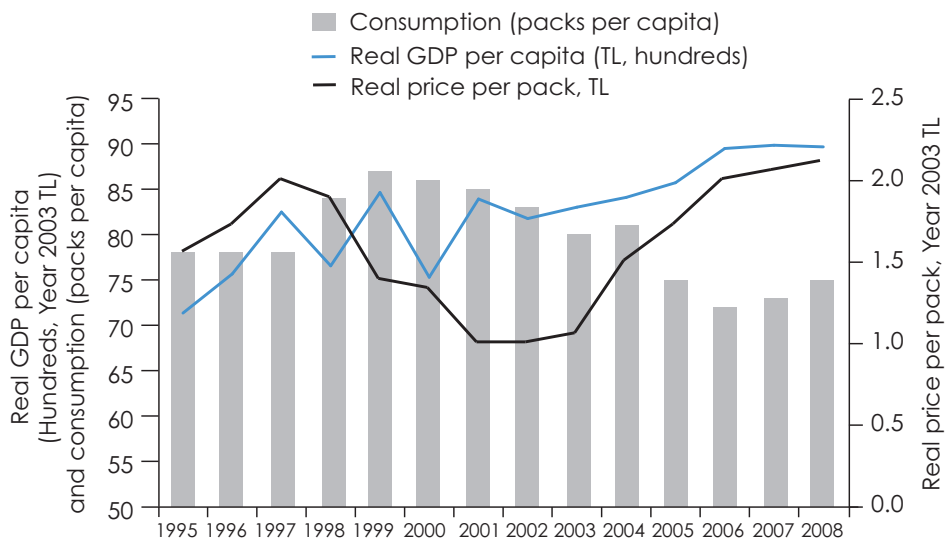
**Graph 2.5: Sales of cigarettes by price category, 2004-2008**



Source: TAPDK and Ministry of Finance.

Note: Low price cigarettes are brands subject to the specific excise tax, mid price brands are subject to either specific or ad valorem, and high price brands are those premium brands (Marlboro or Camel) that are subject to the ad valorem rate.

**Graph 2.6: Consumption, cigarette prices and income 1995-2008, CPI 2003=100**



Source: Ministry of Finance, TAPDK, Turkish Statistics Institute, IMF World Economic Outlook.

Notes: Cigarette prices and income were converted to have a common base year of 2003 using the CPI (consumer price index).

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- <sup>10</sup> Önder Z, Yürekli A. "Is Price Increase an Effective Tool to Combat the Tobacco Epidemic among the Youth in Turkey? Evidence using GYTS data" Paper presented at the 13th World Congress on Tobacco or Health, Washington DC. 2006.



### III. The Health Burden of Tobacco in Turkey

#### Disease Burden from Tobacco

The principal non-communicable diseases caused by smoking include cancers (including cancers of the lung, pancreas, mouth, pharynx, larynx, and bladder), cardiovascular diseases (including ischemic heart disease, myocardial degeneration, pulmonary heart disease, and peripheral and cerebral vascular diseases), and respiratory diseases (including chronic bronchitis, emphysema, asthma, and chronic obstructive pulmonary disease). Smoking harms nearly every organ in the body and is linked to numerous other diseases.<sup>11</sup>

#### Health Burden in Turkey

The diseases caused by smoking impose a substantial burden on the Turkish health care system. According to the Ministry of Health, of the 5 million patients hospitalized in 2000, 20% suffered from a disease caused by tobacco. Moreover, 23% of total patient days and 52% of total hospital deaths resulted from tobacco-attributable diseases (Annex Table A5).

---

**...of the 5 million patients hospitalized in 2000, 20 % suffered from a disease caused by tobacco ...23 % of total patient days and 52 % of total hospital deaths resulted from tobacco-attributable diseases.**

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Overall, smoking-attributable diseases are the most common cause of death among Turkish men and the second highest risk factor (behind high blood pressure) for all deaths.<sup>12,\*</sup> In 2003, the Ministry of

Health estimated that tobacco was responsible for 54,699 deaths in Turkey – 13% of total deaths – and 596,684 years of life lost.<sup>13</sup> 97% of tobacco-attributable deaths were among men, given their higher prevalence and intensity of smoking.

In terms of Disability Adjusted Life Years (DALYs), tobacco use imposes the highest burden, with an estimated 931,909 DALYs in 2003. These account for 15.4% of total DALYs among males and 1.2% among females (see Annex Tables A6 and A7). The Ministry of Health estimated that smoking was responsible for 77% of tracheal, bronchus and lung cancers, 46% of upper aero-digestive system cancers, and 52% of chronic obstructive pulmonary diseases in Turkey.

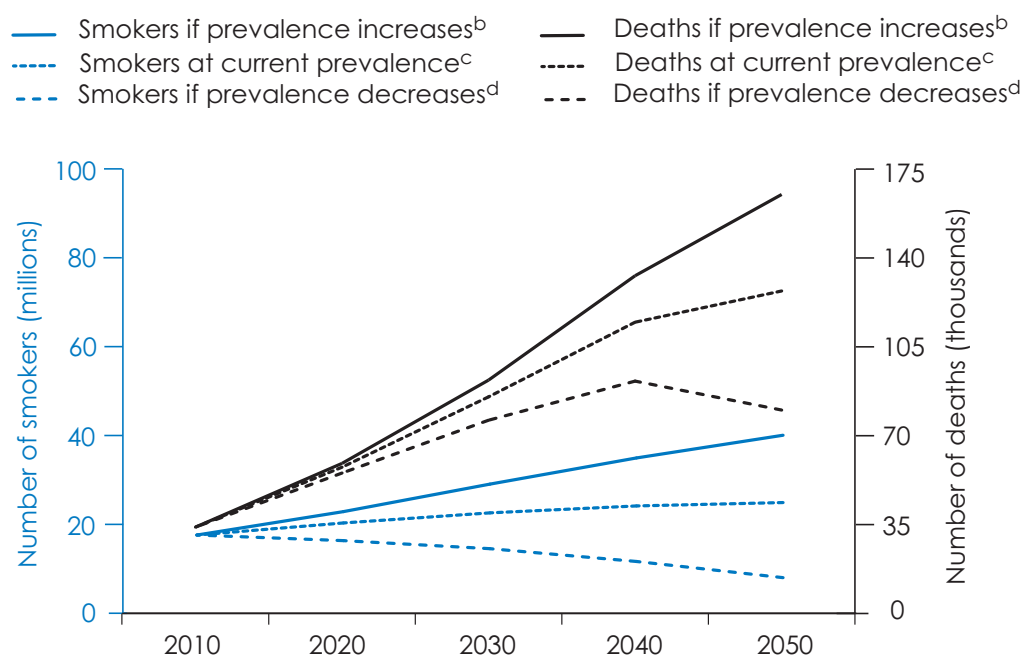
#### Future Health Consequences

Global estimates indicate that tobacco use will be responsible for 10 million deaths annually by 2030.<sup>13</sup> Applying the 2008 GATS gender-specific prevalence rates for Turkey to a model developed by Peto and Lopez,<sup>14</sup> the number of smokers and tobacco-attributable deaths in 2010, 2020, 2030, 2040 and 2050 are estimated and shown in Graph 3.1. Assuming no changes in cigarette smoking prevalence, it is estimated that the number of smokers will rise to 24.9 million by 2050 and that smoking will account for over 127,000 premature deaths. If, instead, the comprehensive tobacco control legislation adopted in 2008 is effectively implemented, along with additional future tobacco control interventions, resulting in a significant reduction in prevalence (to 10% by 2050), it is estimated that the number of adult Turkish smokers will fall to just over 8 million and that tobacco attributable deaths would fall to just over 80,140 in 2050. This implies that 46.9 thousand premature deaths would be averted by effective tobacco control policies.

\* In calculating the health burden from tobacco use, it was assumed that the following diseases are caused by smoking: tracheal, bronchial, and lung cancers; chronic obstructive pulmonary disease; other respiratory and cardiovascular diseases; selected other diseases among those over 30 years of age; burns; and maternal outcomes and prenatal conditions. Other major risk factors include: water and sanitation; alcohol use; low fruit and vegetable intake; physical inactivity; high cholesterol; high body mass index; and high blood pressure.



**Graph 3.1: Projected number of smokers and number tobacco deaths in Turkey under alternative prevalence scenarios<sup>a</sup>**



Source: Authors' calculations.

Notes:

- <sup>a</sup> Year 2008 total, male and female smoking prevalence rates of 31%, 48% and 15% respectively are used as base values for 2010 and the calculation of the number of smokers and the tobacco-attributable deaths for the following years are estimated accordingly. Population predictions for total, male and female adults -15 years old and older are taken from World Bank population estimations. It is assumed that among smokers, 40% are long-term smokers, and half of those long-term smokers will die prematurely from tobacco-attributable diseases.
- <sup>b</sup> In the first scenario current prevalence rate continues without changing over the years.
- <sup>c</sup> In the second scenario, total prevalence rate increases to 35% in 2020, 40% in 2030, 45% in 2040 and 50% in 2050. Based on this assumption, by 2050, there will be 165 thousand tobacco-attributable deaths in Turkey.
- <sup>d</sup> In the third scenario, total prevalence rate decreases to 25% in 2020, 20% in 2030, 15% in 2040 and 10% in 2050. If this happens, then it is predicted that tobacco will be responsible for 80,000 deaths in Turkey. That implies 46.7 thousand lives will be saved compared with the predicted number of tobacco deaths if the current prevalence rate continues.

### Endnotes for Chapter III

- <sup>11</sup> U.S. Department of Health and Human Services. The Health Consequences of Smoking: A Report of the Surgeon General. Atlanta, Georgia: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2004.
- <sup>12</sup> Ministry of Health (MOH) 2004. Burden of Disease. National Burden of Disease and Cost Effectiveness Project. [http://www.toraks.org.tr/pdf/ulusal\\_hastalik\\_yuku\\_burdenofdiseaseENG.pdf](http://www.toraks.org.tr/pdf/ulusal_hastalik_yuku_burdenofdiseaseENG.pdf). Accessed January 25, 2010.
- <sup>13</sup> World Bank. Curbing the Epidemic: Governments and the Economics of Tobacco Control: A World Bank Publication. Washington DC: The International Bank for Construction and Development; 1999.
- <sup>14</sup> Peto R, Lopez AD, Boreham J, Thun M, Heath C. Jr. Mortality from Smoking in Developing Countries 1950-2000. Oxford: Oxford University Press; 1994.

## IV. Tobacco Supply and Trade in Turkey

### Tobacco Farming

#### Tobacco Leaf Production

Turkey is the largest grower of oriental tobacco leaf in the world, and one of the world's leading tobacco growing countries (see Table 4.1).

Turkey's share of global tobacco leaf production peaked at 5.6% in 1976, but fell to 2.1% in 2006. Paralleling the downward trend in tobacco product consumption, total tobacco leaf production and land used in tobacco growing have fallen steadily since the late 1990s (see Graph 4.1). Approximately 60% of Turkish tobacco is grown in the Aegean region, 20% in the eastern/southeastern region, and the rest in the Black Sea and Marmara regions.

From 1940 to 2000, the Turkish government supported tobacco farmers by setting a minimum purchase price for each grade of tobacco leaves. TEKEL, the government's tobacco producing monopoly, purchased all available leaf at the specified prices. TEKEL contracted with tobacco growers, with

contracts specifying the type of tobacco to be grown and the price at which it would be purchased; farmers were free to sell their tobacco leaf on the open market, but most contracted with TEKEL.

In 2000, the government removed its price support program, replacing it with a "direct income support" program for tobacco farmers growing tobacco on at least 6,800 square meters of land. Smaller farmers were initially ineligible for this program; in 2005, however, the program was expanded to include all tobacco farms, regardless of size, with the amount of the direct subsidy determined by the size of the farm. It is estimated that the total subsidy covered about 5% of the costs of tobacco production (9th plan, pp. 44-45).<sup>15</sup>

#### Tobacco Farmers

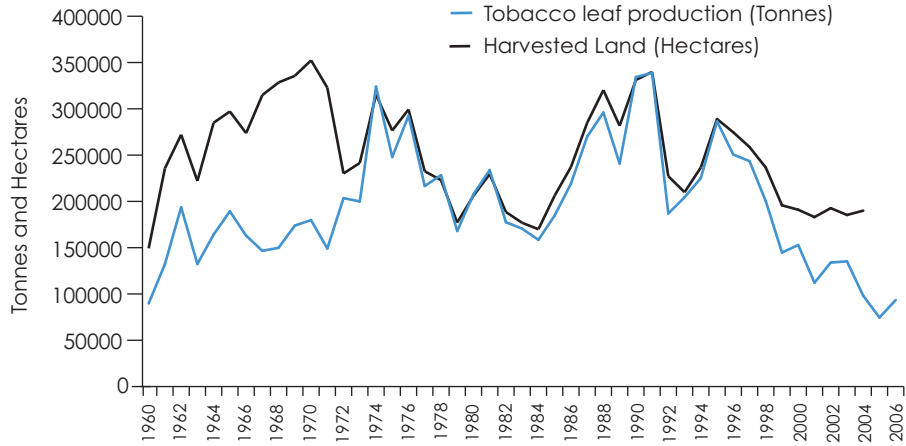
Tobacco farming in Turkey is largely a family business, with approximately 207,000 families involved in tobacco growing in 2006 (see Graph 4.2). This is down sharply by 64% – from 2000, when tobacco was grown by 583,000 farming families. Tobacco is a relatively labor intensive crop; estimates indicate that 3 to 4 members of each tobacco growing family are involved in production (8th plan, p. 48; 9th plan, p. 43).<sup>16</sup> Given this, the recent declines in tobacco

**Table 4.1: Major tobacco leaf producers ('000 tons) and their share in global production (% in parenthesis), 2000-2007**

	2000	2002	2004	2006	2007
China	2564 (38)	2454 (38)	2412 (38)	2750 (41)	2397 (39)
Brazil	579 (9)	670 (10)	921 (14)	905 (14)	909 (15)
India	520 (8)	550 (9)	550 (9)	550 (8)	520 (8)
USA	478 (7)	399 (6)	400 (6)	338 (5)	353 (6)
Indonesia	146 (2)	195 (3)	141 (2)	141 (2)	165 (3)
Turkey	200 (3)	153 (2)	134 (2)	140 (2)	75 (1)
World	6692	6469	6394	6719	6202

Source: FAO database

**Graph 4.1: Leaf production and harvested land in Turkey, 1960-2006**



Source: FAO database.

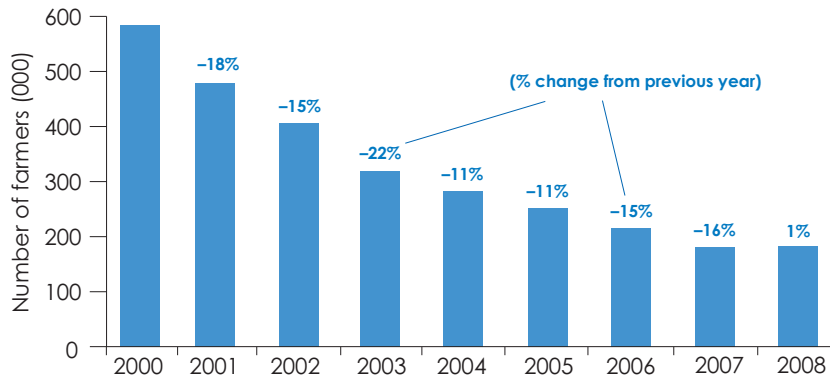
Note: 1 Tonne = 1000 kilograms; leaf production is measured in tonnes. HA, Hectare = 2.461 acres, the unit of measurement for harvested land for tobacco leaf production

growing suggest that the number of individuals involved in tobacco farming has fallen from a figure of 1.5 to two million in 2000, to between 600,000 and 800,000 in 2006.

The elimination of tobacco leaf subsidies and the resulting decline in the profitability of tobacco farming

account for much of the decline in the number of farms on which tobacco is grown. At the same time, farming of other crops has become increasingly profitable, further making tobacco growing less attractive to farmers. This transition has been accelerated by the government-sponsored “alternative crop program” which provided tobacco farmers who moved to other

**Graph 4.2: Number of tobacco farmers in Turkey and annual rate of change, 2000-2008**



Source: 2000-02 data from Turkish Agricultural association, 2003-2008 data from the Regulatory Commission for Tobacco and Tobacco Products.

Note: The count of farmers excludes family members of farmers who might assist with cultivation. The count of farmers is also different from the count of farms — individuals might work on farms owned by others.

crops with a one-time payment based on the amount of land switched from tobacco growing to other crop production of US\$ 80 per thousand square meters. This program was most attractive to farmers in eastern/southeastern Turkey where the poorest quality tobacco had been grown.

## Tobacco Product Manufacturing

### Cigarette Market Structure

Turkey is one of the ten largest cigarette producing countries in the world, accounting for 1.7% of global production in 2006 (see Annex Table A8). The supply side of Turkey's cigarette market has changed significantly over the past 25 years. In the 1980s, the government monopoly TEKEL was the primary producer and distributor of cigarettes, accounting for all domestic production and controlling imports of cigarettes produced by foreign companies. In 1984, the Turkish government allowed foreign cigarette companies to sell their products in Turkey, but TEKEL controlled the import, pricing and distribution of all foreign cigarettes.

In 1991, the government eased restrictions on foreign cigarettes, allowing multinational cigarette companies to price and distribute their cigarettes without going through TEKEL. In 1994, multinational

cigarette companies began constructing their own production facilities in Turkey. One condition of entry into the Turkish cigarette markets was that multinationals invest in state-of-the-art production facilities capable of producing at least 2 billion cigarettes per year.<sup>17</sup>

TEKEL's monopoly power declined as multinational tobacco companies entered the Turkish cigarette market, with its market share falling to 70% by 1997. Nevertheless, TEKEL retained its position as the market leader until 2005, when it was surpassed by Philsa, a joint venture of Philip Morris International and Sabanci Holding Company (see Table 4.2).

Turkey's current cigarette market is dominated by a small number of relatively large firms, led by Philsa with a market share of 41% in 2008. Other key players include BAT (35% share including TEKEL's share) and Japan Tobacco (18%). In the years leading up to the privatization of TEKEL, newer entrants (including Imperial Tobacco, European Tobacco and Gallaher) began gaining a foothold in the market, largely at the expense of TEKEL.

### TEKEL Privatization

As globalization has accelerated over the past few decades, many countries have privatized government-

**Table 4.2: Market shares of major producers in the Turkish cigarette market, 2001-2008**

Firms	2001	2002	2003	2004	2005	2006	2007	2008
TEKEL/BAT*	69%	61%	57%	48%	39%	38%	31%	35%
Philsa	21%	28%	33%	38%	42%	40%	39%	41%
JTI	10%	12%	11%	11%	8%	10%	14%	18%
BAT				4%	8%	7%	7%	--
European					2%	3%	7%	4%
Imperial					0.01%	2%	2%	3%
Gallaher						0.0%	0.3%	--

Source: Market shares (2001-05) Elmas, Ibrahim Halil(2007); 2003,04,05 Mamul Tütün Satışları Tütün Ekspertleri Derneği Bülteni, Yayın No. 76.

Notes:

a. Market shares are calculated using sales figures reported to the Ministry of Finance.

b. TEKEL was acquired by BAT in 2008.

owned businesses, including their tobacco companies. The Turkish government first tried, unsuccessfully, to privatize TEKEL in 2003 and failed again in 2005. The effort was finally successful in February 2008, when TEKEL was sold to British American Tobacco (BAT). The price for TEKEL was lower than originally anticipated, in part because of the investments multinational tobacco companies had made in new production facilities and distribution networks.

The implications of privatization for public health are unclear. Governments that are no longer engaged in tobacco product manufacturing and distribution might be more willing to adopt strong tobacco control policies and take other actions to reduce tobacco use, thereby improving public health. On the other hand, privatization is often accompanied by explicit or implicit agreements that limit government intervention in tobacco product markets, and this raises the possibility that multinational tobacco companies that acquire government business will engage in more aggressive marketing efforts that increase tobacco use and are detrimental to public health.

In Turkey, the trends towards a growing presence of multinational tobacco companies and declining market power of TEKEL were in place for many years given the opening of the Turkish cigarette markets in the 1990s. The privatization of TEKEL is likely to accelerate these trends. The long term impact on public health, however, is unclear.

### Brands

Market shares of brands change dramatically in Turkey. Samsun (19.5%), L&M (17.2%) and Tekel 2001 (12.1%) were the leading brands in 2004. The first two brands lost their shares dramatically to 6.1% and 6.6% respectively by 2008; Tekel 2001, though, remains one of the leading cigarette brands. In recent years, Marlboro and Winston have become the other most widely smoked foreign cigarette brands in Turkey, accounting for 10.5 and 11.4%, respectively, of overall

consumption in 2008. As Table 4.3 shows, other international brands have become popular as the presence of multinational tobacco companies in Turkey has increased. At the same time, TEKEL brands have been rapidly losing market share. As the presence of multinational cigarette companies has expanded in Turkey, the share of the market accounted for by premium brand cigarettes has risen sharply – a 60% increase from 777 million packs in 2004 to over 1.2 billion packs in 2008 (see Graph 2.5 in Chapter II).

High tar cigarette brands account for most (82.3%) of Turkish cigarette consumption, with low or ultra-low tar brands accounting for very little consumption (3.3%); nearly all manufactured cigarettes consumed in Turkey are filtered cigarettes and very few (2.5%) are menthol.<sup>17</sup>

### Employment

Employment in cigarette manufacturing has been generally falling since 1988, with employment in 2005 just over one-half of employment in 1988 (see Graph 4.3). This reduction is in part due to the restructuring of TEKEL and resulting reductions in its staffing during the 1990s. In addition, the recent entry of multinational cigarette firms and their investment in more capital intensive, state-of-the-art production facilities further reduced employment in tobacco manufacturing.

Employment similarly declined in tobacco-related retail (Graph 4.4). This decline parallels the recent downward trend in Turkish cigarette consumption.

### Tobacco-Related Trade

In 2006, Turkey was the sixth largest exporter of tobacco leaf in the world, exporting 112.3 thousand tonnes (FAO 2009), and, in 2005 was the 26th largest exporter of manufactured tobacco products. As a percentage of overall exports, however, tobacco is relatively small, typically accounting for less than 1% of total export value. Tobacco leaf accounts for most of the

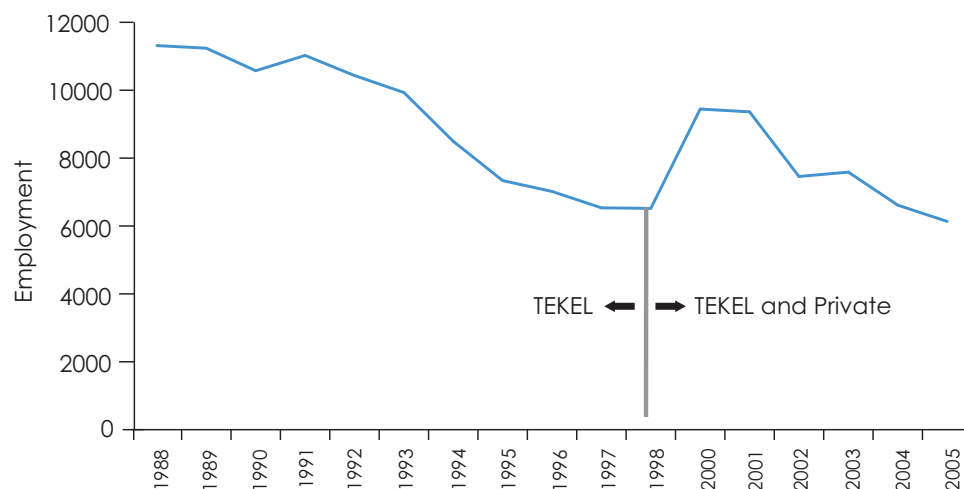
**Table 4.3: Market shares (percent of retail sales) of leading cigarette brands, 2004-2008**

Company	Brand	2004	2006	2008
Philsa	Marlboro	9.9	10.5	10.5
	L&M	17.2	10.0	6.6
	Parliament	3.8	5.2	8.3
	Bond	1.3	3.4	2.0
	Lark	1	6.2	7.9
	Muratti	3.9	4.7	5.3
	Chesterfield	1.0	0.6	0.3
TEKEL/BAT <sup>a</sup>	Tekel 2000	4	3.0	2.1
	Maltepe	7.5	4.2	2.4
	Tekel 2001	12.1	18.4	14.0
	Samsun	19.5	9.8	6.1
	Viceroy	3.4	6.6	6.3
	Pall Mall	0.8	0.5	2.0
JTI	Winston	7.1	7.7	11.4
	Camel	0.3	0.3	0.5*
	Salem	0.1	0.1	0.1
	Monte Carlo	2.1	1.3	3.6
Others		5.3	7.6	20

Source: Ministry of Finance Turkey. Annual shares do not add up to 100% due to rounding.

Notes:

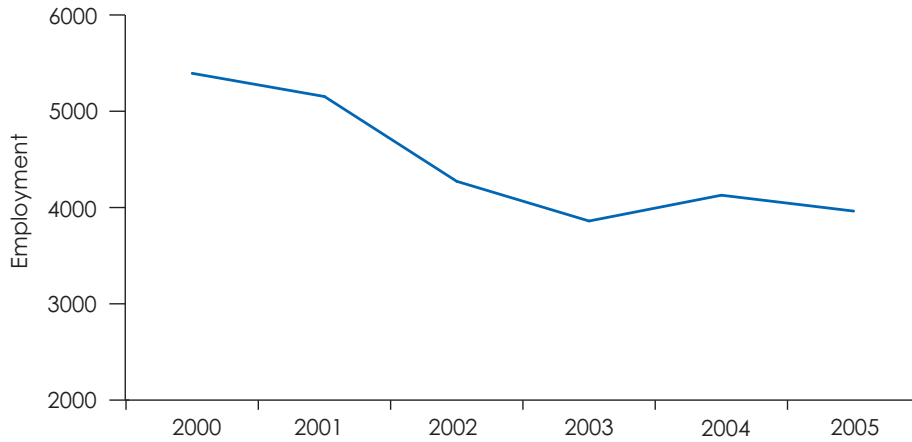
<sup>a</sup> BAT acquired TEKEL in 2008.

**Graph 4.3: Tobacco employment: Total manufacturing, 1988-2005**

Source: TEKEL & the 9th Plan. P.44

Note: TEKEL was the monopoly manufacturer of tobacco prior to 1998. Employment after 1998 includes figures for TEKEL and for private manufacturers.

**Graph 4.4: Employment in tobacco retail, 2000-2005**

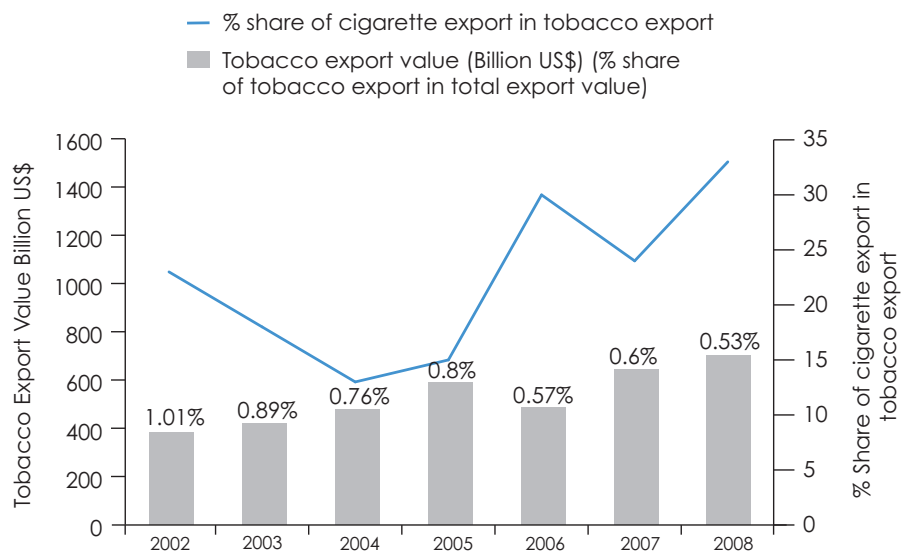


Source: Tekel and the 9th Plan, p.44

value of tobacco exports (see Graph 4.5). Although the share of cigarette export fluctuates, exports of cigarettes have been increasing in both volume and value since 2006.

In recent years, Turkey has not imported cigarettes for domestic consumption. This is partly due to government restrictions on importation of manufactured tobacco products – import duties are

**Graph 4.5: Tobacco and cigarette exports from Turkey, 2002-2008**



Source: UN COMTRADE database.

Note: Figures in parentheses are the share of total export value accounted for by tobacco exports.

US\$ 0.40 per pack for cigarettes containing Virginia type tobacco – and also due to major foreign brands now being produced domestically in Turkey. Turkey imports about 85 to 90% of the Virginia tobacco leaf used in cigarette production for use in producing

American blend cigarettes. American blend cigarettes, however, account for a very small part of the overall market (0.1% in recent years) and the aggregate volume of imported tobacco is relatively small in comparison to domestically grown tobacco.

#### Endnotes for Chapter IV

- <sup>15</sup> State Planning Organization. Dokuzuncu Kalkınma Planı 2007-2013. İçki, Tütün ve Tütün Ürünleri Sanayii Özel İhtisas Komisyonu Raporu. Ankara. 2007.
- <sup>16</sup> State Planning Organization. Sekizinci Beş Yıllık Kalkınma Planı. Tütün ve Tütün Ürünleri Sanayii Özel İhtisas Komisyonu Raporu. Ankara. 2000.
- <sup>17</sup> Euromonitor International. Tobacco – Turkey: Country Market Insight. London: Euromonitor International. 2008.



## V. The Tobacco Control Environment in Turkey

### Tobacco Control Legislation

Strong tobacco control policies have been adopted fairly recently in Turkey. Prior to the 1980s, the only significant control policy was a ban on cigarette advertising on television, radio, and billboards. Starting in September 1981, cigarette warning labels stating “harmful to health” were required; this was strengthened to read “cigarette smoking is dangerous to health” in May 1991. In 1988, there was a short-lived anti-smoking campaign initiated by the Ministry of Health that included posters in public places that warned about the dangers of cigarette smoking.

Law number 4207, enacted on November 26, 1996 banned cigarette smoking in some public places, including in education, health, and cultural service locations, enclosed sports facilities, on public transportation, and in waiting areas; in addition, public workplaces with five or more employees were required to create smoke-free areas. The ban on cigarette advertising was extended to other types of advertising, including magazine and newspaper advertising, and the use of tobacco brand names on non-tobacco products was prohibited. The sale of cigarettes to minors (under age 18) was prohibited. A stronger warning “Legal Warning: Harmful to Health” and was required on all imported and domestically produced cigarette packages. Finally, both public and private television and radio channels were required to broadcast at least 90 minutes per month of information about the consequences of tobacco use.

While Law 4207 was designed to be comprehensive, there were significant problems with

its implementation which limited its effectiveness in reducing tobacco use. Significantly, the law did not designate an agency or official to be responsible for enforcement and collection of penalties.

### Recent Tobacco Control Policies

Turkey signed the WHO’s Framework Convention on Tobacco Control in April 2004 and ratified it in December 2004. This international treaty calls on governments to adopt policies to reduce both the supply of and demand for tobacco products. Most recently, in January 2008, the Tobacco Control and Prevention of Hazards Caused by Tobacco Products Law (Law number 5727), was adopted. With this law, Turkey became the fifth country in Europe, and the first in the Middle-East and Central Asia to become a smoke-free country.

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### Turkey signed the WHO’s Framework Convention on Tobacco Control in April 2004 and ratified it in December 2004.

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The law strengthens restrictions on smoking in public places by making all public buildings, public transportation, taxis, and the inside and outside of all schools and health care facilities, sport facilities including soccer stadiums 100% smoke-free in April 2008. On July 19, 2009, the ban was extended to the hospitality sector, including restaurants, bars and Turkish coffee houses.\*

An interesting feature of Law number 5727 is that it mandates 90 minutes per month of television broadcasting about the harmful effects of tobacco use to be done between the hours of 8:00 a.m. and 10:00 p.m., with at least one-third of the total programming between 5:00 p.m. and 10:00 p.m.

\* Law 5727 further restricts the marketing activities of tobacco companies by banning a variety of activities, including: giving away of gifts, promotions, and samples to distributors or customers; publishing advertisements or any other materials using their names, brands, or logos in the press; producing any chewing gums, confectionary, toys, clothing, accessories, or anything else that looks like cigarettes; selling cigarettes individually or in small packs; displaying company names, brands, or logos on vehicles; sponsoring events with company names, brands, or logos; organizing campaigns that may promote smoking; using company names, brands, or logos on any type of clothing or accessories; and selling cigarettes on the Internet, by telephone, or in vending machines.

The enforcement of the smoke-free laws is challenging and requires full commitment from the government. Despite pressure by the hospitality sector to change the legislation so that restricted areas could be created and the implementation of the law postponed, the government showed its commitment and the law went into effect in July 2009. The Ministry of Health in collaboration with the Turkish regulatory

agency for cigarettes and alcoholic beverages (TAPDK) increased the level of enforcement especially after the full implementation in July 2009. In addition, non-governmental organizations (NGOs) have increased their efforts to help achieve full compliance with the law by involving the public in information campaigns about the benefits of complete smoke-free laws in public places.

## VI. The Price and Demand for Cigarettes in Turkey

This chapter describes retail cigarette prices in Turkey and discusses the impact of cigarette prices on Turkish smokers. It first reviews existing evidence estimates of the price elasticity of cigarette demand and subsequently provides updated estimates.

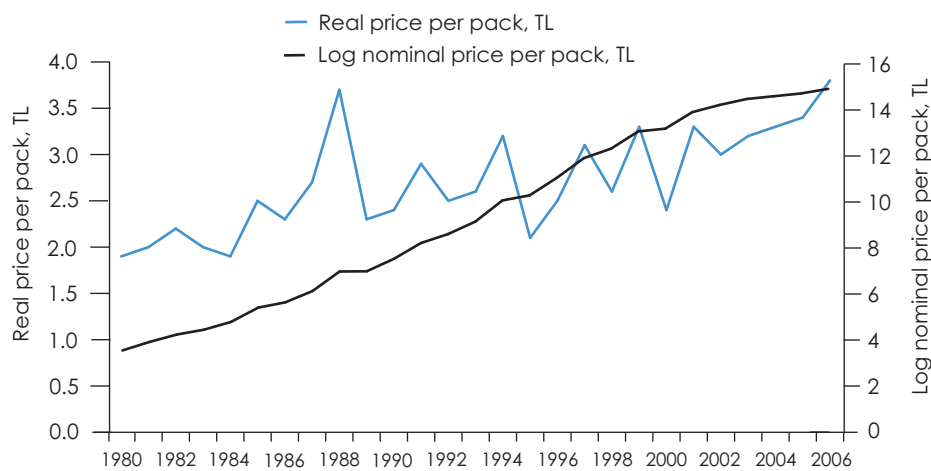
### Cigarette Prices in Turkey

Cigarette prices in Turkey have increased steadily in nominal terms, since 1980, with an annual average price increase of 4.27%. However, Turkey experienced significant inflation during this period, leading to fluctuations in inflation-adjusted (real) cigarette prices (Graph 6.1). Overall, real cigarette prices have risen during this period, with significant fluctuations in prices in the 1980s and 1990s, and a relatively steady

rise in price through most of the 2000s. Between 2006 and 2008, however, real cigarette prices have remained relatively stable.

There is a three tier price structure for cigarettes in Turkey, with a significant gap in prices between tiers, as shown in Table 6.1. Premium brand prices have been almost two and a half times the prices of the lowest priced brands, and are about 50% higher than the brands in the middle price tier. In recent years, the gap between the lowest price tier and both the middle and premium price tiers appears to have narrowed, while the gap in prices between premium brands and mid-level brands has not changed. At least some of the rise in cigarette prices over the past several years and the recent changes in price gaps among tiers can be attributed to the increases in cigarette excise taxes and also to the manner in which the excise taxes are structured and applied.

**Graph 6.1: Nominal and real price of cigarettes per pack in Turkey 1980-2006 (Base year CPI: 2003=100)**



Source: Ministry of Finance and TAPDK.

Note:  $\text{Log}(\text{Nominal price})$  is a logarithmic transformation of the nominal price to reflect proportional changes in pack price. The nominal price ranged from 450 to more than 300,000 TL over a period of considerable inflation;  $\text{log}(\text{nominal pack price})$  provides a more representative picture of price changes in such circumstances.

**Table 6.1: Weighted average nominal and real prices of cigarettes per pack, TL, by price categories<sup>a</sup>**

	Low-Price		Mid-level		Premium	
	Nominal	Real	Nominal	Real	Nominal	Real
2004	1.48	1.36	2.32	2.13	3.39	3.11
2005	1.53	1.30	2.45	2.09	4.18	3.56
2006	1.90	1.47	2.60	2.02	4.37	3.39
2007	2.44	1.74	3.37	2.41	4.71	3.36
2008	2.63	1.70	3.47	2.24	4.92	3.18
2009*	3.45	2.16	4.27	2.67	5.65	3.53

Source: Calculated by authors using data from TAPDK & Ministry of Finance, Turkey CPI 2000=100

Note:

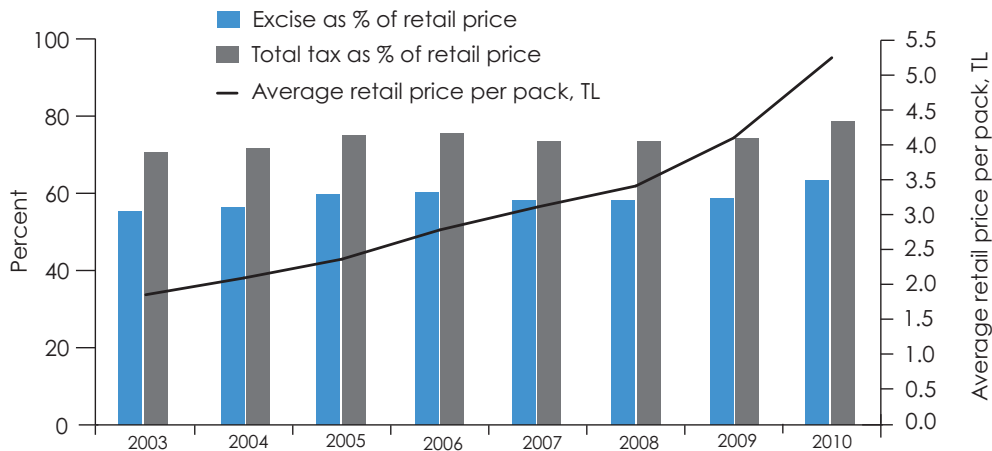
<sup>a</sup> Volume of sales in the corresponding years are used as weights.

\* 2009 prices are as of October 2009 prices The volume of sales in 2009 are used as weights for 2009.

Graph 6.2 shows trends in the weighted average nominal retail price of cigarettes in Turkey (based on brand-specific prices and brand shares) and the tax as a percentage of retail prices. The increases in cigarette excise taxes in 2004, 2005 and 2006 led to an increase from 56.3% to 59.8% and then to 60.2% of the share of

price being accounted for by excise taxes. From 2007 to 2008, however, the share of the excise tax in price fell somewhat, to an average of 58.1%. In 2008 manufacturers increased their prices in line with the inflation which led to a 10% increase in average retail prices from 3.11 TL per pack in 2007 to 3.41 TL per pack

**Graph 6.2: Weighted Average Nominal Retail Price and the share of excise and total tax as percentage (%) of Retail Price 2003-2010**



Source: TAPDK and MoF

Note: The average price is the weighted price based on volume of tax-paid cigarettes. Excise rate is also estimated by dividing total excise payment by the quantity of tax-paid sales. 2009 estimated cigarette sales volume were used when predicting 2010 sales and 2010 predicted sales are used as weights for the 2010 average price.

in 2008. In 2009, manufacturers again increased the retail prices of their brands twice, first in March 2009 by between 6.5% and 13.5%, and then in July 2009 by 0.50 TL per pack at the request of the Ministry of Finance. With these increases, the average nominal retail price of cigarettes increased by 21.7%, from 3.41 TL per pack (US\$ 2.59 per pack at the 2008 exchange rate) in 2008 to 4.10 TL per pack (US\$ 2.68 per pack) in October 2009. It was predicted that the new excise tax increases in 2010 would increase the average retail price to 5.25 TL and the shares of the excise and total taxes in average price would be 63.4% and 79% respectively.

## Demand for Cigarettes

### Existing Evidence

Three previous studies have examined the demand for cigarettes in Turkey. In the first of these, Tansel (1993) estimated a series of double-log models using annual time series data on per capita (ages 15 and older) cigarette consumption for the years 1960 through 1988.<sup>18</sup> In addition to cigarette prices, key explanatory variables included income, an indicator for the years during which health warning labels were required on cigarette packages, an indicator for the years during in which the anti-smoking media campaign was in effect, and measures of secondary and higher education enrollment. To account for the addictive nature of smoking, Tansel included lagged cigarette consumption in the models (implying myopic addiction).<sup>\*</sup> In all models, Tansel found that cigarette prices had a negative and significant impact on cigarette consumption, with an average estimated short run price elasticity of  $-0.21$ . Consistent with addiction, lagged cigarette consumption was estimated to have a positive and significant impact on current consumption. Given these results, Tansel estimated an average long run price elasticity of  $-0.37$ , well above the short run elasticity. In addition, Tansel estimated a

strong positive impact of income on consumption, a consistent negative effect of education, and negative and significant impacts of the warning labels and anti-smoking campaign.

More recently, Önder (2002) estimated demand using annual time series data for the period from 1960 through 2000.<sup>19</sup> Her models included real cigarette price, real per capita income, and an indicator for the 1996 tobacco control law as explanatory variables. Using generalized least squares methods she estimated alternative models including one that incorporated a time trend variable and a second that excluded the time trend. Önder similarly found that cigarette prices have a negative and significant impact on cigarette consumption, with estimated price elasticities ranging from  $-0.190$  to  $-0.284$ . Conducting simulations based on her estimates, Önder concluded that increases in Turkish cigarette taxes would significantly reduce cigarette consumption while at the same time resulting in large increases in cigarette tax revenues.

Önder also used a two-part model of cigarette demand using data taken from the 1994 Turkish Household Expenditure Survey to separately estimate the effects of price on smoking prevalence and on smoking intensity (conditional cigarette demand – cigarette consumption among those who smoke). In addition to price and income, she controlled for the socio-economic characteristics of households, including measures for gender, education, employment, working class status of the household head, household size, and household location (urban/rural and region). Based on these models, Önder estimated that the overall price elasticity of cigarette demand in Turkey was  $-0.41$ , with nearly all of the impact of price on consumption among smokers (conditional demand elasticity of  $-0.39$ ) rather than on smoking prevalence (participation elasticity of  $-0.027$ ). Consistent with economic theory, Önder also

\* Myopic addiction models consider consumers as having no foresight. Their previous period consumption behavior reflects current consumption, and this is captured by including lagged consumption as explanatory variables.

found that smoking in poorer households was more responsive to price than was smoking in richer households (overall elasticities of  $-0.47$  and  $-0.16$ , respectively) (see Annex Table A10 for the full set of estimates by income quintile).

In a recent follow-up study, Önder and Yürekli (2007) added data from the 2003 Turkish Household Expenditure Survey to look at changes in price elasticity over time.<sup>20</sup> Using a similar approach, they estimated a cigarette demand elasticity of  $-0.67$  in 2003 (Table 6.2). Their estimates indicated that much of the impact of price is on cigarette consumption by smokers (conditional demand price elasticity of  $-0.47$ ), but that prices also have a significant impact on smoking prevalence (participation elasticity of  $-0.20$ ). Önder and Yürekli found that the increased price sensitivity of smoking was true for all income quintiles and that smoking among those in poor households was nearly twice as sensitive to price as smoking among persons in rich households (Table 6.2).

**New Evidence**

**Annual Time Series Data**

Using data for 2001 through 2006 provided by TAPDK, the Turkish regulatory agency for tobacco and

alcohol, we update Önder’s (2002) time series analysis of cigarette demand in Turkey.<sup>20</sup> Using generalized least squares methods to account for autocorrelation,\* four alternative linear regression models are estimated:

$$I: \ln Q_t = \beta_0 + \beta_1 \ln P_t + \beta_2 \ln Y_t + \beta_3 \text{Regulation}_t + \beta_4 \text{Crisis}_t + \beta_5 \text{Trend}_t + \varepsilon_t$$

$$II: \ln Q_t = \beta_0 + \beta_1 \ln P_t + \beta_2 \ln Y_t + \beta_3 \text{Regulation}_t + \beta_4 \text{Crisis}_t + \varepsilon_t$$

$$III: \ln Q_t = \beta_0 + \beta_1 \ln P_t + \beta_2 \ln Y_t + \beta_3 \text{Regulation}_t + \beta_5 \text{Trend}_t + \varepsilon_t$$

$$IV: \ln Q_t = \beta_0 + \beta_1 \ln P_t + \beta_2 \ln Y_t + \beta_3 \text{Regulation}_t + \varepsilon_t$$

where  $\ln$  is the natural logarithm,  $Q_t$  is the per capita (15 and older) consumption of cigarettes in year  $t$ ,  $P_t$  is the average real price of cigarettes in year  $t$ ,  $Y_t$  is per capita real income in year  $t$ ,  $\text{Regulation}_t$  is an indicator variable for tobacco control regulations in year  $t$ ,  $\text{Crisis}_t$  is a dummy variable that takes on a value of 1 for the economic crises in Turkey in 1994 through 1996 and 2001 and 2002,  $\text{Trend}_t$  is a time trend variable, and  $\varepsilon_t$  is an error variable.

The regulation variable takes on a value of 0 before 1991, 0.25 from 1991 through 1996 (when health

**Table 6.2: Price elasticity of cigarette demand by households, 1994 and 2003**

	Overall		Poorest quintile		Richest quintile	
	1994	2003	1994	2003	1994	2003
Smoking Participation <sup>a</sup>	-0.03	-0.20	-0.12	-0.31	-0.15	-0.15
Conditional Demand <sup>b</sup>	-0.39	-0.47	-0.34	-0.68	-0.30	-0.36
Total <sup>c</sup>	-0.41	-0.67	-0.47	-0.99	-0.16	-0.51

Source: Önder 2002, Önder and Yürekli 2007.

Notes:

- <sup>a</sup> The elasticity of smoking participation is the percentage change in number of smoking households for a one-percent increase in cigarette price.
- <sup>b</sup> Conditional demand is the percentage change in the quantity of cigarettes smoked by current smokers for a one-percent increase in cigarette price (that is, the change in consumption conditional on a household having smokers).
- <sup>c</sup> The total elasticity is the change in cigarette consumption that accounts for both changes in numbers of smokers and changes in quantities smoked by continuing smokers.

\* The generalized least squares procedure attempts to correct for a common problem that occurs in estimates based on time series — annual data tends to be highly correlated with previous years’ data, and this can result in wider confidence intervals that overstate the significance of the statistical relation between quantity and price.

warning labels were required on cigarette packs and advertising), and 1 from 1997 through 2006 (following the enactment of comprehensive tobacco control legislation banning all tobacco advertising and sponsorships and restricting smoking in public places).

Given the potential endogeneity of cigarette price in this model, an instrumental variables approach is employed,\* with the real tax per pack, real per capita income, and the time trend used as instruments for price.

In all estimated models, cigarette price is found to have a negative and significant impact on cigarette demand, with estimated elasticities ranging from  $-0.33$  to  $-0.44$ , with an average elasticity of  $-0.39$  (see Table 6.3).

Given the earlier elasticity estimates described above, these estimates would appear to indicate that cigarette demand in Turkey is becoming increasingly more responsive to price (see Table 6.4). The increased price sensitivity of demand is likely to be due, at least in part, to the recent changes in the structure of cigarette excise taxes which reduce the incentives for substitution between higher and lower priced cigarettes.

In addition, income is found to have a positive and significant impact on cigarette demand, with an average estimated income elasticity of 0.56. Estimated coefficients for the economic crisis indicator variable are also positive and significant, implying that cigarette smoking increased during Turkey's economic crises of the mid-1990s and early 2000s. Surprisingly,

**Table 6.3: Annual time-series estimates of cigarette demand, 1960-2006<sup>a</sup>**

	Model I	Model II	Model III	Model IV
Intercept	0.056 (0.50)	0.057 (0.55)	0.065 (0.53)	0.062 (0.53)
$\ln(\text{Predicted } P)^b$	$-0.331^{***}$ (-3.17)	$-0.439^{***}$ (-7.59)	$-0.385^{***}$ (-3.35)	$-0.406^{***}$ (-6.68)
$\ln Y$	$0.595^{***}$ (10.13)	$0.545^{***}$ (13.08)	$0.565^{***}$ (8.74)	$0.556^{***}$ (12.36)
Regulation <sup>c</sup>	$0.248^{***}$ (3.41)	$0.198^{***}$ (3.20)	$0.189^{**}$ (2.40)	$0.177^{**}$ (2.68)
Crisis <sup>c</sup>	$0.129^{***}$ (3.29)	$0.117^{***}$ (3.09)		
Trend <sup>d</sup>	$-0.006$ (-1.21)	$-0.001$ (-0.22)		
Adj. R <sup>2</sup>	0.921	0.925	0.903	0.908
F-statistic	106.28	140.54	106.12	148.91
Durbin-Watson	1.88	2.00	1.99	2.08
N	46	46	46	46

Source: Authors' estimation for the present report. Adj. R<sup>2</sup>, the F-statistic and the Durbin-Watson statistic are measures used to evaluate the fit of particular econometric models. The F-statistics reported for all the models indicate that the variables included are jointly statistically significant. The Durbin Watson test is conducted to eliminate the possibility that successive years' data is correlated. Serial correlation is a concern since it can result in the statistical significance of explanatory variables being overstated.

Notes:

<sup>a</sup> \*\* and \*\*\* show significance at 5% and 1% significance levels. T-statistics are reported in parentheses.

<sup>b</sup> The coefficients of  $\ln(\text{Predicted } P)$  are read as elasticities, or the effect of a percentage change in price on the change in cigarette demand holding the effects of income and any prominent policy changes constant.

<sup>c</sup> Regulation and Crisis are variables introduced to account for particular years when the industry was subject to regulation, and when the economy experienced a crisis. Excluding these variables would lead some of the change in demand that is attributable to factors other than cigarette prices to be incorrectly attributed to price.

<sup>d</sup> Models I and II include time trends to account for general changes in cigarette demand over time that are not explained by price and other variables. These trends were not statistically significant.

\* One way in which this endogeneity problem arises is from the fact that factors that influence the observed relationship quantity demanded and price might be omitted – for instance, if consumer preferences shift to higher priced premium brands without a change in per capita consumption, it would appear as if consumers have become less price responsive (prices are observed to increase, but quantities do not decline much), when in reality they might be as price responsive, but operating at a different segment of the market. The instrumental variables approach attempts to reduce the possible bias in estimates that arises from the endogeneity problem.



**Table 6.4: Elasticities of demand for cigarettes using time-series data**

Studies	Period	Price Elasticity	Income Elasticity
Tansel (1993)	1960-1988	Short-term: -0.214 Long-term: -0.370	0.411
Önder (2002)	1960-2000	-0.192 Range: -0.190 to -0.284	0.233
This report	1960-2006	-0.390 Range: -0.331 to -0.439	0.565

the indicator for tobacco control regulations is positive and significant in all models; this may be the result of weak enforcement of these regulations and a correlation between the regulation measure and other factors that influence cigarette demand that are not controlled for in this model (for example, the growing presence of multinational cigarette

companies in Turkey during these years). Finally, the coefficients on the time trend are not statistically significant, indicating that after accounting for price, income, tobacco control regulations, and the economic crises, there is no consistent time trend in cigarette smoking in Turkey over the period from 1960 through 2006.

#### Endnotes for Chapter VI

<sup>18</sup> Tansel, A. "Cigarette demand, health scares and education in Turkey," *Applied Economics*. 1993; 25: 521-529.

<sup>19</sup> Önder Z. *Economics of tobacco control in Turkey*. HNP Discussion Paper, Economics of Tobacco Control Paper, Washington D. C.: The International Bank for Reconstruction and Development/ The World Bank. 2002; 2.

<sup>20</sup> Önder Z, Yürekli A. *Regressivity of Cigarette Excise Taxes and Tobacco Control: A Case Study in Turkey*. Working paper. 2007.



## VII. Cigarette Taxes and Revenues in Turkey

Taxes are an important determinant of retail cigarette prices. In this section, we provide an overview of the different taxes levied on cigarettes and examine the historic and current excise structure in Turkey. We also describe the impact of these taxes on cigarette prices. Finally, based on the elasticity estimates produced for this report and presented in the previous section, we conduct a simulation analysis to show the impact of increases in cigarette taxes and prices on overall cigarette consumption, on poor smokers' smoking patterns, and on government revenues.

### Cigarette Taxation

Tobacco excises can be imposed on either a specific or an *ad valorem* basis. With a specific excise, the tax is based on some measure of the volume or quantity of the tobacco product sold. With an *ad valorem* tax, the tax is based on the value of the tobacco product. The unit used to specify a specific excise tax for cigarettes is often based on the number of cigarettes (e.g. per 1000 sticks or per pack of 20). *Ad valorem* excises are often based on manufacturer (ex-factory), distributor, or retail prices. The application of excises differs by countries. Most countries levy either specific or *ad valorem* excises. Some countries levy an *ad valorem* excise with a specific excise floor (e.g. Turkey, Russia); thus, when the *ad valorem* tax liability falls below the minimum specific levy, cigarettes are subject to the specific excise tax. A benefit from this is that it reduces the scope for undervaluation. Some countries give the specific excise tax an *ad valorem* nature within a multi-tier regime with different specific rates prescribed for different price bands. Some countries impose a mixture of both specific and *ad valorem* excises.

The choice between specific and *ad valorem* taxes is a long-standing issue in tax policy, and has implications for both the impact of the tax and for tax administration. In addition to generating revenues, excise taxes can be used to promote various, often competing goals (e.g. to protect domestic producers or to improve public health) and the level and structure of an excise will have an impact on the interests of different players' interests in the market – government (revenues), producers (profit) and consumers (price, variety and quality). There are many studies that provide interesting analytical frameworks illustrating the relative merits of both types of excises, and how the implications of the choice vary with market structure.<sup>21,22</sup> Indeed, the choice for the optimal balance between specific and *ad valorem* taxes depends on the market characteristics. The main differences between the two excises are summarized in Table 7.1 which compares four different excise regimes: specific, *ad valorem*, *ad valorem* with a specific floor, and a mixed *ad valorem* and specific excise regime.

In general, specific excise taxes have the following features/effects:

- Result in relatively high levels of price, product quality and variety.
- Provide an appropriate basis to account for negative externalities associated with consumption of tobacco products.
- Are better at addressing undervaluation problems and more easily administered, particularly in countries with weak tax and customs administration.
- Can be manipulated when the basis for excise is set for the characteristics of the cigarettes such as length, weight or content of tobacco in cigarettes.
- Decline in real terms (as do the revenues they generate) if the tax is not regularly adjusted for inflation.

**Table 7.1: Comparison of specific and ad valorem excise regimes**

Specific Excise	Ad valorem excise	Ad valorem with specific floor	Mixed specific and ad valorem excise
<b>Tax base</b> Per unit of products (e.g., per 1000)	The value of the products. The excise can be applied on the retail sales price, or the ex-factory price.	The excise is calculated on an ad valorem basis; however, if the calculated tax falls below a specified minimum floor, a specific tax rate applies.	Both ad valorem and specific excises are applied.
<b>Administrative requirements</b>	The tax should be collected at the point of manufacturing and at the time of imports. Low, as only the volume of the products has to be ascertained.	The administrative burden can be high, as with a pure ad valorem regime.	The administrative burden is high as it requires assessing and collecting both ad valorem and specific excises.
<b>Undervaluation</b>	Not an issue.	The excise regime is susceptible to undervaluation. This can be overcome by prescribing a minimum retail sale price.	The ad valorem part of the excise collections is susceptible to undervaluation.
<b>Impact on product quality</b>	Upgrading effect tend to reduce the relative tax on high quality products.	Multipier effect provides a disincentive to costly quality improvement.	
<b>Impact on price</b>	Tends to lead to higher prices, particularly for low-priced cigarettes.	Tends to lead to lower prices. Price reductions will be "subsidized" if the multiplier effect is strong.	Tends to lead to higher prices for low-priced cigarettes.
<b>Inflation</b>	The real value of the excise will be eroded unless adjusted in line with inflation.	The real value of the excise will be preserved as prices increase; at least, to the extent that tobacco product prices follow inflation.	The real value of the specific floors will be eroded over time unless adjusted in line with inflation.
<b>Health benefits</b>	The tax will discourage the smoking of tobacco products irrespective of the price.	The tax may encourage "trading down" in favor of cheaper cigarettes; these potentially could have a worse health and revenue impact.	

Source: WHO Consultation Meeting for the Technical Handbook on Tobacco Tax Administration, Proceedings of a meeting, 18-19 November, 2009, Washington, DC.

- Serve better if the focus of the tobacco tax is to promote public health by reducing tobacco use.

By comparison, *ad valorem* excises have the following features/effects:

- Seem most appropriate in markets characterized by monopolistic output restrictions and little heterogeneity of the product.
- Lead to higher tax revenue as cigarette prices increase.
- Are prone to undervaluation problems, especially in countries with a weak tax and customs administration.
- Have a multiplier effect on consumer's price and the manufacturers' quality decision by increasing the differences in prices between high and low quality/cost products reducing producers' incentives to produce higher quality products and increasing consumers' incentives to substitute to cheaper products in response to tax and price increases.
- Can create incentives for firms to cut prices since any manufacturer price reduction leads to a greater reduction in consumer price.

Some countries have successfully combined the two: applying a minimum specific excise rate as a floor, but charging an *ad valorem* rate on top of this. Alternatively, some countries use specified minimum values for the excise and import duties assessment.\* Even in countries with relatively limited administrative capacity this has worked reasonably well. A similar outcome can be achieved by assessing the *ad valorem* excise based on a prescribed price band. However, this is likely to be less desirable, if the prices are not market determined or if prices are updated regularly.

### History of Cigarette Tax Rates in Turkey

Until 2002, cigarettes sold in Turkey were subject to a variety of dedicated, mostly *ad valorem* taxes applied at different places in the distribution chain, with rates that were determined each year by the Cabinet (see Table 7.2). In 2002, most of these taxes were replaced by a "special consumption tax" (SCT) that was set at 49.5% of retail price (inclusive of taxes) and applied to all tobacco products. Through 2005, revenues generated from the SCT continued to support the various funds to which earlier dedicated tax

**Table 7.2: Taxes on cigarettes in 2000**

Type of Tax	Amount of Tax
Tobacco Fund	US\$ 3/kg**
Imported cigarettes:	US\$ 0.40 per pack
Defense Industry Fund	10% of factory price
Additional Fund	120% of factory price
Education Fund	15% of retail price
Grazing Ground Fund	2% of retail price
Veterans Fund	2% of retail price
Value Added Tax	17% of retail price

Source: Ministry of Finance data compiled by Önder (2000).

\*\* Until January 2010, domestic cigarettes paid this tax based on the imported tobacco leaf content of cigarettes. The US\$ 3 figure was applicable for cigarettes with a 100 percent imported tobacco content. Cigarettes with 50% imported tobacco content carried a tax of US\$ 1.5 per 1000 pieces. Cigarettes with no imported tobacco content are not subject to a tax liability for the tobacco fund.

\* For example, the excise duty can be calculated as the larger of an *ad valorem* rate and a specific excise amount.

revenues went. The only dedicated taxes that were retained were the tax on imported tobacco leaf used in cigarette production (taxed at a rate of US\$ 3/kg) and a US\$ 0.40 per pack tax on imported cigarettes, with revenues from these taxes going to the tobacco fund.

### Tobacco Fund Tax

This fund was established long before the privatization of the state-owned tobacco monopoly TEKEL. The main objectives of the fund were to protect Turkish tobacco leaf growers by raising the costs of using imported tobacco leaves in cigarette and other tobacco products production and to protect domestic manufacturers from imported cigarettes. In recent years, almost all domestically produced cigarettes have had a percentage of imported tobacco leaves and the manufacturers pay a tax based on the proportion of imported tobacco leaves used in cigarettes, with this tax varying from US\$ 0.03 to US\$ 3 per 1000 pieces of cigarettes. If cigarettes were

imported directly, they were subject to a tax of US\$ 0.40 per pack, in addition to import duties, excise taxes, and the VAT. Since these taxes were levied on imports (or share of imported tobacco leaves), the World Trade Organization (WTO) and the EU claimed that the tax was discriminatory and suggested eliminating the tobacco fund taxes and replacing them with new levies on top of excise duties. The tobacco fund tax on imported cigarettes and processed tobacco leaves was eliminated when the government increased the excise taxes in January 2010. A plan is also being developed to eliminate the tobacco fund tax on imported unprocessed (raw) tobacco gradually by 2018.

### Tobacco Excise Taxes 2002-2009

Tobacco taxes have been increased and new excises added since 2002 (see Table 7.3). January 2003 saw the SCT *ad valorem* tax rate being increased to 55.3% of retail price.

**Table 7.3: Tax (Excise, VAT and Total) rates as percent of retail price on cigarettes in Turkey (2002-2010)**

Year	Excise Taxes (Structure at the end of the year)			VAT rate <sup>d</sup>	Total tax rate
	<i>Ad valorem</i>	Minimum specific tax per pack	Total excise rate		
2002	49.5%		49.5%	15.25%	64.8%
2003	55.3%		55.3%	15.25%	70.6%
2004	28.0%	AND 0.35 TL – 1.00 TL	56.3%	15.25%	71.6%
2005 <sup>a</sup>	58.0%	Or 1.20 TL	60.2%	15.25%	75.5%
2006	58.0%	Or 1.20 TL	59.4%	15.25%	74.6%
2007	58.0%	Or 1.55 TL	58.2%	15.25%	73.5%
2008	58.0%	Or 1.55 TL	58.1%	15.25%	73.3%
2009 <sup>b</sup>	58.0%	Or 2.05 TL	58.8%	15.25%	74.1%
2010 <sup>c</sup>	63.0%	Or 2.65 TL	63.4%	15.25%	78.7%

Notes: These are the tax rates at the end of each year.

<sup>a</sup> Since July 2005, companies pay the greater of the *ad valorem* or the specific excise.

<sup>b</sup> 2009 total and excise tax rates are the average values calculated based on first eight months of sales and paid taxes.

<sup>c</sup> 2010 average total and excise tax rates are estimated based on October 2009 prices and predicted sales of cigarettes for the twelve months of 2009.

<sup>d</sup> The VAT rate here is expressed as a percentage of the price inclusive of VAT. As a percentage of price excluding VAT, this translates into 18%.

In February 2004, the tax structure was changed again. A specific excise tax was added, with the amount of the specific tax based on the retail price. The specific tax was 0.25 TL per pack on brands priced up to 1.6 TL per pack, 0.05 TL per pack on brands from 1.65 to 3.05 TL per pack, and 0.08 TL on brands priced higher than 3.05 TL per pack.\* In an effort to at least partially offset the impact of the new tax structure, cigarette companies responded by reducing retail prices. The reduction in retail prices significantly reduced government revenues from the SCT, leading the Ministry of Finance to further change the tax structure.

By mid 2004, the SCT was reduced to 28% of retail price, while the specific tax was increased significantly and was now set to vary inversely with the share of oriental tobacco used in cigarette production. Cigarettes with oriental tobacco content less than one-third of overall tobacco were taxed at a rate of 0.05 TL per stick (1 TL per pack). The greater the share of oriental tobacco used in cigarettes, the lower the tax rate, with cigarettes that used at least two-thirds oriental tobacco taxed at a rate of 0.35 TL per pack. There were two key reasons for basing the specific tax on oriental tobacco content. The first was that this gave some advantage to TEKEL whose brands mostly used oriental tobacco and disadvantaged multinational cigarette companies whose brands included less oriental tobacco. The second was that this helped protect domestic tobacco farmers, given that Turkey is one of the world's leading growers of oriental tobacco.

Cigarette companies quickly adapted to the new tax structure by increasing the oriental tobacco content

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**In June 2009, specific excise increased to 2.05 TL per pack, and manufacturers also increased retail prices by 0.50 TL per pack.**

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of their cigarettes, a move that again adversely affected cigarette tax revenues. In response, the government increased the specific excise tax rates in February 2005, but eventually abandoned the tax based on oriental tobacco content in July 2005. The content-based tax was replaced by a simpler specific tax of 0.06 TL per cigarette (1.20 TL per pack) that applied to all brands regardless of price or tobacco content. At the same time, the *ad valorem* excise (SCT) was increased from 28% to 58% of retail price. In February 2007, the specific tax was increased from 1.20 TL to 1.40 TL per pack and in November 2007 increased again to 1.55 TL per pack. In June 2009, specific excise increased to 2.05 TL per pack, and manufacturers also increased retail prices by 0.50 TL per pack. In January 2010, the specific tax was increased to 2.65 TL per pack and *ad valorem* was increased to 63% of retail prices. In addition to *ad valorem* and specific excise taxes, all cigarettes are also subject to an 18% statutory value-added tax (VAT) which amounts to 15.25% of the retail price of cigarettes inclusive of VAT.

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**In January 2010, the specific tax was increased to 2.65 TL per pack and *ad valorem* was increased to 63% of retail prices.**

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### **Tobacco Excise Taxes: recent developments**

Turkey currently administers an *ad valorem* excise regime with a specific floor value. Thus, excise is calculated on an *ad valorem* basis of 63% of retail prices of a pack of cigarettes as of 2010; however, if the calculated tax falls below a specified minimum floor, a specific tax rate applies.

In 2008, cigarettes under 2.67 TL per pack were subject to specific tax of 1.55 TL, while those with retail

\* Since this structure was changed shortly after the introduction, these rates are not shown in Table 7.3, which shows the tax rates in effect at the end of each year.

† Though the *ad valorem* tax was, in theory, applicable for all cigarettes priced above 2.67 TL, we did not find any cigarettes priced between 2.60 TL and 2.75 TL per pack in 2008.

prices higher than 2.75 TL<sup>†</sup> per pack were subject to 58% *ad valorem* rate. In 2009, when the specific floor value increased to 2.05 TL per pack and the industry increased brand prices by 0.50 TL per pack, cigarettes that have prices equal to or lower than 3.40 TL per pack were subject to the specific excise.

From 2005 through 2009, the *ad valorem* rate was left unchanged and price increases were instead put in place through a combination of the Ministry of Finance increasing the specific floor tax and cigarette manufacturers agreeing to a price increase of 0.50 TL per pack.

It is important to reiterate that the effectiveness of the specific tax will be eroded over time unless periodically increased to account for inflation. Under the Turkish excise tax regime, the specific excise is not adjusted automatically. Consequently, as the industry increases the retail prices of cigarettes, assuming the specific tax is unchanged, an increasing number of brands become subject to the *ad valorem* tax rather than the specific tax.

**...the effectiveness of the specific tax will be eroded over time unless periodically increased to account for inflation.**

One policy option in this scenario is the EU excise system that relies on both specific and *ad valorem* excises simultaneously, obtaining the benefits of both and ensuring the sustainability of higher revenues and the efficient administration of excises. If instead the government maintains the current tax system, the specific excise floor would need to be increased in order to reduce the price gap between low and high priced cigarettes.

### Cigarette Excise Tax Revenues

Cigarette taxes are an important source of revenue for the Turkish government. In 2008, excise and value added taxes on cigarettes generated an estimated 14 billion TL in tax revenues, about 8% of overall tax revenues and 6.9% of all government revenues. The Ministry of Finance estimated that total tax revenue in 2009 would amount to about 11.9 billion TL, or 7.9% of overall tax revenues and 6.5% of all government revenues (see Table 7.4).

While revenues from cigarette excise taxes in Turkey are considerable, they fall well below the revenues generated from cigarette excise taxes in other EU member states. As Graph 7.1 indicates, despite being the largest cigarette consuming country in the EU, Turkey's cigarette excise tax revenue in 2007-08 was among the lowest of major cigarette consuming countries.

**Table 7.4: Share of taxes (%) collected from cigarette sales in total government revenue and total tax revenue**

	2003	2004	2005	2006	2007	2008	2009 <sup>a</sup>
Share in Tax Revenue	6.0	9.2	8.9	8.0	8.0	8.4	7.9
Share in Government Revenue	5.1	7.6	7.0	6.5	6.6	6.9	6.5
Official Sales (in million packs)	4,062	5,506	5,391	5,267	5,362	5,607	5,299

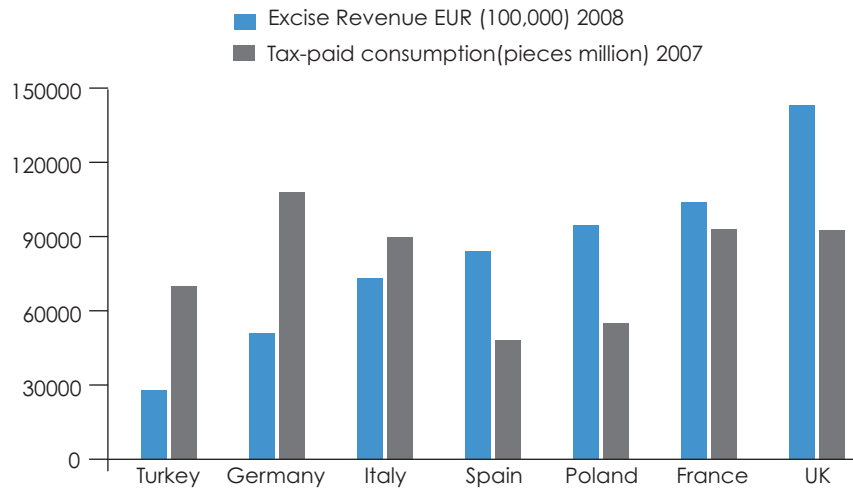
Source: Ministry of Finance.

Note:

<sup>a</sup> For 2009, an expected figure of 11.9 billion TL is used as the numerator (Total taxes, excise + VAT). Tax and government revenues are respectively, the expected budget targets of 202 billion TL and 244.2 billion TL.



**Graph 7.1: Cigarette consumption<sup>a</sup> in comparison to tobacco excise tax revenues<sup>b</sup>: Turkey in comparison to major EU countries**



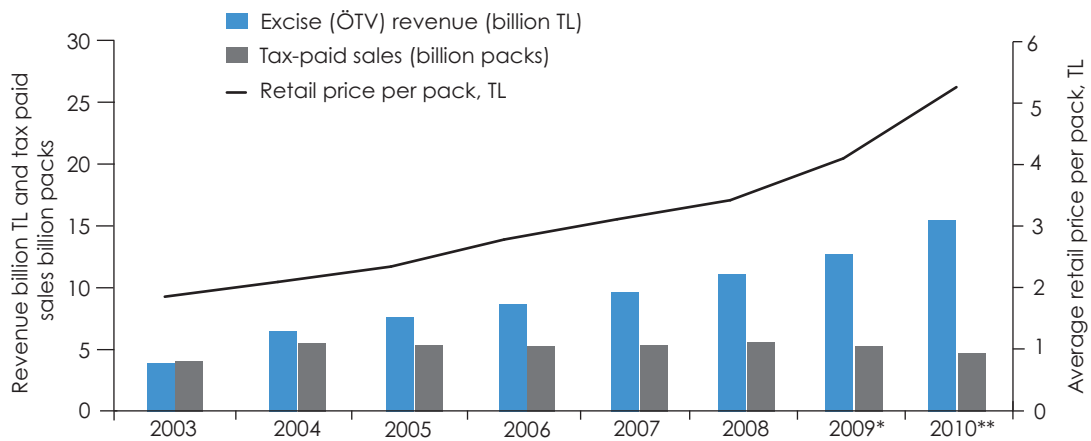
Source: ERC, WHO, GTCR 2008, Ministry of Finance websites

Notes:

<sup>a</sup> Cigarette consumption measured as tax-paid consumption, millions of pieces in 2007.

<sup>b</sup> Excise revenue measured in 100,000 Euros in 2008.

**Graph 7.2: Excise (Special Consumption Tax) revenue and price per pack 2003-2010**



Source: Ministry of Finance and TAPDK. ÖTV (Özel Tüketim Vergisi) is Turkey's excise tax.

Notes:

\* 2009 retail price is the average weighted price for October 2009. Based on first ten months of 2009 sales and excise revenue, twelve months sales and excise revenue are estimated.

\*\* Figures for 2010 are the predicted values based on 2010 excise tax rates, retail prices of brands on October 2009, and estimated total sales of 2009.

Cigarette excise tax revenues have risen in recent years as cigarette taxes have increased, despite generally declining per capita cigarette consumption and relatively flat total consumption in Turkey (see Graph 7.2). The increase in revenues is explained by the increases in specific excise taxes, increases in industry prices, and a shift among smokers from lower and mid-priced brands to premium price brands.

### Status of Turkish Cigarette Excises among EU Member States

Turkey is a candidate for European Union (EU) membership. After becoming a full member, Turkey would need to adjust its cigarette excise taxes to be in line with the standards set by the EU. Specifically, the EU requires that each member state's cigarette excise tax include both an *ad valorem* component and a specific component. The total excise tax must account for at least 57% of the retail price of the most popular price category of cigarettes sold, with the specific

**...the average retail price of cigarettes in Turkey is still well below that in many EU countries.**

component accounting for between 5% and 55% of total taxes on cigarettes (including the value-added tax). In addition, the total excise must be at least 64 euros per 1,000 cigarettes (1.28 euros per pack). Finally, member countries may impose a minimum excise duty up to 100% of the total excise on the most popular price category.

Turkey's total and excise tax incidences on cigarettes are in line with the EU. However, the average retail price of cigarettes in Turkey is still well below that in many EU countries. Indeed the average retail price of cigarettes in Turkey is the lowest among all high income EU member countries, as shown in Graph 7.3, though as Graph 7.4 suggests, cigarette prices in Turkey are in the middle of the range of prices

**Graph 7.3: Excise status and average retail price of selected high income EU member countries in January 09 and Turkey in June 09**



Source: EU Commission Excise Tax data from January 1, 2009 and authors' calculation for Turkey



**Graph 7.4: Excise status and average retail price of selected middle income EU member countries in January 1 (Turkey: June 2009)**



Source: EU Commission Excise Tax 2009

observed in other new EU member states. (See Annex Table A9 for detailed data on prices and excise tax yield for EU member states).

### **Economic and Political Consideration on Choice between Excise Taxes**

Given current taxes and prices, the overall share of cigarette excise taxes in final retail price in Turkey meets the minimum standard set by the EU. However,

**...given current economic stability and economic growth in Turkey, the government should aim to reduce the gap in retail prices by gradually increasing the specific excise while aiming to have excise taxes account for at least 70% of retail prices.**

as described above, the current tax is not a combination of specific and *ad valorem* taxes, but rather one or the other, depending on retail price. In the past, particularly during the triple-digit inflationary periods of the late-1990s/early-2000s, reliance on *ad valorem* taxes was a good choice, as the amount of the tax and tax revenues would rise with price. However, given current economic stability and economic growth in Turkey, the government should aim to reduce the gap in retail prices by gradually increasing the specific excise while aiming to have excise taxes account for at least 70% of retail prices.

As discussed previously, the choice between specific and *ad valorem* taxes is a long-standing issue in tax policy, and has implications for both the impact of the tax and for tax administration. In Turkey, the government appears to have had three competing goals in the post-privatization period:

1. Assisting the privatization of the former state monopoly, TEKEL. Large increases in specific taxes can place a burden on cash flows of a privatizing entity. The specific excise was not increased between January 2008 and June 2009.
2. Reducing reliance on one or two companies for tax revenues. In general, governments faced with an industry where a few brands dominate the market face the challenge of a few firms having greater negotiating power as well as greater ability to manipulate revenues through their own pricing decisions.
3. Improving public health — As mentioned above, the Turkish government has recently strengthened tobacco control measures and the real price of cigarettes has been increasing.

If the priorities are to improve public health while at the same time generating higher revenues, a higher specific excise would be most effective in doing both. In the following section, we examine the impact of alternative tax structures on cigarette consumption, tax revenues, cigarette smoking prevalence, and premature deaths caused by smoking under two scenarios.

### Simulation Analysis of Alternative Excise Tax Increases

In a country with a tax structure like Turkey's which results in a wide price gap between low and high price cigarette brands, the government can reduce the gap by raising the specific excise tax levied on low priced brands, while maintaining the *ad valorem* tax rate on high priced brands.

When manufacturers increased retail cigarette prices by between 6.5% and 13.5% in March 2009\* and

there was no change in the excise tax rates, the market share of brands subject to the minimum specific excise fell from 15% (867 million packs) to 7% (371 million packs). In June 2009, the government increased the specific excise from 1.55 TL per pack to 2.05 TL per pack, while leaving the *ad valorem* rate of 58% unchanged. As a result, the share of brands subject to the specific excise tax increased to 54% (2.9 billion packs).<sup>†</sup> However, in July 2009, following the industry's price increase of 0.50 TL per pack, the share of brands subject to the specific excise tax returned to 15%.

Table 7.5 summarizes the results of simulations used to project the government's expected cigarette excise tax and total cigarette tax revenues under two scenarios as compared with the 2009 baseline.<sup>§</sup>

In Scenario 1, we predict cigarette sales and cigarette tax revenues for the 2010 increase in the specific excise to 2.65 TL per pack and the *ad valorem* rate to 63%; October 2009 prices are employed in this scenario.

In Scenario 2, we estimate the impact on sales and tax revenues of an increase in the *ad valorem* tax to 65% and the specific tax at 3.10 TL per pack.

Given the  $-0.39$  price and  $0.565$  income elasticities of cigarette demand estimated above, we predict that with the January 2010 tax increases (Scenario 1), government cigarette excise tax revenues will rise by 22.5% (to 15.5 billion TL). We estimate that total cigarette consumption will fall by 12.2% (to 4.7 billion packs). The excise tax incidence would increase, from 58.8% to 63.4%.

Despite the significant reduction in consumption, cigarette excise tax revenues would have risen by

\* The excise tax increase was expected in January 2009, but was postponed due to local elections to be held in March. In anticipation of the postponed tax increase, cigarette companies raised retail cigarette prices by between 6.5% and 13.5% in March 2009 (see Annex Table A11 for selected brand price changes).

<sup>†</sup> Market share here is calculated by assuming that March 2009 retail prices do not change after the specific excise increases.

<sup>§</sup> Estimates for the two scenarios are obtained from a computer simulation model that accounts for the price and income elasticities of cigarette demand in Turkey, and the excise taxes, VAT, market prices and retail margins and sales volume for the 50 most widely consumed brands.

**Table 7.5: Estimated government revenues, sales, average retail price of cigarettes for January 2010 tax increase and an alternative scenario**

	Price elasticity: $-0.39$ , income elasticity: $0.565$		
	Baseline	EXCISE TAX INCREASE	
	2009	Scenario 1: EFFECTIVE JAN 2010	Scenario 2: ALTERNATIVE
	Specific: 2.05 YTL Ad valorem 58%	Specific: 2.65 TL Ad valorem 63%	Specific: 3.10 TL Ad valorem 65%
Cigarettes sales (Million packs)	5,300	4,651	4,263
% change in sales		-12.2%	-19.6%
Average retail price per pack <sup>a</sup>	4.06	5.25	6.02
% change in price		29%	48%
Average total tax per pack <sup>b</sup>	3.01	4.13	4.85
Total tax share in retail price (%) <sup>c</sup>	74.1	78.7	80.1
Excise tax per pack <sup>b</sup>	2.39	3.33	3.93
Excise tax share in retail price (%) <sup>c</sup>	58.8	63.4	65.4
Total revenue (Million TL)	15,935	19,223	20,667
% change in total revenue		20.6%	29.7%
Excise revenue (Million TL)	12,654	15,496	16,757
% change in excise revenue		22.5%	32.4%

## Notes:

<sup>a</sup> The simulations on average retail prices are based on 2009 October average retail prices.<sup>b</sup> Retail price and total tax per pack are weighted average values. Sales values are used as weights.<sup>c</sup> As percentage of retail price.

22.5% (to 15.4 billion TL) and total cigarette tax revenues would have risen by 20% (to 19.2 billion TL).

If the government had instead increased the specific excise to 3.10 TL and the *ad valorem* rate to 65% as in Scenario 2, average retail prices would have increased by 48% (higher than the 29% increase under the 2010 tax increase), resulting in a 19.2% reduction in cigarette consumption (7 percentage points more than in Scenario 1). This tax increase would have generated 16.8 billion TL in cigarette excise tax revenues and 20.7 billion TL in total cigarette tax revenue. The excise tax revenue would increase 4.1 billion TL from the 2009 levels of 12.6 billion TL.

Table 7.6 provides estimates of the likely changes in retail prices and excise tax per pack of cigarettes by premium, mid-level and low-priced cigarette categories under the two scenarios in Table 7.5.

The simulation analysis in Tables 7.5 and 7.6 clearly shows that there is room to increase excise taxes and generate higher revenues for the government, while at the same time promoting public health by reducing cigarette consumption. Further, as a general principle, retail price increases through tax increases are a more direct way to address tobacco control goals than relying on the industry to raise retail prices on its own accord — the January 2010 price

**Table 7.6: Weighted average retail price and excise tax per pack under alternative scenarios**

	Price elasticity: $-0.39$ , income elasticity: $0.565$				
	Baseline	EXCISE TAX INCREASE			
	2009	Scenario 1: EFFECTIVE JAN 2010		Scenario 2: ALTERNATIVE	
	Specific: 2.05 YTL Ad valorem 58%	Specific: 2.65 TL Ad valorem 63%		Specific: 3.10 TL Ad valorem 65%	
<b>Retail price</b>	<b>Base</b>	<b>Per pack</b>	<b>% change</b>	<b>Per pack</b>	<b>% change</b>
Premium	5.85	7.44	32%	8.52	51%
Mid-level	4.27	5.62	32%	6.44	51%
Low-priced	3.45	4.40	28%	5.04	46%
<b>Excise</b>	<b>Per pack</b>	<b>Per pack</b>	<b>% change</b>	<b>Per pack</b>	<b>% change</b>
Premium	3.28	4.69	43%	5.54	69%
Mid-level	2.48	3.54	43%	4.19	69%
Low-priced	2.06	2.81	36%	3.31	61%
<b>Excise incidence</b> (% of retail price)		<b>Excise share in retail price per pack</b>		<b>Excise incidence per pack</b>	
Premium	58.0%	63.0%		65.0%	
Mid-level	58.0%	63.0%		65.0%	
Low-priced	59.7%	63.8%		65.7%	

increases were an instance of the government increasing excise taxes without relying on firms to increase prices. Increasing specific excise to 3.10 TL per pack and *ad valorem* to 65% of retail price would be consistent with the call for higher taxes and prices outlined in the Ministry of Health's Turkish National Action Plan for Tobacco Control. The plan calls for increasing the tax on cigarettes to above 80% of retail prices by 2010. The simulation analysis clearly shows that a higher specific excise tax would generate both

significant new revenues while at the same time benefiting public health by significantly reducing cigarette smoking. Larger increases in either tax would lead to greater increases in revenues while at the same time bringing about larger declines in smoking, with an increase in the specific tax producing a greater public health benefit. Perhaps most importantly, the significant reductions in consumption would save many lives that would otherwise end prematurely because of diseases caused by smoking.

#### Endnotes for Chapter VII

<sup>21</sup> Keen M. The balance between specific and ad valorem taxation, *Fiscal Studies*. 1998; 19:1-37.

<sup>22</sup> Delipalla S, Keen M. The Comparison between ad valorem and specific taxation under imperfect competition, *Journal of Public Economics*. 1992; 49:351-367.

## VIII. Impact of Cigarette Tax Increases in Turkey

Using the estimates obtained in Chapter VII, we simulate the effects of cigarette tax increases on several outcomes related to cigarette smoking in Turkey, including the number of smokers, and examine the differential impact of tax increases on poor and rich households. In these analyses, all other factors, including the VAT and per capita income, are being held constant.

### Impact on Smoking Prevalence and Health

Using the estimates produced for this report, we simulate the impact of the tax increase described above

on the number of smokers and on future deaths caused by smoking among the current Turkish population cohort. Estimates based on the average price elasticity of  $-0.39$  and income elasticity of  $0.565$  estimated for this report are contained in Table 8.1. Given current population and cigarette smoking prevalence estimates in 2008, approximately 17.3 million adults in Turkey are smokers. Estimates suggest that as many as one in two smokers will die prematurely from diseases caused by cigarette smoking; to be conservative, we assume that 40% of current adult smokers in Turkey – 6.93 million persons – will die prematurely from smoking. Assuming that the current cohort of youth in Turkey will take up smoking at the same rates as in the current adult cohort, we estimate that 6.4 million youth ages 0

**Table 8.1: Estimated impact of a cigarette excise tax increase on the number of smokers and deaths caused by smoking among the current population cohort**

	Price elasticity $-0.39$ , income elasticity: $0.565$		
	Baseline	Scenario 1	Scenario 2
	2009	2010 Tax increases	GOING FORWARD
	Specific: 2.05 TL Ad valorem 58%	Specific: 2.65 TL Ad valorem 63%	Specific: 3.10 TL Ad valorem 65%
Adult smokers (millions)	17.3	16.7	16.3
Deaths caused by smoking among current smokers (millions)	6.93	6.78	6.65
Reduction in number of adult smokers		590,631	972,804
Reduction in deaths caused by smoking among adults		165,377	272,385
Future smokers among current youth cohort (millions)	6.4	5.98	5.69
Deaths caused by smoking among future smokers (millions)	2.6	2.39	2.28
Reduction in number of future smokers		437,746	720,994
Reduction in deaths among future smokers		175,099	288,398
Total reduction in deaths caused by smoking		340,475	560,783

Note: Estimates may not sum exactly to totals due to rounding. See text for discussion of assumptions used in estimating the impact of the alternative scenarios on the numbers of current adult and future smokers and premature deaths caused by smoking.

through 15 will become smokers as adults and that 2.57 million of them will die prematurely from diseases caused by smoking.

Based on Önder's (2002) estimate that about 30% of the impact of price on overall smoking among adults results from a reduction in smoking prevalence, we estimate that the average prevalence elasticity implied by the estimates obtained for this report is  $-0.12$ .<sup>20</sup> Given this, under the 2010 tax regime (Scenario 1), we estimate that the resulting price increases will reduce adult smoking prevalence by about 3.5%, reducing the number of adult smokers by 590,631. Given the evidence on the health benefits of smoking cessation, we assume that 70% of those who would have otherwise died prematurely from diseases caused by smoking avoid premature death by quitting. Thus, we estimate that this price increase reduces the number of premature deaths expected among current adult smokers by about 165,377.

Under the alternative proposed tax regimes that result in higher prices (Scenario 2) adult prevalence and the number of premature deaths caused by smoking would fall by more. Under Scenario 2, adult prevalence would fall by about 5.5%, reducing the number of adult smokers by just over 970,000 and averting over 272,000 premature deaths that would have otherwise been caused by smoking.

Considerable research shows that youth smoking is more responsive to price than adult smoking, with estimates from high-income countries suggesting that price elasticity of cigarette demand among youth is two or more times higher than it is among adults.<sup>23</sup> Assuming that youth smoking in Turkey is twice as sensitive to price as is adult smoking, we estimate that under the current tax regime in 2010, the price increases will reduce youth smoking prevalence by about 7%, preventing almost 437,000 youth from taking up smoking. All smoking-attributable premature deaths will be avoided among youth

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**...with a specific tax increase to 3.10 TL per pack and a 65% *ad valorem* tax ...youth smoking prevalence would fall by about 11%, preventing over 720,000 Turkish youth from taking up smoking and preventing over 288,000 premature deaths.**

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prevented from starting (40% of whom we assume would have died prematurely had they become smokers as adults), leading to a reduction of over 288,000 deaths among youth who do not initiate smoking as a result of the tax increase.

Again, the public health benefits are greater with a specific tax increase to 3.10 TL per pack and a 65% *ad valorem* tax. Under Scenario 2, youth smoking prevalence would fall by about 11%, preventing over 720,000 Turkish youth from taking up smoking and preventing over 288,000 premature deaths that would have otherwise been caused by smoking.

To summarize, raising the specific tax to 3.10 TL per pack and the *ad valorem* tax to 65% will lead 0.9 million current smokers to quit and prevent 0.7 million young people from initiating smoking, preventing 0.5 million premature deaths among Turkey's population. Further, it would generate an additional 4.1 billion TL in tax revenues.

### Impact on the Poor

Concerns about the impact of cigarette tax increases on the poor are often raised in opposition to higher cigarette taxes. Using data from the 2003 National Household Expenditure Survey, Önder and Yürekli (2007) examined this issue by looking at the burden of cigarette excise taxes on the share of total cigarette taxes paid by households at different income



levels.<sup>21</sup> Specifically, the authors calculated the share of total cigarette taxes paid by households in tertiles defined by overall household expenditures, both at the existing tax rates and for a tax increase of 25% and 50% (see Table 8.2). At existing tax rates, they estimated that households in the poorest one-third paid almost 28% of total cigarette taxes, while those in the richest tertile paid almost 37% of the total. Given the greater price responsiveness of smoking among the poor (as shown in Table 2.6), they estimated that after the tax increase, the share paid by households in the poorest tertile would fall to 16%, while the share paid by the highest tertile would rise to 46%. These estimates suggest that cigarette tax increases in Turkey are not likely to be regressive, given that the burden of these tax increases falls most on higher income households.

Studies examining tax reform often suggest that tobacco excise taxes can improve both tax equity and health, as suggested by the results above.<sup>24,25</sup> Concerns that remain about the impact of cigarette tax increases on the poor can be addressed by spending the new tax revenues generated by the tax increase in a progressive manner, in ways that benefit the poorest proportionately more. Using the new revenues to increase government spending on education, health care, and social assistance programs that benefit the poor can offset any negative impact of higher taxes on

low income smokers who continue to smoke, as well as provide benefits to low income, non-smoking households. Dedicating or earmarking tobacco taxes for public health is not a new concept, with an increasing number of countries doing this in recent years.

### Dedicated or Earmarked Taxes for Public Health

Increases in these taxes raise new revenues due to the fact that demand for tobacco products is relatively inelastic in most countries, including Turkey, and given that tobacco taxes account for only a fraction of retail prices. Experiences around the world consistently show that when tobacco taxes are increased, government revenues rise, even when tax avoidance and evasion increase.

Until 2000, Turkey had many dedicated tobacco taxes allocated to several different funds (Table 7.2). The government eliminated dedicated taxes by allocating funds from the general budget as needed. Earmarked taxes differ from dedicated taxes in that earmarked taxes are committed to support, or fully fund, pre-specified expenditure items.<sup>26</sup> Earmarking can be weak (purely formal and undertaken to make the system more transparent and to inform the taxpayer of the cost of a service), strong (revenue determines expenditure), wide (covering a whole spending programme) or narrow (a specific project within a programme).<sup>27</sup>

**Table 8.2: Share of cigarette taxes paid by household income groups**

Expenditure tertile	Share of cigarette tax revenues paid	Share of cigarette tax revenues paid if excise tax increases by:	
		25%	50%
The poorest one-third	27.80%	17.10%	16.19%
2nd	35.33%	38.04%	38.21%
The richest one-third	36.87%	44.86%	45.61%

Source: Önder and Yürekli (2007)

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**...earmarking will be more beneficial if dedicated for health or specifically for the treatment of nicotine dependence and for prevention programs, particularly when these efforts are targeted to the poor.**

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Many public finance economists oppose earmarked taxes mainly because they introduce rigidities that make it more difficult to allocate general revenues among competing uses.<sup>28-30</sup> However, there are several arguments that can be made in support of some form of earmarking for tobacco taxes. First, earmarking assures a minimum level of expenditures for desirable governmental functions, avoiding the need for wasteful repeated pressure on the legislature.<sup>31</sup> Second, earmarked tobacco taxes can promote equity by providing funds for programs that target lower-income populations (e.g. for smoking cessation or public health insurance), consistent with an overall system of taxes and transfers that promotes vertical equity.<sup>32</sup> Finally, earmarking will be more beneficial if dedicated for health or specifically for the treatment of nicotine dependence and for prevention programs, particularly when these efforts are targeted to the poor among whom smoking prevalence is higher and who are generally more sensitive to higher prices.<sup>33</sup>

#### **Earmarking tobacco taxes: country examples**

Tobacco taxes are earmarked by a number of governments. For example, several US States (notably California, Massachusetts, Arizona and Oregon) and several countries (e.g. Ecuador, Egypt, Estonia, Finland, Iceland, India, Korea, Nepal and Thailand) earmark part or all of their tobacco tax revenues for different purposes. In the case of health programs, these include mainly tobacco control and/or health

promotion programs. For example, Serbia collects 1 Dinar per pack that is allocated to its health insurance and financing system, as well as for tobacco control programs. In Nepal, a 1 paisa health tax per manufactured cigarette (domestically produced or imported) is imposed and earmarked for cancer control. Other countries such as Argentina, Costa Rica, Jamaica, Panama, Mongolia, and the Philippines allocate earmarked taxes to fund health-related programs/activities including programs targeting children, the elderly and the disabled (Costa Rica), education (Costa Rica, Iceland, Korea), emergency care (El Salvador, Paraguay), and sports activities (Colombia, Estonia, Switzerland) (WHO 2009).

Thailand is perhaps the best example of tobacco tax (and alcohol tax) earmarking. In 2001, the Government of Thailand passed the Health Promotion Foundation Act, which created the ThaiHealth Promotion Foundation. ThaiHealth receives 2% of the total national tax revenues from alcohol and tobacco taxes – equivalent to about US\$ 35 million per year. ThaiHealth acts as a catalyst and supports groups and organizations that are already working on public health issues. It reports directly to the Cabinet and Parliament each year. The success of ThaiHealth has inspired other countries to adopt or contemplate setting up the same policy – Mongolia has adopted the same structure as Thai Health and received technical assistance from ThaiHealth during the process of implementing this policy.

#### **Tobacco tax revenues and their earmarking towards health expenditures**

Tobacco excise tax revenues alone can provide a substantial contribution to Turkey's health system. Cigarette excise tax revenues under Turkey's 2008 excise tax regime were equivalent to 47% of total Turkish public health expenditures in 2006.\* Under the 2010 tax regime (Scenario 1) and under the suggested

\* In 2006, public health expenditure (at 26.4 billion TL) was equivalent to 3.48% of GDP (758.4 billion TL).



alternative tax increase (Scenario 2), the higher excise taxes would generate revenues to meet an additional 12% (under the 2010 tax regime) and 15.5% (under proposed tax regime) of public health expenditures.

A portion of the higher excise tax revenues generated under the 2010 tax increases and by the higher taxes proposed in Scenario 2 could easily be earmarked to fund health programs in Turkey. If 10% of the total excise tax revenues (1.55 billion TL out of 15.5 billion TL under the 2010 tax regime and 1.68 billion TL out of 16.8 billion TL) were dedicated or earmarked for health programs, the Ministry of Finance would still have 14 billion to 15 billion TL in excise revenues from cigarettes, more than what is expected in 2009.

## Illicit Trade

### Determinants of Illicit Trade

While many argue that cigarette taxes are the primary cause of contraband cigarettes, existing evidence indicates that a variety of other factors are important determinants of large scale, organized smuggling, individual tax avoidance, counterfeiting, and other illicit cigarette trade.<sup>14</sup> For example, while differences in cigarette taxes can contribute to the smuggling of cigarettes from low tax to high tax jurisdictions, pre-tax price differences are often substantial and create a financial incentive to smuggle (see Annex Figure A7). Others have found that the level of corruption in a country explains at least as much of the extent of smuggling as is explained by tax and price levels.<sup>34,35</sup> Other important determinants include the presence of an informal distribution network for cigarettes within a country, poor technology and communications at customs, weak or non-existent enforcement, and minimal penalties for those caught trading illegally in cigarettes.<sup>36</sup> Euromonitor International (2008) notes that technical deficiencies

at customs checkpoints and small fines are important determinants of smuggling in Turkey.<sup>37</sup>

### Illicit Trade in Turkey

According to Turkish Customs officials, there is no counterfeit cigarette production in Turkey. However, domestic and foreign brands (both authentic and counterfeit) are smuggled into Turkey. Domestically produced cigarettes exported to the Middle East, particularly Iraq, re-enter the country illegally across rural mountain roads, with smuggling of counterfeit cigarettes from Iraq into Turkey increasing sharply after the start of the Iraq war.<sup>37</sup> Ongoing unrest in southeastern Turkey makes it difficult to implement anti-smuggling in this region. Other key smuggling areas include the free trade zones in the cities of Izmir and Mersin, in western and southern Turkey, respectively. According to Turkish customs, cigarettes shipped to these zones disappear or are exported to the Middle East before being re-imported illegally. One major concern the Turkish customs authorities face is that profits from cigarette smuggling are used to finance terrorist activities.

According to the Ministry of the Interior, over 10 million packs of illegal cigarettes were confiscated in 2007, 2.5 million more packs than in 2006 (see Table 8.3). Illegal cigarette confiscations have been increasing since 2003. Based on the average retail price of foreign brands, the market value of these confiscated cigarettes was estimated to be 43 million TL in 2007, resulting in a loss of 31.5 million TL in cigarette excise tax and VAT revenues. Because only a small share of smuggled cigarettes is likely to be confiscated, actual losses are likely to be much higher. Table 8.4 presents estimates of these losses under conservative assumptions that confiscated cigarettes represent 1% and 5% of all illegally traded cigarettes. Given these assumptions, smuggled cigarettes are estimated to account for between 4 and 20% of tax-

**Table 8.3: Confiscated cigarettes in Turkey (2000-2007)**

Years	Volumes (packs) [1] (‘000)	Average price per pack [2] <sup>a</sup>	Approximate value [3]=[1]*[2]		Total revenue lost (million TL)	Share in total cigarette tax revenue
			TL (‘000)	US\$ (‘000)		
2000	2,134	0.63	1,344	2,158		
2001	2,776	1.35	3,747	3,050		
2002	1,332	1.7	2,247	1,492		
2003	3,641	2.1	7,645	5,124	5.1	0.08%
2004	4,316	2.6	11,005	7,739	7.9	0.10%
2005	4,843	2.9	14,044	10,480	10.6	0.11%
2006	7,213	3.3	23,947	16,734	17.9	0.16%
2007	10,747	4.0	42,987	34,389	31.5	0.26%

Source: Authors' calculation. Figures for the number of packs confiscated are provided by the Ministry of Interior

\* Average price of the foreign brands is used to calculate the value of smuggled cigarettes. Approximate value in US\$ is calculated using mid-year exchange rate.

**Table 8.4: Magnitude and impact of smuggling**

	Assumption: Share of confiscated cigarettes in total smuggled cigarettes	
	1%	5%
Cigarettes (packs, million)	214.9	1,074.7
Approximate value (million TL)	859.5	4,298.7
Total revenue lost (million TL)	630.2	3,151.0
Share in total cigarette tax revenue (%)	5	26
Share in total tax-paid sales (%)	4	20

Source: Authors' calculation. Figures for the number of packs confiscated are provided by the Ministry of Interior.

paid cigarette sales. Consequently, between 5% and 26% of overall tax revenues from cigarettes are estimated to be lost due to illicit trade. This range is consistent with the recent Euromonitor International estimate that smuggled and counterfeit cigarettes account for about 14% of the cigarette market in Turkey.<sup>37</sup>

### Impact of Smuggling on New Revenues from Cigarette Tax Increases

Existing evidence shows that significant cigarette tax increases lead to increases in government cigarette tax revenues, even when smuggling increases following the tax increases.<sup>34,35</sup> Using the simulation model

above, we estimate the impact of increased smuggling on Turkish tax revenues from cigarettes for the current and the proposed tax regimes as compared to situation in 2009. Specifically, we assume that the resulting price increase leads to an increase in smuggling that leads to an additional 25% decline in tax-paid cigarette sales. Estimates from this simulation are presented in Table 8.5. Under the 2010 excise regime (Scenario 1), with no increase in smuggling, we estimated that government revenues would rise by 20.9%. The government will earn much higher revenue — about 29.7% more — if the proposed tax regime (Scenario 2) is implemented. Even with a large increase in smuggling in response to the tax increase, we still

**Table 8.5: Impact of tax increase on government excise revenues with increased smuggling<sup>a, b</sup>**

	Price elasticity $-0.39$ : income elasticity $0.565$	
	Scenario 1	Scenario 2: Going Forward
	Specific: 2.65 TL Ad valorem 63%	Specific: 3.10 TL Ad valorem 65%
Percent increase in tax revenues, no increase in smuggling	20.9%	29.7%
Percent increase in tax revenues, increased smuggling	16.6%	22.0%

Note:  
<sup>a</sup> Impacts under scenarios 1 and 2 estimated relative to the baseline 2009 situation of a 2.05 TL specific tax and 58% ad valorem tax.  
<sup>b</sup> Increased smuggling assumes 25 percent additional reduction in tax-paid sales in response to tax increase replaced by smuggled cigarettes.

estimate that under the current 2010 regime and the proposed tax regime, government revenues will increase significantly – by 16.6 and 22% respectively – in response to the tax increase.

As these simulations indicate, the revenue generating potential of cigarette tax increases is maximized when illicit trade in cigarettes is minimized. Effective measures to curb illicit trade exist, including: affixing prominent, high tech cigarette tax stamps on all cigarette packs intended for retail sale; stronger border controls and enforcement of existing anti-smuggling laws; policies targeting money laundering; better tracking of cigarettes through the distribution process; and more stringent penalties on those caught illegally trading cigarettes. Turkey did adopt high tech tax stamps in 2006, a

move TAPDK officials suggest will reduce illicit cigarette trade by as much as 90%, when combined with other actions, including the implementation of an anti-contraband protocol developed by the Customs Undersecretariat, Ministry of Finance, Undersecretary of Foreign Trade, TAPDK, and all major cigarette producers in Turkey. Cigarette companies have also begun to inform the public about the consequences of illicit trade in tobacco.<sup>37</sup> Dedicating a small percentage of cigarette tax revenues to increased enforcement and related efforts would lead to a several-fold increase in revenues as smuggling is reduced. In addition, ongoing global efforts to develop an FCTC protocol on illicit trade will lead to more effective global action against cigarettes, further enhancing the revenue and public health impact of tobacco tax increases.

#### Endnotes for Chapter VIII

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## Summary and Recommendations

### Summary

The tobacco environment in Turkey has changed dramatically over the past few decades. Through the early 1990s, the Turkish government-owned TEKEL monopolized cigarette production and distribution. By early 2008, TEKEL had been privatized and several multinational tobacco companies competed with one another in Turkey's cigarette markets. Before the start of the new millennium, tobacco growing was subsidized by the Turkish government; in recent years, subsidies have been largely eliminated and the government has provided financial assistance to tobacco farmers willing to grow other crops on the land once used for tobacco growing. Until 1996, tobacco control policies and programs in Turkey were almost non-existent; in early 2008, the government adopted a comprehensive set of measures to reduce tobacco use that includes a ban on smoking in all indoor public places, bans on most forms of tobacco advertising and promotion, a prohibition on cigarette sales to minors, prominent warning labels on cigarette packaging, and mass-media public education efforts to warn about the dangers of tobacco use. The results of these changes are beginning to be seen, as per capita tobacco consumption has declined since 1999.

However, tobacco use in Turkey continues to impose a significant health and economic burden. Almost one-third of adults are cigarette smokers and many consume other tobacco products. Diseases caused by cigarette smoking account for about 55,000 deaths annually, with the death toll expected to more than double by 2050 if prevalence remains unchanged. More than 8% of youth are cigarette smokers and initiation is occurring at younger and younger ages. Given the delays between smoking initiation and onset of diseases caused by smoking, the high rate of youth smoking implies that Turkey will face unprecedented health and economic consequences from smoking in coming years.

Extensive research from a growing number of countries has documented the effectiveness of cigarette tax and price increases in reducing tobacco use. Turkey is no exception; previous economic studies as well as analyses done for this report clearly show that higher cigarette prices will reduce cigarette consumption and smoking prevalence and that cigarette demand in Turkey has become increasingly responsive to cigarette prices in recent years. Our estimates imply that a 10% increase in cigarette price will reduce overall cigarette consumption by nearly 4%. Recent research for Turkey indicates that about 30% of the reduction results from reductions in the number of smokers, with the remainder resulting from decreased cigarette consumption among continuing smokers. As predicted by economic theory, recent empirical research suggests that smoking in Turkey declines the most among the poorest households in response to higher cigarette prices.

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**...a 10% increase in cigarette price will reduce overall cigarette consumption by nearly 4% ...about 30% of the reduction results from reductions in the number of smokers, with the remainder resulting from decreased cigarette consumption.**

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The structure and level of cigarette taxes in Turkey has also changed dramatically over the past decade, with various earmarked taxes being replaced by cigarette excise taxes that currently account for about 63.4% of retail cigarette prices. The change in tax structure, recent increases in cigarette excise taxes and retail prices have contributed to increases in the real price of cigarettes in Turkey over the past several years, accounting for at least part of the observed reductions in per capita cigarette consumption during this period.

Based on the estimates produced for this report as well as previous research on cigarette demand in Turkey, we estimated the impact of increasing cigarette excise taxes and retail prices further. We examined the 2010 tax regime and an alternative tax regime. Under the 2010 tax regime and the proposed tax regime, excise taxes would rise to the level at which they account for 63.4% and 65.4% of retail prices respectively. A modest tax increase of this magnitude would reduce overall cigarette consumption by 12% to 20% respectively) compared to 2009 level, lead over 590,631 to 972,804 current smokers to quit smoking, and prevent 437,746 to 720,000 young people from taking up smoking. At the same time, due to the inelasticity of demand, the excise tax increase would result in a 22.5% to 32% increase (to 15.5 billion TL and 16.8 billion TL respectively) in the revenues the Turkish government receives from excise taxes on cigarettes. Even if smuggling increased in response to the tax increase, revenues would still increase, but to a lesser extent; strengthening ongoing efforts to curb smuggling would maximize the revenue and health impact of a cigarette tax increase. The health impact of such a tax increase would be significant, with the increased cessation and prevented initiation reducing the number of premature deaths caused by smoking in the current population cohort by an estimated 340,475 to 560,783 respectively.

Given this evidence, we make the following recommendations:

1. Increase the specific tax periodically and ensure it is automatically adjusted to keep pace with inflation. Further, in line with best practice, the rate of price increase should be higher than the inflation rate.
2. Increase excise taxes over time so that they account for at least 70% of retail cigarette prices. Given the inelasticity of cigarette demand, a tax increase of this magnitude will increase government revenues from cigarettes while at the same time encouraging many adult smokers to quit and preventing several young people from taking up smoking, reducing the health and economic burden caused by smoking in Turkey.
3. Raise revenues through excise tax increases rather than relying on cigarette manufacturers to increase the price of their brands.
4. Consider dedicating a portion of the increased tobacco tax revenues for financing the health care system and supporting tobacco control programs. For the recommended tax increase, 10% of the resulting excise tax revenues would cover about 5.6% of total public health expenditures.
5. Strengthen ongoing efforts to curb illicit trade in tobacco products. Reducing illicit trade will maximize the revenue and health impact of cigarette excise tax increases. These efforts should include a prominent role for Turkey in ongoing negotiations of the FCTC protocol on illicit trade, in order to develop and strengthen regional partnerships for reducing smuggling and contraband.

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