

The Economics of Tobacco and Tobacco Taxation in Poland

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“Increasing the average excise tax to 9.76 PLN per pack in Poland would lead 618,000 adult smokers to quit and prevent 215,000 young people from initiating smoking, resulting in a 7.2% reduction in premature deaths among Poland’s population. Further, it would generate an additional 7.1 billion PLN in excise 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 information on supply side issues related to tobacco in Poland is available at <http://www.tobaccofreeunion.org/content/en/217/>

Executive Summary

Tobacco use in Poland and its consequences

Tobacco use continues to be a major cause of mortality in Poland. The Global Adult Tobacco Survey (2009) revealed that 36.9% of men and 24.4% of women are current tobacco smokers in Poland. Relatively high smoking rates also persist among Polish youth. A 2009 Global Youth Tobacco Survey (GYTS) conducted in Mazovia Province found that 18.7% of youth ages 13-15 were current smokers and that 5.6% of boys and 7.4% of girls smoked daily. A comparable survey previously undertaken countrywide (Global Youth Tobacco Survey, 2003) revealed that 18.6% of youth ages 13-15 years (19.6% of boys and 17.1% of girls) were current smokers.

Tobacco smoking is the leading cause of premature death among the adult population in Poland. The burden of disease and earlier mortality borne by smokers is compounded by the effects of second hand smoke on non-smokers. Tobacco smoking in the presence of non-smokers is common in Poland. 44.2% of adults (14.1 million individuals) were exposed to tobacco smoke at home and 33.6% to tobacco smoke at their workplace.

Tobacco control efforts in Poland

Poland signed the Framework Convention on Tobacco Control (FCTC) in June 2004 and ratified it in September 2006. Notwithstanding considerable progress, tobacco control in Poland faces challenges. In 2008, approximately 1 million PLN was allocated to the Tobacco Control National Action Plan. This was a fraction of the amount mandated by the Tobacco Act of 1995, which directed 0.5% of the revenue from tobacco excise taxes (amounting to 65 million PLN in 2008) to the National Action Plan. The National Health Program 2007-2015 includes the intent to guarantee “workplaces free from tobacco smoke pollution for all

Higher tobacco excise taxes and prices are the most effective tool to reduce use and prevalence, and tobacco taxation is an important component of the overall tobacco control environment.

employed in Poland” and smoking is banned in health facilities and educational environments. There is, however, no comprehensive smoke-free law to cover all indoor public places and workplaces

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Tobacco excise tax structure: the EU and Poland

Higher tobacco excise taxes have been a key driver of price increases in Poland in recent years, with the European Union’s excise tax rules providing a framework for tax, and consequently price increases.

Poland is required to levy an excise tax that consists of two components (1) a specific excise tax, prescribed as a fixed amount per 1000 cigarettes, and (2) an ad valorem excise tax that is levied as a percentage of the maximum retail price charged by manufacturers on each cigarette pack. The EU also requires excise taxes to be a certain minimum: both as a value measured in Euro, and as a fraction of price.

The EU tests member states’ compliance by examining the taxes that countries levy on a reference price. The reference price used from 2011 onwards is the Weighted Average Price (WAP) of cigarettes, the total value of all cigarettes released for consumption

divided by the total quantity sold. For most EU members, the excise tax is required to be at least 60% of the retail price of a pack of cigarettes from January 2014. The minimum tax as measured in Euro, is required to be at least € 90 per 1000 cigarettes by January 2014. Poland and other recent EU members are required to ensure they reach this minimum by December 31 2017.

As of July 2011, Poland imposed a specific tax of PLN 158.36 per 1000 cigarettes. The weighted average price for 1000 cigarettes, as of July 1, 2011 was PLN 456.84, or € 116.04. With this weighted average price, the specific tax amounted to 40.89% of total tax (excise + VAT) well within both the 55% outer limit previously used and the 76.5% limit that will be permitted from January 2014. For 2011, Poland left its ad valorem rate of 31.41% unchanged. The VAT rate was increased from 22% to 23% of retail price exclusive of VAT. The excise yield on the weighted average price is € 76.67. This amounts to an excise incidence of 66.07% of the weighted average price.

While excise taxes as a percentage of final price are fairly high in Poland, the excise yield in Euro (the tax collected per 1000 cigarettes) and the price of cigarettes themselves are among the lowest in the European Union.

Impact of tobacco excise tax increases: Alternative scenarios

Estimates using time series data from Poland have suggested price elasticity of demand is in the range of -0.11 to -0.12 , suggesting a 10% increase in prices would be accompanied by a 1% decline in consumption. Other estimates using panel data suggest a short run price elasticity of cigarette demand of -0.4 . The average of these estimates is used to simulate the impact of alternative tax policy options for Poland. All the scenarios considered raise prices while being compliant with the range of taxes permitted by the European Union.

A first scenario estimates the impact of a switch to the EU recommended minimum of € 90 (equivalent to excise tax averaging 7.09 PLN a pack) with immediate effect. Such a move is predicted to raise prices 14.1%, reduce consumption by 3.5% and result in 174,000 fewer adults smoking in Poland, or a 1.8% decline in prevalence. It would also result in 60,500 fewer youth taking up smoking, or 3.5% fewer future smokers in the current cohort of 0-14 year olds. Taken together, this implies 78,000 fewer premature deaths in Poland's current population, or a 2% reduction in premature mortality. At the same time, the 1.05 PLN increase in excise tax per pack of cigarettes would result in excise revenue increasing by 2.3 billion PLN or US\$ 735 million at the October 2011 exchange rate, a 13.2% increase in cigarette excise revenues.

A different scenario estimates the impact of increasing specific taxes on cigarettes in Poland to enable total excise taxes to reach 70% of retail price (equivalent to excise tax averaging 8.47 PLN a pack), in line with the World Health Organization's recommendations. This would raise prices 34.7%, resulting in an 8.7% reduction in consumption. The number of current smokers quitting as a result is nearly 404,000, or a 4.3% decline in prevalence. Such a tax increase would also prevent nearly 149,000 individuals in the under-15 population from initiating smoking. Taken together, this would result in an estimated reduction in mortality of over 192,000 or 4.9% fewer smoking-related premature deaths in Poland's current population. The revenue impact of the higher excise tax is an additional 5.2 million PLN (US\$ 1.7 billion at the 2011 exchange rate of 1 US\$ = 3.13 PLN), or 30.3% more in excise revenues.

A final scenario models the impact of raising excise taxes to yield € 124, close to the current median yield in the EU-15 members in July 2011, to highlight the impact of further reducing the large gap in cigarette prices between Poland and several other EU countries. The public health and revenue impact of this scenario

(equivalent to excise tax averaging PLN 9.76 a pack) are the largest. A 50% increase in average cigarette price would result in an estimated 618,000 current adult smokers quitting, or a 6.3% reduction in prevalence. In addition, the price rise is estimated to result in 215,000 fewer initiations in the under-15 population. The total impact of this is 278,000 premature smoking-related deaths averted or a 7.2% reduction in premature mortality from smoking in the current population of Poland. The revenue impact of the increase in excise taxes is an additional 7.1 billion PLN in excise collections (US\$ 2.3 billion), or a 41.4% increase in cigarette excise revenues.

Recommendations

1. Rely on the specific rather than the ad valorem component of the excise tax, and impose a high minimum duty, to drive tax increases and revenue collection.
2. Allow for automatic increases to the specific component so as to meet or exceed rates of inflation and per capita income growth.
3. Increase excise taxation on all other tobacco products substantially to ensure the effectiveness of cigarette tax increases.
4. Raise excise taxes to make yields (Euros of excise per 1000 cigarettes) in Poland comparable to those in other EU member states.
5. Earmark a portion of tobacco taxes for public health efforts, medical treatment, law enforcement as well as other sectors vital for tobacco control.

I. Introduction

Since its political turning point in 1989, Poland has experienced large-scale social and economic changes as a result of the reforms associated with its transition to a free-market economy. While Poland's gains in per capita income and standard of living over the past two decades are significant, tobacco use continues to be a major cause of mortality. 36.9% of men and 24.4% of women are current tobacco smokers,¹ while nearly 19% of youth ages 13–15 report smoking cigarettes).^{2,3} Age-standardized prevalence for smoking among adults in Poland is one of the highest in Europe,^{4,5} and, if unchecked, tobacco use will contribute to significant premature mortality.

Age-standardized smoking prevalence among Polish adults is one of the highest in Europe.

Raising tobacco product prices through higher taxes is recognized globally as the most effective strategy to reduce tobacco use.⁴ Poland presents an interesting combination of circumstances in this regard: while total tobacco tax as a percentage of retail price tends to be high in the country, it also has some of the lowest cigarette prices in the European Union. Poland is also among the fastest growing of Europe's economies. With per capita incomes rising, the affordability of tobacco products will increase if prices do not keep pace. This underscores the need to examine prices and taxes in the

While total tobacco tax as a percentage of retail price tends to be high in Poland, it also has some of the lowest cigarette prices in the European Union.

country, both in the context of tobacco control, and in the context of its tax policy obligations under European Union membership requirements.

This report begins with a brief description of tobacco use patterns in Poland in Chapter II, including social and demographic aspects of tobacco use and then surveys tobacco product prices and trends. Chapter III presents data on the burden of tobacco use in Poland. Chapter IV examines the rationale for government intervention to reduce tobacco use and summarizes recent developments in tobacco control in Poland. Chapter V surveys the historical and current tobacco tax structure across all categories of tobacco products sold in Poland and examines its impact on the market prices of these products. Chapter VI reviews existing empirical studies that use aggregate or individual survey data to estimate the demand for cigarettes. Chapter VII presents the results of simulations that predict the impact of tax increases on household tobacco spending, cigarette consumption, tobacco attributable mortality, and government tax revenues. Chapter VII also discusses tax excise revenues, operational aspects of tobacco tax implementation, and responses to the tax increases including concerns around regressivity and illicit trade. The report concludes with policy recommendations.

Data Sources

Measures of prevalence and consumption in Poland have been drawn from the Global Adult Tobacco Survey and, where appropriate, from omnibus consumer surveys. Data on household cigarette consumption, tobacco expenditures, employment, tobacco in agriculture, cigarette production, tobacco product imports/exports, consumer price index and consumer price index for tobacco were collected from Poland's Central Statistical Office (GUS). Tobacco tax data including tax levels and tobacco tax revenues were obtained by special request from Poland's Ministry of Finance.

Endnotes to Chapter I

- ¹ Global Adult Tobacco Survey (GATS), Poland, 2009.
- ² Global Youth Tobacco Survey, GYTS, Poland, 2003.
- ³ Global Youth Tobacco Survey, GYTS, Poland (Mazovia Province), 2009.
- ⁴ World Health Organization. WHO Report on the Global Tobacco Epidemic, 2009: Implementing smoke-free environments. Geneva: World Health Organization, 2009.
- ⁵ World Health Organization. WHO Report on the Global Tobacco Epidemic, 2011: Warning about the dangers of tobacco. Geneva: World Health Organization, 2011.

II. Tobacco Prevalence and Consumption Patterns in Poland

Adult and Youth Smoking Prevalence

The Global Adult Tobacco Survey estimated 9.8 million smokers in Poland in 2009 — 30.3% of adults (36.9% of men and 24.4% of women) currently smoke tobacco. 33.5% of men (5.2 million) and 21% of women (3.5 million) smoke tobacco daily.¹

These figures are largely consistent with earlier estimates of about 9.1 million smokers in Poland.⁶ In 2007, approximately 31% of Poland's population, including 37% of adult Polish men and 26% of adult Polish women reported tobacco smoking, whether regular or occasional.⁷ Graph 2.1 presents consumer tobacco use behaviors in 1997 and 2007. The prevalence of smoking in Poland peaked in 1982 when over 60% of males and over 30% of females smoked

36.9% of men and 24.4% of women in Poland currently smoke tobacco.

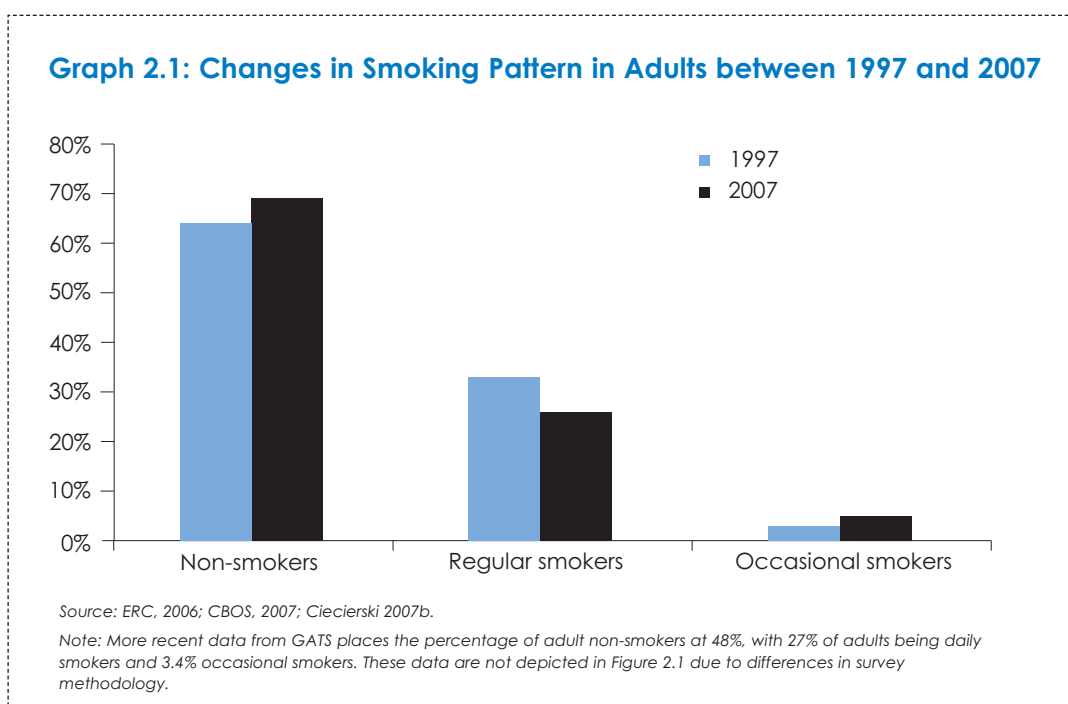
daily. A decline in cigarette use occurred in the mid-to-late 1990's. During the period, smoking prevalence rates for males and females dropped to approximately 40% and 20%, respectively.⁸ In 2007, approximately 33% of men and 23% of women reported smoking daily, while an estimated 3.5% of both women and men reported occasional tobacco use.⁹

Graph 2.1 suggests that there has been a decrease in the prevalence of daily smoking (from 33% to 26%) during the last decade. However about one-third of former daily smokers (representing 2% of all adults) in Poland continue to smoke occasionally.⁹ Previous surveys found the prevalence of daily smoking to be the highest among unskilled workers (58%) and among skilled blue collar workers (35%).⁷

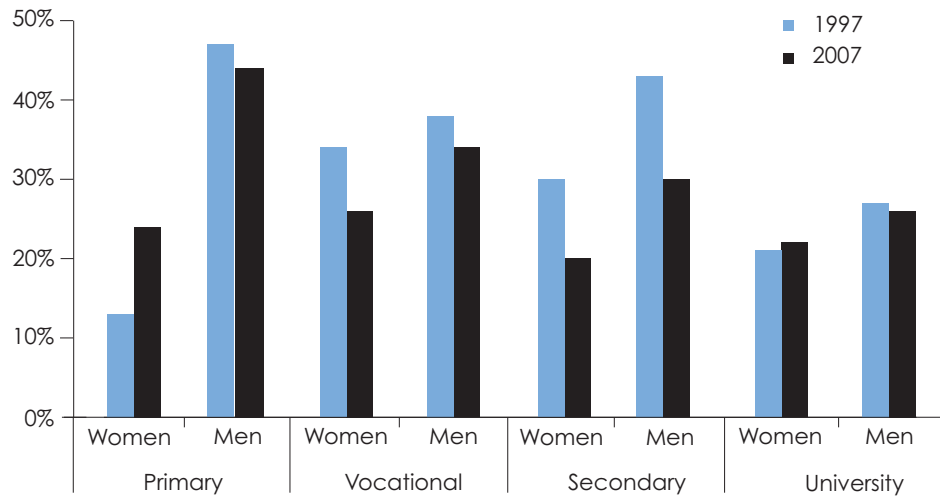
Socio-economic patterns

Graph 2.2 suggests that between 1997 and 2007, the percentage of smokers increased among women with primary levels of educational attainment and, to a lesser extent, among women with a university education.

Graph 2.3 presents the results of a cohort analysis of smoking behaviors based on nationally



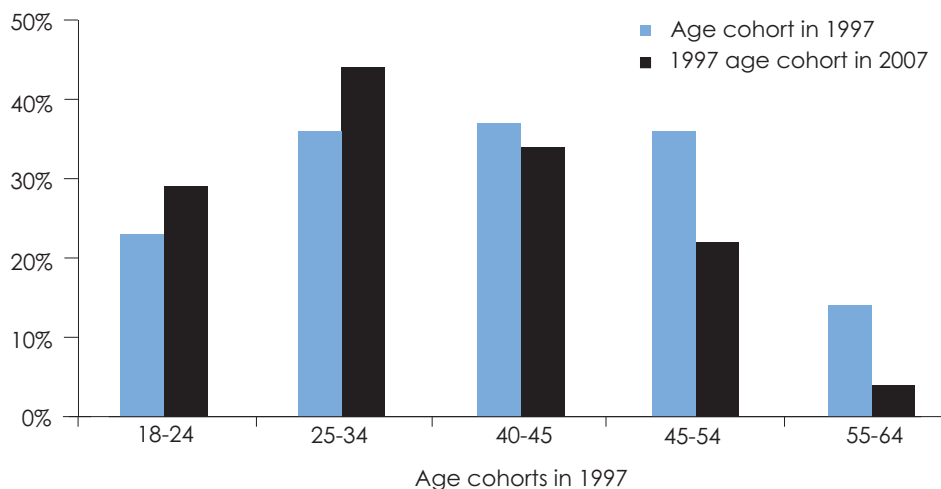
Graph 2.2: Changes in Smoking Patterns between 1997 and 2007: Daily Smokers by Gender and Educational Attainment



Source: CBOS, March 2007; Ciecierski, 2007b.

Note: Data from GATS 2009 suggest the percentages for women smoking among those with a Primary, Vocational, Secondary or University education were, respectively, 11.7%, 30.7%, 22.6% and 18%. The corresponding figures for men were 28.8%, 45%, 30.3%, and 23.2%. The 2009 data is not graphed in Graph 2.2 due to differences in survey methodology.

Graph 2.3: Smoking Patterns among Females: Changes within Age Cohorts of the Female Population



Source: CBOS, March 2007; Ciecierski, 2007b.

representative samples of females drawn in 1997 and in 2007. In 1997, a sample of females ages 18 to 24 reported a smoking prevalence of 23%. In 2007, a comparable female cohort now between 28 and 34

years of age reported a smoking prevalence of 29%. This is a 6% increase in the percentage of female smokers within a single cohort over a ten-year period. A similar pattern occurs in the case of women who

Table 2.1: Patterns of Smoking Intensity in Daily Smokers, GATS 2009

Demographic characteristics	Average number of cigarettes smoked per day	Distribution of average number of cigarettes smoked per day for daily smokers, GATS, 2009			
		<10	10–19	20–29	30+
Mean		(percentage of daily smokers)			
Male	18.3	11.4	30.6	46.7	11.3
Female	15.5	12.8	45.4	36.1	5.7
Overall	17.2	12	36.6	42.4	9.1

Source: Global Adult Tobacco Survey, Poland, 2009

were between the ages of 25 to 34 in 1997 and then entered the age range of 35 to 44 in 2007; in this group, prevalence increased from 36% to 44%.

Smoking intensity

Daily smokers in Poland smoke an average of 17 cigarettes per day.¹ As Table 2.1 suggests, 88% of daily smokers smoke at least half a pack a day, with more than 50% smoking a full pack or more.

Averages are over 15 cigarettes a day for both men and women, with male smokers averaging 18.3 cigarettes a day, and female smokers averaging 15.5 cigarettes a day.

Youth tobacco use

Relatively high smoking rates also persist among Polish youth. More girls report smoking regularly than boys — by one estimate, approximately 500 children start smoking every day in Poland.¹⁰

18.6% of youth ages 13-15 years (19.6% of boys and 17.1% of girls) surveyed in Poland currently smoked cigarettes.

In 2003, the Global Youth Tobacco Survey (GYTS) revealed that 18.6% of youth ages 13–15 years (19.6% of boys and 17.1% of girls) currently smoked cigarettes, with 6.2% of boys and 3.5% of girls smoking cigarettes daily. 76.2% of youth purchasing cigarettes in stores were not refused purchase because of their age.² The 2009 Global Youth Tobacco Survey conducted in Mazovia Province revealed similar numbers — 18.7% of youth ages 13–15 were current smokers, with 5.6% of boys and 7.4% of girls smoking cigarettes daily.³

Trends in Consumption

As Table 2.2 suggests, cigarettes are the main form in which tobacco is consumed in Poland. There has been a decline in the volume of sales of cigarettes in the recent past. In 2008 and 2009, the volume of annual tax paid sales of cigarettes declined by 9.7% and 6.2% over the preceding year. While fluctuations in the penetration of illicit trade imply that actual consumption figures are slightly larger than these numbers,¹¹ the overall trend in consumption of cigarettes has been negative. By contrast, sales of smoking tobacco (a category including tobacco used in pipes and fine-cut tobacco used in roll-your-own cigarettes) have been rising.

Table 2.2: Trends in Sales of Tobacco Products in Poland

Product Year →	2004	2005	2006	2007	2008	2009	2010
Cigarettes (billion sticks)	71.93	73.79	72.47	69.91	63.10	59.21	56.4
Cigars (million units)	6.6	6.8	8.2	9.3	10.3	11.6	13.1
Smoking Tobacco (tonnes)	5,039.20	2,743.80	3,445.60	4,740.00	7,110.00	3445.3	3220.6

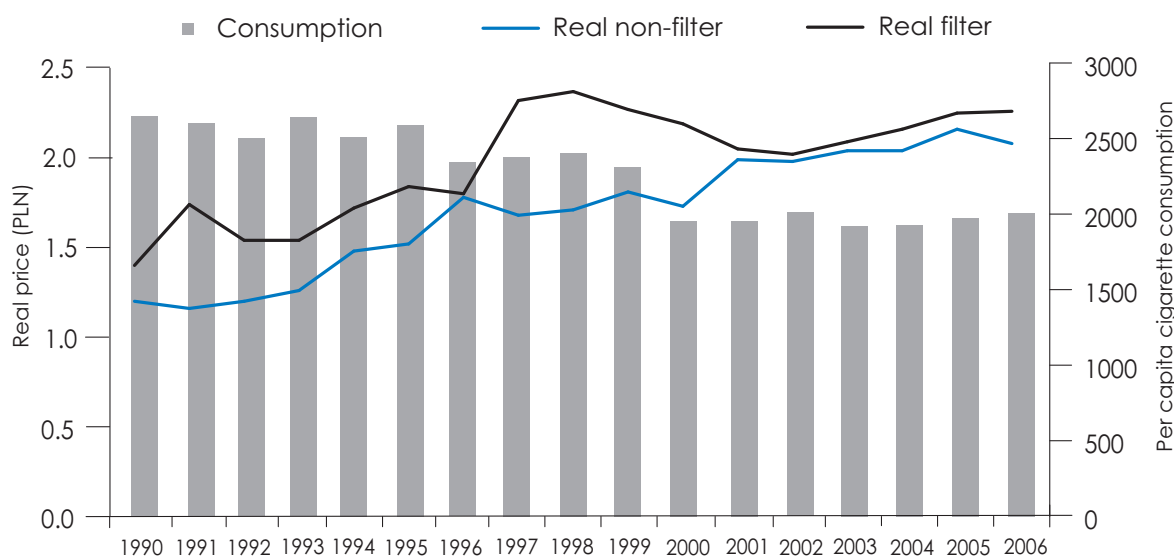
Source: Euromonitor, Tobacco in Poland, August 2010

Note: The table presents tax-paid sales; illicit sales penetration in the case of cigarettes was estimated to be 13.6% of all cigarette sales.

Tobacco use trends have been shown to respond to price changes.¹² In Poland, as elsewhere, higher real prices (or prices adjusted for economy-wide inflation) for cigarettes are associated with falling rates of per capita consumption.^{13,14} This relationship between real cigarette prices (both filter and non-filter) and cigarette consumption per capita in Poland is depicted in Graph 2.4.

The trends in real prices in Graph 2.4 reflect changes in the taxation of tobacco products over time

In Poland, as elsewhere, higher real prices for cigarettes are associated with falling rates of per capita consumption.

Graph 2.4: Trends in Real Filter and Non-Filter Cigarette Prices versus total cigarette Consumption per Capita, Poland, 1990-2007

Source: Central Statistical Office of the Republic of Poland, Statistical Yearbook, various years.

Note: Nominal price indices for filter and non-filter cigarettes are converted to real values using the consumer price index as the deflator. Real prices net out the effect of a general increase in prices over time and therefore reflect adjustments for inflation. The base year used here is 1990 (i.e. the consumer price index in 1990 is taken to equal 1)

in Poland. Subsequent chapters discuss the role of the tax system in insuring higher tobacco product prices and reductions in use.

Substitution among tobacco products

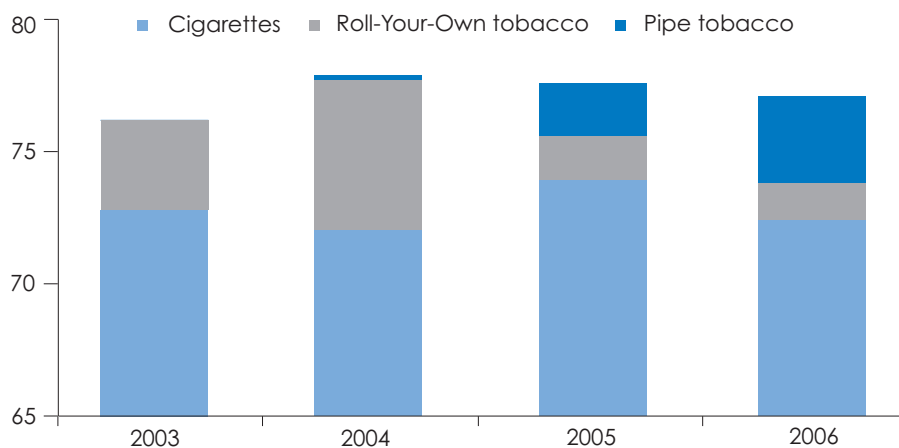
Data from recent years reveal the growing popularity of other forms of tobacco products in Poland including loose cigarette tobacco and particularly, pipe tobacco. Sales data (Graph 2.5) support this observation.

The drivers of this substitution appear to have been low tobacco taxes and prices for cut tobacco products. For example, in 2007, the average tax burden levied on factory-made cigarettes amounted to approximately 181.80 PLN per 1000 cigarettes. By comparison, the average tax burden levied on roll-your-own cigarettes made with cigarette tobacco amounted to approximately only 70.39 PLN per 1000 roll-your-own cigarettes in 2007. Finally, in 2007, an

average tax burden of only 39.11 per 1000 applied to roll-your-own cigarettes made with pipe tobacco.

Sales data from 2007–2008 also provide evidence of growing demand for fine-cut tobacco products. Large increases in terms of both unit sales (59% increase from 1386 to 2205 tons of cut tobacco) and value sales (57% rise from 133 million PLN to 209 million PLN) were observed between October 2007 and September 2008.¹⁵ Interesting sales trends are observed within the cut-tobacco category itself. Sales data for years 2007–2008 reveal significant substitution between roll-your-own cigarette tobacco and its significantly less taxed counterpart, pipe tobacco. Between October 2007 and September 2008 sales of pipe tobacco increased significantly (87%) from 600 tons in 2007 to 1124 tons in 2008.¹⁵ At the same time, sales of roll-your-own cigarette tobacco rose by only 37% (from 786 in 2007 to 1080 tons in 2008). Through the end of 2008, a growing dominance

Graph 2.5: Trends in Tobacco Product Sales, in billions of units



Note: RYO and pipe tobacco volumes converted to units of equivalent cigarettes for comparison.

of pipe tobacco over roll-your-own cigarette tobacco is observed.

To summarize, between 2003 and 2008, differences in excise taxes across tobacco products

resulted in some substitution towards products for which taxes were stable or did not increase significantly. In 2009, Poland's tax schedules were accordingly adjusted (see Chapter V, Table 5.4).

Endnotes to Chapter II

- ⁶ Euromonitor International, Tobacco-Poland. Country profile, January 2007.
- ⁷ Ciecierski C. Technical Report submitted to the Development Research Program, Roswell Park Transdisciplinary Tobacco Use Research Center (TTURC), 2007.
- ⁸ Zatonski W. "Democracy and Health: Tobacco Control in Poland", in *Strategies, Successes and Setbacks*, edited by Joy de Beyer and Linda Waverley Brigden. Co-published by the World Bank and Research for International Tobacco Control, 2003.
- ⁹ Ciecierski C. "Poland: The Market for Legal and Illegal Cigarettes - A Closer Look at Demand and Supply-Side Characteristics", IDRC Working Paper Series, 2007.
- ¹⁰ Szczęsna J. *Diagnoza problemu palenia tytoniu w Polsce i w województwie opolskim*, General Sanitary Inspectorat, Opole. Poland, 2007.
- ¹¹ Euromonitor International, Tobacco-Poland. Country profile, 2010.
- ¹² Chaloupka FJ, Warner KE. The economics of smoking. In: J.P. Newhouse and A.J. Cuyler, editors, *The Handbook of Health Economics*. New York: Elsevier, North-Holland, 1999. 1539-1627.
- ¹³ Czart, Christina., K. Przewozniak, F.J. Chaloupka, and W. Zatonski. Descriptive analysis of the impact of tobacco taxes on reported smoking behavior in Poland. Unpublished report prepared for the World Bank. Washington, DC, USA: World Bank, 2000.
- ¹⁴ Ciecierski C. Technical Report submitted to The Initiative for Cardiovascular Health Research in the Developing Countries entitled "Analysis of the Impacts of Poland's Population-Based Tobacco Control Policy on Smoking Behaviors and its Comparative Cost-Effectiveness to Clinic-Based Smoking Cessation Programs", August 2005.
- ¹⁵ Mruk J and Teleżyńska K. *Rynek papierosów i wyrobów tytoniowych-raport*. Poradnik Handlowca, 2009.

III. The Burden of Tobacco Use in Poland

Smoking attributable disease

Tobacco smoking is the leading cause of premature death among the adult population in Poland. In 2000, 38% of all deaths in males ages 35–69 were attributable to smoking; middle aged adult smokers lost nearly 22 years of life and smokers age 70 and older lost an average of 8 years of life because of their smoking behavior.^{16,17} Tobacco smoking was responsible for 55% of all cancer-related deaths among Poland's males and was the leading cause of lung cancer among Polish adults ages 35 and above (implicated in 94% and 68% of all lung cancer deaths in males and females respectively).

In 2000, 38% of all deaths in males ages 35-69 in Poland were attributable to smoking.

Although the last decade has shown some leveling off in the rates of death from lung cancer among young and middle-aged men, the trend among the female population has been the opposite. Tobacco smoking is also a major cause of respiratory fatalities (associated with over half of male and nearly 20% of female respiratory-related deaths, respectively) and cardiovascular-related deaths (implicated in 25% and 5% of male and female vascular deaths, respectively.)

Second hand smoke

Tobacco smoking in the presence of non-smokers is common in Poland.¹⁸ A majority of Poland's children are exposed to passive smoking.^{7,19} The 2009 Global Youth Tobacco Survey in Mazovia Province found that over 52% of youth 13-15 years lived in homes where

44.2% of Polish adults are exposed to tobacco smoke at home and 33.6% to tobacco smoke at their workplace.

others smoked in their presence, and over 70% were around others who smoked in places outside their home.³ In 2007, 48% of adult smokers reported smoking in the presence of children. Among those who smoked in the presence of children, 27% reported smoking in the presence of pregnant women.¹⁰ Approximately 25% of Polish women smoke during pregnancy. Approximately 70,000–100,000 newborns each year are subject to the hazardous substances contained in tobacco smoke.¹⁰

Data from the Global Adult Tobacco Survey conducted in 2009 indicate that second-hand smoke continues to be a major problem. 44.2% of adults (14.1 million individuals) were exposed to tobacco smoke at home and 33.6% to tobacco smoke at their workplace.

Treatment costs

Smoking is also associated with high treatment costs in Poland. Individuals who smoke burden public budgets with health care costs that are on average 30% greater than those incurred by non-smokers.²⁰

In the aggregate, the health care costs associated with treating tobacco-related diseases have been estimated to amount to approximately 18 billion PLN in 2004 (US\$ 6 billion)*, of which 10 billion PLN (US\$ 3.3 billion) was spent on the treatment of chronic obstructive pulmonary disease (COPD). In addition to treatment costs, there are estimates of other costs associated with tobacco use in Poland — for 2004, these costs, including losses in productivity and employment were estimated at 15 billion PLN (about US\$ 5 billion in year 2004 dollars).²¹

* Applying an exchange rate of 1 Polish zloty (PLN) = 0.33 US dollars in December 2004. As of October 2011, the exchange rate is 1 PLN = .31 US\$

Endnotes for Chapter III

- ¹⁶ World Health Organization. The Current Status of the Tobacco Epidemic in Poland. WHO Regional Office for Europe. Copenhagen, 2009.
- ¹⁷ Peto R, Lopez A, Boreham J, Thun M, Heath C Jr., Mortality from smoking in developed countries 1950-2000, 2nd edition, 2006.
- ¹⁸ Zatonski W. "Tobacco Smoking in Central European Countries: Poland" in "Tobacco and Public Health: Science and Policy", edited by P. Boyle, N. Gray, J. Henningfield, J. Seffrin and W. Zatonski. Oxford University Press, Oxford, 2004.
- ¹⁹ Mazur J, Woynarowska B, Kowalewska A. Palenie tytoiu. Zdrowie młodzieży szkolnej w Polsce" (Tobacco smoking: The Health of School-Aged Children in Poland), Katedra Biomedycznych Podstaw Rozwoju i Wychowania, Wydział Pedagogiczny UW, Warszawa, 2000.
- ²⁰ Niewada M, Filipiak K. "Analiza kosztów choroby: Ekonomiczne następstwa nikotynizmu", (An Analysis of Health Costs: The Economic Consequences of Nicotine Addiction) *Polski Przegląd Kardiologiczny* 2, 4, pp.367-371 (in Polish), 2000.
- ²¹ Krzyżanowska A, Głogowski C. "Nikotynizm na świecie: Następstwa ekonomiczne" (The Global Nicotine Addiction and its Economic Consequences), *Menedżer Zdrowia*, 2/2004, pp. 98-103 (in Polish, 2004.

IV. Tobacco Control in Poland

National governments frequently intervene in tobacco markets to lessen the burden of tobacco-related diseases, to guard minors and to correct market failures such as the presence of externalities and lack of full information about products' health consequences seen in the tobacco market. Over the past two decades, Poland's governing bodies have introduced legislative and other efforts to combat tobacco use and reduce its burden.

Rationale for Government Intervention

The principle of consumer sovereignty — the premise that consumers are fully informed with respect to the benefits and costs of their choices and that they also fully bear the costs and benefits associated with their choices — are both violated in the case of tobacco. This motivates the basis for governments to intervene to reduce the societal harm caused by tobacco products use.

Consumers typically have imperfect information and do not fully recognize the health risks of tobacco use. This is further complicated by the addictive nature of the product — many smokers report a willingness to quit but find it difficult to do so. Further, there are significant negative externalities associated with tobacco use. Non-users bear costs imposed by tobacco users, both in the form of the disease burden from second hand smoke, and in the form of the financial burden of treatment of tobacco related illnesses through the publicly financed healthcare.

Smokers in Poland remain less than fully informed, both about the range of health risks from tobacco use and the health risks of certain tobacco products. Since 1996, Poland's smokers have been exposed to health warning labels that occupy 30% of the surface area of cigarette packaging. The warnings convey the following information “Smoking Causes Heart Disease” and “Smoking Causes Lung Cancer”. While 90% of smokers associate cigarette use with

heart disease and lung cancer, 50% or less report its association with other health disorders such stroke, impotence and other forms of disease.²² The Global Adult Tobacco Survey in Poland in 2009 also found that, while 82.3% of current smokers believed smoking causes serious illnesses, less than 27% of current smokers (and 44.4% of non-smokers) believed smokeless tobacco causes illnesses. These perceptions matter in thinking of how to frame effective tobacco excise tax policy — tax increases on some, rather than all tobacco products might encourage substitution towards products that users wrongly assume to be safer.

Tobacco Control Policies and Implementation

Poland signed the Framework Convention on Tobacco Control (FCTC) in June 2004 and ratified it in September 2006.

The fundamental legal instrument which regulates tobacco in Poland is the Act on the Protection of Public Health against the Effects of Tobacco Use (ratified on November 9th, 1995). The Act's policy aims include: protection of non-smoker rights through smoke-free environments; promotion of healthy lives free from tobacco smoking addiction; the provision of anti-tobacco educational and informational activities; the creation of an economic and legal environment which controls tobacco use; provision of information regarding the harms of tobacco, tobacco product ingredients and tobacco product-related communications; treatment and rehabilitation of tobacco addicts; and provision of stricter controls on harmful substances found in tobacco products.

In addition, the 1995 law imposed restrictions on cigarette sales to minors, smoking in public places and tobacco advertising. The law has since been amended to cover a wide range of tobacco regulations including: health warning labels on cigarette packs, reductions in allowable levels of tar and nicotine and comprehensive bans of tobacco promotions as well as street level and traditional media advertising. The law also requires that

Table 4.1: Summary of Tobacco Control Environment in Poland, 2011

Select Tobacco Control Policies	Status
The Monitoring of Smoking Prevalance	Recent, representative and periodic data for both adults and youth exists
Smoke-Free Policies	Schools, hospitals and all health facilities and public transport are smoke free. The hospitality and entertainment sectors have option of creating enclosed smoking areas. Data from the Chief Sanitary Inspectorate suggests compliance is around 95%.
Cessation Programs	Poland has a national toll free quit line. Nicotine replacement therapy (NRT) is sold and some smoking cessation support is available in primary care facilities, hospitals, offices of health professionals and in the community.
Health Warnings	Health warnings occupy 35% of cigarette product packages (30% of the front display area and 40% of the back display area), but these are text warnings. There are no pictures or pictograms and/or other appropriate characteristics
Advertising Bans	Ban on national television, radio and print media as well as on some but not all other forms of direct and/or indirect advertising. As of December 31, 2011, there were no bans on advertisements at the point of sale
Raise Taxes	Total taxes on the most sold brand amounted to 86% of retail price; specific and ad valorem excises amounted to 37% and 31% of the retail price of the most sold brand while VAT amounted to 18% of price

Source: WHO Report on the Global Tobacco Epidemic, 2011: Warning about the dangers of tobacco

0.5% of excise tax revenues be statutorily allocated to the National Tobacco Addiction Prevention Program.

Table 4.1 provides a snapshot of Poland's tobacco control environment in 2011, organized by the components of the World Health Organization's MPOWER strategy to reduce the global tobacco epidemic.

In 2008, approximately 1 million PLN was allocated to the Tobacco Control National Action Plan. This was a fraction of the amount mandated by the Tobacco Act of 1995 which directed 0.5% of the revenue from tobacco excise taxes (amounting to 65 million PLN in 2008) to the National Action Plan. While the National Health Programme 2007–2015 includes the intent to guarantee “workplaces free from tobacco smoke pollution for all employed in Poland” and smoking is banned in health facilities and educational

environments, there is no comprehensive smoke-free law to cover all indoor public places and workplaces. Poland has strong text warnings on tobacco packages but has yet to implement pictorial health warnings. Point-of-sale tobacco product displays have been allowed and are used extensively for tobacco advertising in the face of a tobacco control environment that prevents other forms of tobacco promotion.

As a highly effective tool to reduce consumption and ultimately prevalence, tobacco taxation is an important component of the tobacco control environment. One of the challenges of tobacco taxation is that it has to be responsive to constantly evolving market and economy-wide trends, including industry pricing and marketing strategies. The following chapters analyze the potential for an enhanced role for tobacco taxation in Poland.

Endnotes for Chapter IV

²² Ciecierski C, Chaloupka FJ. “Collection and analysis of longitudinal, individual-level tobacco control survey data in Poland”, presented during the 13th World Conference on Tobacco or Health, 2006 in Washington D.C., USA. 2006.

V. Tobacco Tax Structure in Poland

The level and structure of a country's tobacco taxes are key determinants of the levels and patterns of prices of tobacco products, and consequently of patterns of purchase and use. Higher tobacco excise taxes are recognized as the most effective policy tool to raise tobacco product prices and effect reductions in tobacco consumption of tobacco and prevalence.^{4,5}

This chapter traces the evolution of the tax structure and price trends for cigarettes and for other tobacco products. Poland is an example of a country where taxes as a fraction of prices are relatively high, but tobacco products have been quite affordable, both in relation to the rest of Europe and over time as purchasing power within the country has risen rapidly. Excise tax developments in Poland have been driven by the country's obligations to meet European Union (EU) requirements, including a set of EU requirements adopted in 2010 which must be fully implemented by 2018.

Excise tax developments in Poland have been driven by the country's obligations to meet European Union (EU) requirements.

The EU requires its members to apply a combination of a specific tax (a fixed Euro amount per 1000 cigarettes) and an ad valorem tax (that is, a tax expressed as a percentage of retail price) and sets rules for the allowable share of specific taxes in final price.

The EU also requires excise taxes to be a certain minimum: both as a value measured in Euro, and as a fraction of price. Rather than testing that each brand

sold in a country complies with the minimum, the EU assesses compliance by examining the excise tax on a particular reference price every year. The reference price used for the purpose through 2010 was the Most Popular Price Category (MPPC) price, which is the price at which most cigarettes in a country are sold in the preceding year. Since January 2011, the reference price is the Weighted Average Price (WAP) of cigarettes in a country, calculated as the total value of all cigarettes released for consumption divided by the total quantity of cigarettes released for consumption. Member states are obliged to ensure that the excise tax (specific plus ad valorem tax amount) they levy on the reference price as on January 1 each year exceeds a certain minimum percentage — 57% at present, and, for most states, 60% from 2014 onwards. The EU further mandates a minimum tax per pack of cigarettes, denominated in Euro. This minimum tax is applicable if the combined value of the specific tax and the ad valorem tax in Euros for a given brand of cigarettes falls below the amount of excise tax applied on the reference price. In addition to the excise taxes, cigarettes are subject to the Value Added Tax (VAT), which is collected at each stage of production and distribution. Member states typically adjust their excise taxes annually as part of the fiscal process, and ensure domestic policy lines up with EU requirements.

Cigarette Taxes, 1993 to 2000

From July 1993 to 2000, Poland's cigarette excise tax was a multi-tier specific tax, that is, a tax charged per unit and varying across four* categories of cigarettes (Graph 5.1). The excise tax was consistently the highest for foreign and imported cigarette brands and remained the lowest for domestically produced short, unfiltered cigarettes.

As Table 5.1 depicts, year-to-year percentage increases in the cigarette tax rate tended to be slightly

* The four categories of cigarettes included: foreign, king size, domestic with filter and domestic without filter. The foreign brand category applied to imported cigarettes as well as those foreign brands manufactured in Poland but produced entirely from imported tobacco (Source: Program badawczy, "Ekonomia palenia tytoniu").

higher for the domestic brands. However, as Graph 5.1 suggests, this did not close the gap between the levels of taxes on domestic brands and those on foreign brands. There was a significant rise in excise taxes between 1998 and 2000, with the tax rising more steeply in the case of king sized cigarettes, both domestic and foreign. The tax increases exceeded general rates of inflation and were specifically aimed at strengthening the revenue generation potential of Poland's tobacco excise tax structure. Overall, Graph 5.1 suggests the excise

regime during the period clearly favored domestic cigarettes, contrary to the spirit of countries' obligations under the World Trade Organization.

EU Accession and Tobacco Taxes in Poland, 2000–2010

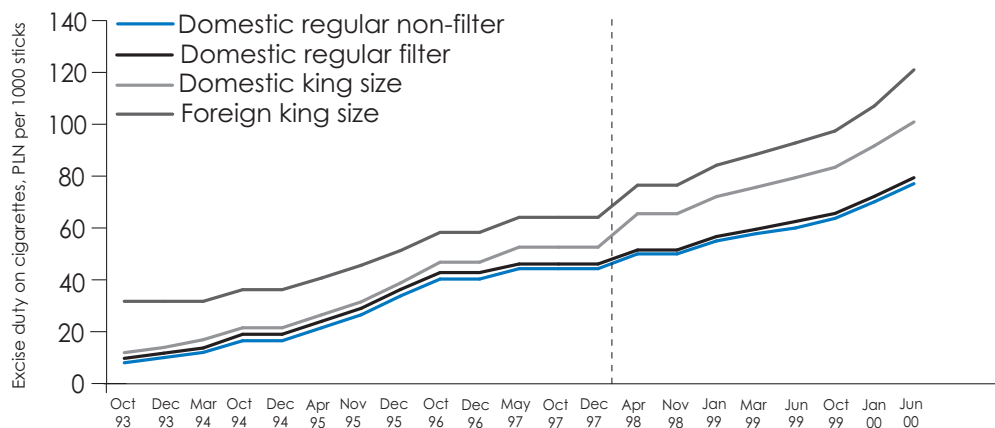
Poland joined the European Union in May 2004. Its tobacco excise tax system has undergone significant change in the last decade as one of several European

Table 5.1: Year-on-year Percentage Change in Cigarette Excise Taxes, 1994-2000

	Regular non-filter	Domestic Regular filter	King-size	Foreign King-size
1994	65%	62%	55%	14%
1995	105%	105%	105%	92%
1996	19%	18%	21%	14%
1997	10%	8%	12%	10%
1998	13%	12%	25%	19%
1999	16%	16%	16%	16%
2000	10%	10%	10%	13%

Source: Ministry of Finance of the Republic of Poland

Graph 5.1: Excise Duty Tax Rates in Poland, 1993-2000



Source: Ministry of Finance of the Republic of Poland

Union accession members obliged to adjust their excise regimes to be in full compliance with the Union's requirements by January 1, 2009.*

The European Union mandates the minimum share of excise in cigarette retail price and the minimum share of specific taxes in total tax (excise plus VAT). The EU system reflects attempts to have broadly consistent excise tax policies across member states and prevent the distortion of competition in tobacco product markets, while allowing member states considerable leeway in the exact mix of taxes they choose. Compliance with the EU requirements has led to price increases in the accession countries, but did not eliminate the large differences in price and tax levels that characterize the EU cigarette market.†‡§

In Poland's instance, tiers based on type of cigarette or on country of origin were eliminated in June 2000. Poland has since been required to levy an excise tax that consists of two components (1) a specific excise tax, prescribed as a fixed amount per 1000 cigarettes, and (2) an ad valorem excise tax that is levied as a percentage of the maximum retail price labeled by manufacturers on each cigarette pack.§

The EU requires that countries' excise taxes be a minimum percentage of a reference price (the

weighted average price — WAP — since 2011, the most popular price category or MPPC in the past).

EU rules further prescribe that there be a minimum share of specific taxes in total tax on cigarettes (excise plus VAT) in member states. From 2000 to the end of the year 2010, the specific component of the excise was required to be between 5% and 55% of the total tax (excise plus VAT).**

In addition to requiring specific excises to be within a range of certain percentages of retail price, the EU has, since 2002, prescribed a fixed minimum excise tax on cigarettes, expressed in Euro.†† In 2010, this minimum was € 64 per 1000 cigarettes (or € 1.28 for a pack of 20 cigarettes).§§

EU rules also mandate a VAT of not less than 15% on tobacco product retail price inclusive of the value added tax. In Poland, the VAT was 22% of final retail price excluding VAT (that is, 18.03% of final retail price including VAT)*** throughout the period 2000–2010.

The evolution of the excise tax structure over the past decade reflects Poland's steps towards compliance with EU rules. While the EU mandated a minimum level of tax of € 64 per 1000 cigarettes of the Most Popular Price Category effective July 1, 2006 (up from € 60 previously), the target was steep for Poland, and

* The changes in 2000 were preceded by a phased preparation to facilitate tax changes. Phase 4 in the evolution of EU assistance to Poland spanned years 1997-1999 and included assistance programs focused on pre-accession needs. See: http://www.icps.com.ua/doc/nl_eng_20010514_0107.pdf

† In 2010, for instance, tax rates varied widely across the EU states. The minimum excise duty in France was € 164 per 1000 cigarettes, which is a relatively high tobacco tax level within the EU. In other member states, this minimum duty is significantly lower and measured: € 66.21 in Hungary, 67.66 in Poland, 78.33 in the Czech Republic, 140.72 in Germany, 136.65 in the Netherlands in 2009.

§ Journal of Laws (Dziennik Ustaw) Nr. 1 poz. 9. If a cigarette pack is displayed for retail sale without a printed price, a 400 % excise tax applies (less VAT).

** Council Directive 1999/81/EC of 29 July 1999 amending Directive 92/79/EE

†† 2002/10/EC of 12 February 2002 amending Directives 92/79/EEC, 92/80/EEC and 95/59/EC.

§§ As an illustration of how the EC determines compliance with the minimum excise duty rule: In 2010, Poland had a specific tax of 146.83 PLN per 1000 cigarettes and an ad valorem tax of 31.41% of retail price. These rates were applied to the MPPC, or the price of the most popular cigarettes in the previous year, (397.50 PLN per 1000 cigarettes or a pack price of 7.95 PLN in 2009). The excise tax for 1000 cigarettes so calculated is 271.68 PLN (146.83 PLN specific + 124.85 PLN ad valorem component). The EU converts this excise tax at the PLN-€ exchange rate prevailing on October 1 in the previous year (4.245 in 2009) to arrive at a figure of € 64, implying Poland was exactly in compliance with the minimum tax rule in 2010. Since 2011, the Weighted Average Price replaces MPPC as the reference price.

*** As an example, if the price of a pack of cigarettes before VAT is 10 Zloty, a 22% VAT results in the price inclusive of VAT being 12.2 Zloty. VAT as fraction of the final price is then (2.2/12.2) or 18.03%

Given how low taxes were previously in Poland in comparison to the rest of the EU, reaching the € 64 (minimum) tax involved fairly large annual increases in the excise tax.

other newer entrants to the EU. Poland was permitted a transition period, and was required to reach the € 64 target by December 31, 2009. Given how low taxes were previously in comparison to the rest of the EU, reaching the € 64 tax involved the country implementing fairly large annual increases in the excise tax; initially for both specific and ad valorem rates and in more recent years focusing on specific rates.

The structure of Poland's tax system for cigarettes over the years 2000–2011 is presented in Table 5.2. The specific component of the excise tax was progressively increased, as was the minimum tax in PLN applied to all cigarettes. The ad valorem component remained at 25% for four years, after which it was progressively increased till it reached 41% of the MPPC in January 2009.

In March 2009, Poland reduced the ad valorem rate from 41% to 31% while at the same time increasing the specific excise. For the MPPC, this increased the specific tax as a share of the total tax burden (excise plus VAT) from 36.75% to 42.76%. The overall excise yield for the MPPC amounted to € 64.45 per 1000 cigarettes by July 2009.²⁴

Table 5.2: Excise Duty Taxes in Poland, 2000-2011

Year	Month	VAT (% of price before VAT)	Specific tax (PLN)	Ad valorem tax (% of price)
2000	June	22%	37.50	25.00%
	October	22%	42	25.00%
2001	January	22%	50	25.00%
2002	January	22%	52	25.00%
2003	January	22%	57	25.00%
2004 ^a	January	22%	64	25.00%
	May	22%	64	26.67%
2005 ^b	January	22%	68.38	28.48%
2006 ^c	January	22%	75.12	31.30%
2007 ^d	January	22%	80.87	33.70%
2008 ^{*,e}	January	22%	91.00	37.92%
2009 ^{*,f,g}	January	22%	99.16	41.32%
	March	22%	138.50	31.41%
2010 ^h	January	22%	146.83	31.41%
2011 ^{**,i}	January	23%	158.36	31.41%

Notes:

* Tax levels and rates for 2008 and 2009 were decreased from a planned 134.18 and 25% in 2008 and a planned 173.66 and 25% in 2009 to the levels and rates denoted above. The decrease was mandated by law dated 20th of December 2007 [Dz.U. Nr 247, poz. 18

** The European Union moved from using the Most Popular Price Category to the Weighted Average Price as the criterion for determining compliance with its excise requirements with effect January 1, 2011

^a Minimum excise tax on cigarettes beginning 17.12.2004: 115.80 PLN/1000 pieces

^b Minimum excise tax on cigarettes beginning 26.03.2005: 129.44 PLN/1000 pieces

^c Minimum excise tax on cigarettes beginning 22.03.2006: 150.00 PLN/1000 pieces

^d Minimum excise tax on cigarettes beginning 02.08.2007: 146.33 PLN/1000 pieces

^e Minimum excise tax on cigarettes beginning 05.04.2008: 181.72 PLN/1000 pieces

^f Minimum excise tax on cigarettes beginning 26.02.2009: 196.16 PLN/1000 pieces

^g Minimum excise tax on cigarettes beginning 01.03.2009: 228.80 PLN/1000 pieces

^h Minimum excise tax on cigarettes beginning 01.01.2010: 271.68 PLN/1000 pieces

ⁱ Minimum excise tax on cigarettes beginning 01.01.2011: 300.72 PLN/1000 pieces

Rising excise taxes have translated into larger percentage shares of tax in retail price. Graph 5.2 depicts the share of taxes in the retail price of Marlboro cigarettes between 2000 and 2009. Two points are noteworthy. One, the share of total tax in retail price rose, from 50% to 72%. More significantly, with VAT rates remaining unchanged over the period, this increase in total tax was driven primarily by the more than 100% increase in the share of the excise tax in total price, from 32% to 65% over the 9 year period.

Graph 5.3 illustrates the evolution of price for L&M cigarettes over the past decade as further evidence of the importance of excise taxation in raising brand-specific cigarette prices over time, and of the greater emphasis of specific taxes in recent years. Over the period 2001–2011, the price of L&M cigarettes more than doubled in nominal terms, from 4.7 to 10.2 PLN. The share of excise taxes in final price also rose, from 42% in 2001 to 65% in 2009. The pace of growth of the share of excise taxes rose in 2006, when specific taxes were increased after having leveled off in 2005, and ad valorem rates were also increased. Between 2008 and 2009, while the ad valorem tax rate was reduced (from

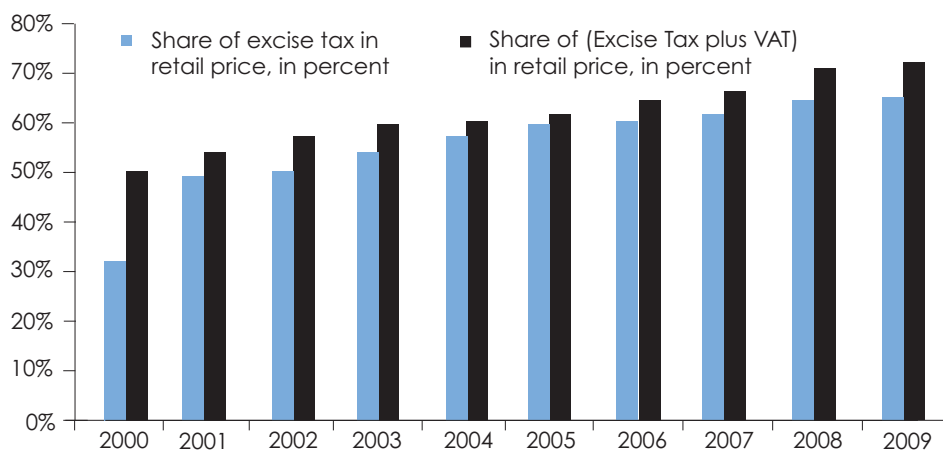
37.92% to 31.41% of retail price), the ad valorem tax raised per pack did not decline, since specific taxes were raised over 50%, from 1.82 PLN to 2.77 PLN per pack. The share of excise taxes (specific plus ad valorem) in L&M retail prices declined slightly after 2009 (to 64% in 2011) even as prices rose. This reflects both a slower growth in the specific tax (by about 0.2 PLN a pack each year), and the fact that the VAT rate rose in 2011 making for a slightly smaller share of excise taxes in total price.

Ad valorem and specific taxes in Poland

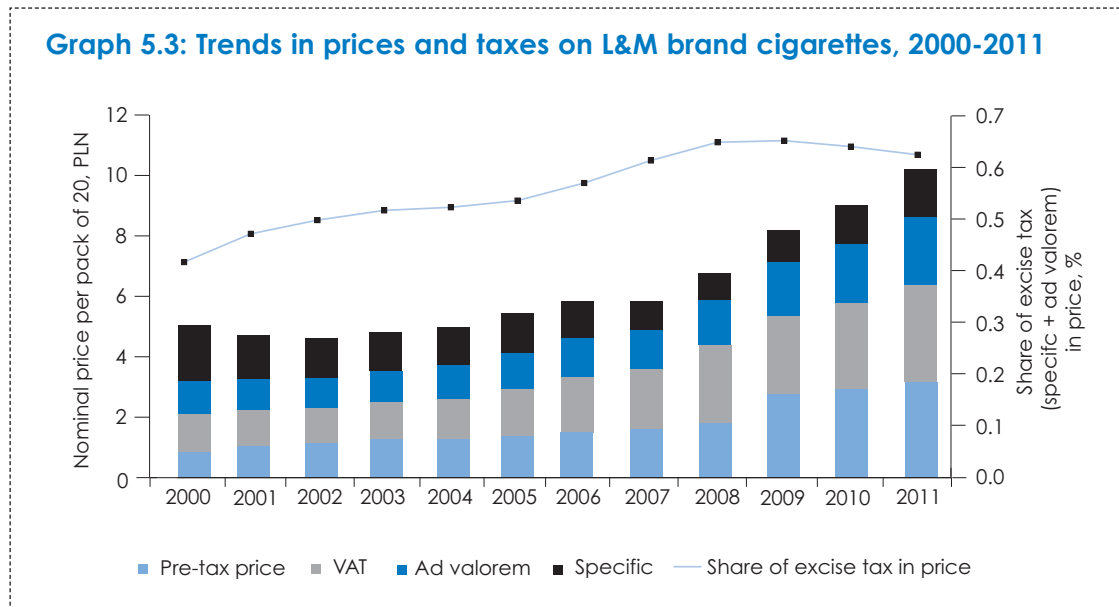
The market implications of specific and ad valorem taxes differ, with both having strengths and weaknesses. As the new EU excise regime for cigarettes will allow member states to increase their reliance on the specific excise, we next turn to the strengths and weaknesses of specific and ad valorem taxes.

The major advantage of an ad valorem excise is that the tax will automatically increase with price increase, including price increases due to inflation. However, under an ad valorem tax, the government shares in any price reduction. Firms have an incentive to reduce prices or keep prices low to reduce the

Graph 5.2: Percentage Share of Excise Tax in Retail Price of Marlboro cigarettes, 2000-2009



Source: Ministry of Finance of the Republic of Poland



effective amount of tax surrendered to the government leading to price wars and lower cigarette prices on average. One argument cited sometimes in favor of ad valorem excises, is that they are more progressive, relative to income, than a specific excise, as higher-income individuals tend to smoke more expensive cigarettes. This is a weak justification for an ad valorem excise on cigarettes, as governments have more effective ways of helping low-income consumers than encouraging the market for cheap tobacco products.

By contrast, a strong case can be made for countries adopting a specific tax regime for cigarettes. If a primary purpose of cigarette excises is to

discourage consumption, the tax should be levied on the characteristic to be discouraged, that is, the number of cigarettes consumed. A lower excise burden per cigarette on cheaper brands cannot be justified by health concerns. In addition, specific excises are easier to administer because it is only necessary to determine the physical quantity of the product taxed, not its value. A further advantage of a specific excise regime is that it narrows the price differential between high- and low-priced cigarettes and therefore reduces brand switching to cheaper brands whenever the excise rate is increased. Finally, if specific excises are used, the tax revenue does not fluctuate with pricing variables, providing the government with a more stable and reliable source of revenue. A specific tax, however, will

A specific excise tax regime narrows the price differential between high- and low-priced cigarettes and therefore reduces brand switching to cheaper brands when the excise rate is increased.

A specific tax will keep up with the pace of inflation only if it is systematically adjusted according to movements in an economy's consumer price index.

* In the EU, the requirement that each member state must impose cigarette excises equal to at least 60 % of the weighted average price of cigarettes sold by 2014 provides a form of indexing as it is necessary to increase excise rates whenever the weighted average price rises.

keep up with the pace of inflation only if it is systematically adjusted according to movements in an economy's consumer price index (CPI).*

From 2000 to 2008, Poland relied heavily on the ad valorem tax relative to the specific excise tax on tobacco (Table 5.2). The country's cigarette market developed into one characterized by large market shares of low priced cigarettes, rapidly increasing market shares for lowest-price category brands (a rise of 35% in 2007) and price wars among brands/producers.

A closer look at price and share information provides evidence of market developments typical to an ad valorem tax structure. Despite a 16% rise in excise taxes in January 2006, many mid-priced cigarette brands remained, throughout 2006, at levels that were at or below December 2005 prices. Graph 5.4 tracks month-on-month changes in prices of four cigarette brands over the period February 2003 to October 2007, and suggests strategic pricing decisions by competing brands. In early 2006, BAT decreased the price of its Pall Mall line which led Philip Morris to significantly decrease the price (by 17%) of its L&M brand in February 2006. Competing brands from other manufacturers quickly followed suit including West (Imperial Tobacco) and Cristal (Scandinavian Tobacco; not depicted).^{25,26} In May 2006, BAT decreased the price of its Golden American cigarettes, a brand positioned to compete with Philip Morris' L&M, by 5% in May 2006,²⁶ this was followed by a lagged response by Philip Morris, with L&M prices declining in June 2006. The overall patterns of Graph 5.4 are indicative of a strategic manipulation of price. Cigarette producers are, under ad valorem tax regimes, able and willing to absorb tax increases and lower prices in an attempt to secure their

market position, illustrating how both levels and the structure of tobacco taxes are important to effective tax policy from the standpoint of tobacco control.

Table 5.3 compares Poland's excise taxes on MPPC cigarettes with other EU countries.²⁷ In 2010, Poland exactly met the € 64 minimum excise tax requirement with its most popular brand retailing at 287.50 PLN (€ 85) per 1000 sticks, or € 5.75 a pack. At the same time, the excise tax on the MPPC brand as a fraction of the retail price of the MPPC brand was 68% in Poland, higher than in any other member state except for Bulgaria. Poland also had the lowest excise tax yield in the EU as measured in Euros per 1000 sticks of the MPPC brand.* This was consistent with the price of cigarettes in Poland being low overall in comparison with cigarette prices in other EU countries.

EU Mandates and Developments in 2011

In February 2010, the Council of the European Union adopted a new regime for tobacco excises in each member state, in part, to address the large differences in cigarette prices across the EU and to underscore health objectives.[†] The minimum overall excise tax (specific and plus ad valorem) is no longer based on the most popular price category, but instead is based on the weighted average sales price with effect from January 2011.[§]

Three changes in EU rules have occurred with regard to tax rates. First, the minimum excise has been increased from € 64 to € 90 per 1000 cigarettes** of all categories (no longer based on the most popular price category — MPPC). Second, the overall excise tax must be at least 60% (increased from 57%) of the weighted average sales price (again no longer based on the

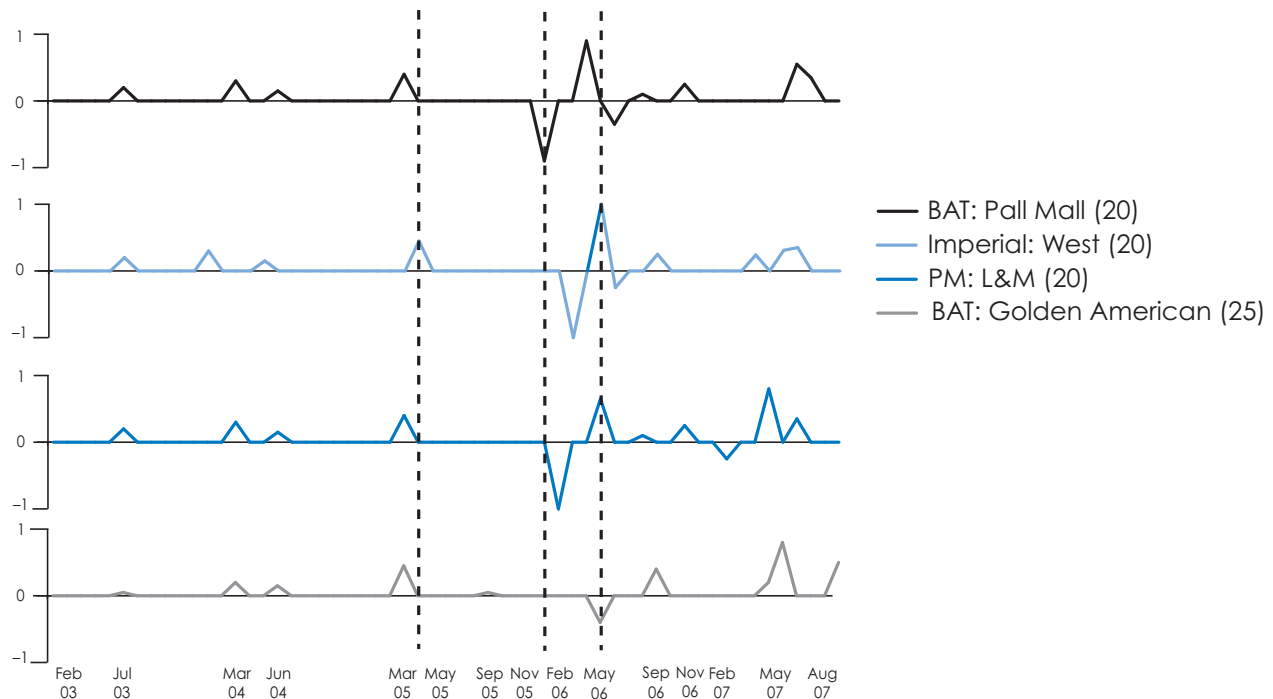
* Most of the other accession member states were slightly over the € 64 per 1000 cigarettes tax mark. Within the EU, Ireland had the highest excise yield — € 261 per 1000 cigarettes.

† Council Directive 2010/12/EU. The main directive governing excises previously did not make an explicit reference to health objectives.

§ The Weighted Average Price is calculated as Total value of all cigarettes released for consumption/ Total quantity of cigarettes released for consumption.

** Member states are required to gradually increase excise duties in order to reach the requirements by 2014 or, in the case of Bulgaria, Estonia, Greece, Latvia, Lithuania, Hungary, Poland and Romania, 2018.

Graph 5.4: Comparison of Changes in Prices of Retail Cigarette Prices, Mid-Price Brands, 2003-2007



Source: Trade sources

Note: The figure depicts changes in pack price in PLN in each month over the previous month over the period February 2003 to October 2007. A value of 0 indicates a brand's price was unchanged over the previous month.

MPPC).^{*} Third, specific excise as a percentage of the total tax burden (excise plus VAT) must now be between 7.5% and 76.5% (up from 5% to 55% previously), permitting member states to increase the specific excise relative to the ad valorem excise.

The EU requires that the revised requirements on rates and prices be met by January 1, 2014 but allows for a transitional period of up to January 1, 2018 for member states including Poland that only recently

achieved the minimum rates required by its earlier directive.[†]

Meeting the requirements of the new EU cigarette excise regime

In January 2011, Poland increased its specific excise to PLN 158.36 per 1000 cigarettes. The weighted average price for 1000 cigarettes, as of January 1 2011 was PLN 456.84, or € 76.67.[§] With this weighted

^{*} This requirement is waived for countries that levy a total excise burden of at least € 115 per 1000 cigarettes.

[†] EU directive 2002/10/EC which mandated a € 60 minimum tax on MPPC cigarettes before 2006, and € 64 minimum from July 1, 2006

[§] For a member state that does not use the Euro as its national currency, the Euro value of the excise on cigarettes is determined using the exchange rate as of the first working day in October of the previous year. As the zloty appreciated relative to the Euro between October 2009 and October 2010, Poland's minimum tax jumped from € 64 Euro in 2010 to € 76 Euro in 2011.

Table 5.3: Excise Taxes Poland in Comparison with EU Countries in 2010

Member state	Excise yield (€/1000 cigarettes on most popular pack)	Minimum excise duty as prescribed by EU, € ^a	Minimum excise duty as % of MPCC
Ireland	260.98		61.41%
UK	213.55		61.85%
France	179.2	164	64%
Netherlands	144	144	57%
Germany	143.7	143.7	58.09%
Belgium	142.91	124.79	58.99%
Denmark	136.28	123.1	54.84%
Finland	131.9	129	59.95%
Sweden	126.61	126.61	51.60%
Malta	122	117	61%
Austria	112.69	101.42	56.35%
Italy	108.23	108.23	58.50%
Portugal	107.83	107.83	61.62%
Greece ^b	107.2	80.4	67%
Spain ^b	107.1	91.3	63%
Luxembourg	104.92	96.52	57.02%
Cyprus	83.25	83.25	59.04%
Slovakia ^c	81.49	81.32	59.20%
Czech Republic ^c	76.79	79.07	61.97%
Bulgaria ^c	75.87	75.67	72.03%
Romania ^c	74.01	71.04	63.83%
Slovenia ^c	74	74	67.32%
Latvia ^c	68.78	67.77	64.11%
Estonia ^c	67.2	64	65.91%
Hungary ^c	66.56	64.12	58.93%
Lithuania ^c	65.74		59.74%
Poland^c	64	64	68.35%

Notes

^a The minimum value is calculated with reference to the MPCC and is the larger of a) 57% of the retail price of the MPCC cigarette, or b) € 64 (since 2006; previously the benchmark was € 60)

^b Greece and Spain were required to reach the € 64 minimum by 1/1/2008

^c Member states with extended transition periods; these countries were required to reach the € 64 minimum by Dec 31 2006 - Dec 31 2009

Source: European Commission Excise Duty Tables, July 2010

average price, the specific tax amounted to 40.89% of total tax (excise + VAT), well within both the 55% outer limit previously used and the 76.5% limit that will be permitted from January 2014. For 2011, Poland left its ad valorem rate of 31.41% unchanged.

The VAT rate was increased from 22 to 23% of retail price exclusive of VAT. For 2011, it is estimated that Poland's excise regime has an excise incidence of 66.07% of the weighted average price.

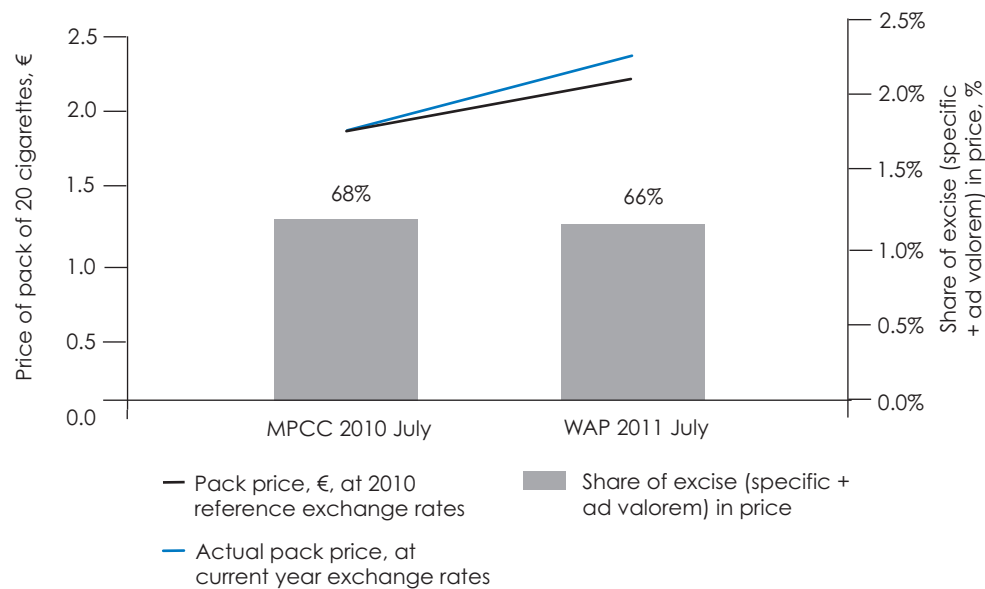
Poland is required to increase its minimum excise for all cigarettes to € 90 by 2018. Graph 5.5 points to the interplay of domestic excise and public health concerns and macroeconomic developments in the larger EU context in recent years. The most popular price category was PLN 7.95 in July 2010 and the WAP brand price was PLN 9.14. At the reference exchange rates (4.245, from October 1, 2009 and 3.94 PLN from October 1, 2010 respectively), the Euro equivalent of these prices were € 1.90 in 2010 and € 2.30 in 2011. In effect, between 2010 and 2011, pack price rose more steeply in terms of Euro than it would have if exchange rates were unchanged.

At the current PLN-Euro exchange rate, relatively small excise tax increases will be sufficient to reach the € 90 benchmark by 2018 in comparison with the increases in tax that were required to meet the EU requirements as of January 2009. The concern from a tobacco control standpoint in such a scenario is that

Poland is required to increase its minimum excise for all cigarettes to € 90 before 2018.

exchange rate appreciation reduces the pace of tax increases that Poland needs to undertake to meet the letter of the law, without necessarily making cigarettes much more expensive over time for Polish smokers. Policy options to address tobacco control in such an environment include accelerating the pace of excise tax increase beyond that currently required by the EU, targeting larger excise taxes with an active health focus, and altering the mix of specific and ad valorem taxes to reduce inefficiencies in the tax structure and favor health goals. These options are analyzed further in Chapter VII in the context of simulations of the impact of tobacco excise tax increases.

Graph 5.5: Most popular and weighted average prices and excise tax shares, 2009-2011



Zloty and Euro pack prices for MPPC (2010) and Weighted Average Price (2011)

Tax Structure for Other Categories of Tobacco

Excise taxes for tobacco product categories other than factory-made cigarettes also apply in Poland. Of particular interest are the tax structures of tobacco products used as substitutes for cigarettes.

Table 5.4 presents the evolution of excise taxes, including both specific and ad valorem taxes, for the three types of non-cigarette smoked tobacco products sold in Poland: loose tobacco used to make roll-your-own cigarettes, pipe tobacco and cigars and cigarillos.

Roll-your-own (RYO) tobacco bears both a specific tax and an ad valorem tax since May 2004, analogous to cigarettes but at lower rates. The increase in cigarette taxes in 2003-2004 was followed by an increase in RYO tobacco use. This prompted the change in RYO tax

structure to a mixture of specific and ad valorem taxes. Increases in RYO taxes in 2003 and 2004, however, were seen to lead to increases in pipe tobacco use as an even cheaper substitute for RYOs.²⁸

Overall, while the share of tax in cigarette price increased relatively regularly between 2000 and 2009, there were significantly fewer and less aggressive increases in excise taxes on cut tobacco products. As a result, the burden of tax in the retail prices of cut tobacco products remains quite low. Graph 5.6 reveals both relatively low levels and a lack of increase in the total tax on roll-your-own and pipe tobacco when compared to that of the MPPC cigarette brand in 2007 and 2008.

In March 2009, the specific tax component was increased significantly for all categories of non-cigarette tobacco products sold in Poland. The excise tax on cigars and cigarillos increased nearly 60% from a long-prevailing specific tax level of 149 PLN per 1000 cigarillos to 235 PLN per 1000 cigarillos.

The specific tax on roll-your-own cigarette tobacco was increased by nearly 12% (to 95 PLN/kg) while the ad valorem tax was reduced 4 percentage points to 31.41% (an ad valorem rate equal to that levied on factory-made cigarettes in the same period).

...while the share of tax in cigarette price increased relatively regularly between 2000 and 2009, there were significantly fewer and less aggressive increases in excise taxes on cut tobacco products.

Table 5.4: Excise Taxes on other Tobacco Product Excise

Year	Month	Roll-Your-Own		Pipe Tobacco		Cigars & Cigarillos	
		Specific (PLN/kg)	Ad valorem	Specific (PLN/kg)	Ad valorem	Specific (PLN/1000)	Ad valorem
2004	January	-	65%	-	65%	134	-
2004	May	42	17.50%	-	50%	134	-
2005	January	46.53	19.39%	-	50%	134	-
2006	January	52	21.67%	-	59%	134	-
2007	January	56.8	23.67%	-	59%	149	-
2008	January	65.62	27.34%	-	59%	149	-
2009	January	84.87	35.36%	-	59%	149	-
2009	March	95	31.41%	95	31.41%	235	-
2010	January	95	31.41%	95	31.41%	235	-

Source: Ministry of Finance of the Republic of Poland

At the same time, an equal specific tax of 95 PLN/kg and an ad valorem tax of 31.41% were levied on pipe tobacco creating, for the first time, a single excise tax rate for both types of loose tobacco sold in Poland. This fiscal harmonization is likely to have the beneficial effect of reducing price variation between these two forms of cut tobacco sold in Poland, and thereby reducing the incentives to switch between the two. The 2009 tax increases did not, however, alter the fundamental imbalance between excises on cigarettes and those on cut tobacco.

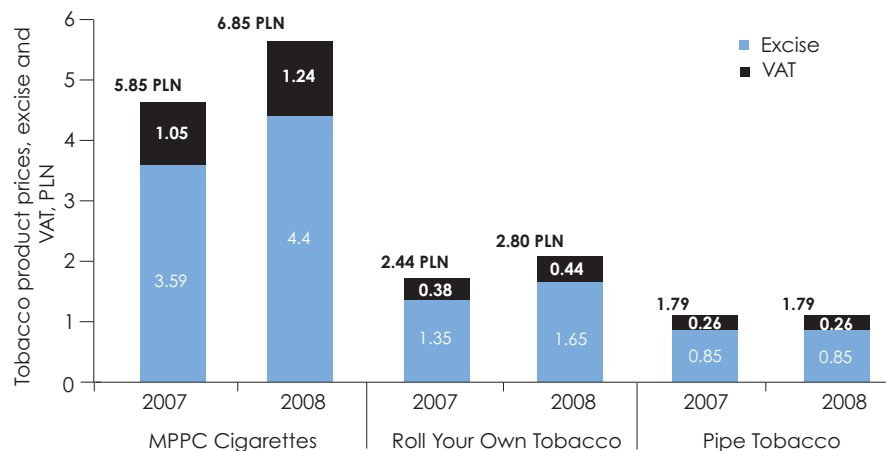
To discourage substitution between tobacco products, all tobacco products should be taxed at high rates, although the tax rates on tobacco products other than cigarettes are typically lower. In 2010, the EU increased the minimum rates that apply to tobacco products other than cigarettes. In the case of fine cut tobacco (used for roll-your-own), the minimum rate in 2011 is 40% of the weighted average price of fine cut tobacco or at least € 40 per kilogram. These rates are required to be increased in steps so that eventually,

from 2020, the minimum rate for fine cut tobacco will be 50% of the weighted average price or at least € 60 per kilogram.

Even as rates on cut tobacco are increased in the EU, and thereby in Poland, and the differential between cut tobacco and cigarettes is narrowed, the concern remains that cut tobacco is taxed at considerably lower rates. As an illustration, a kilogram of fine-cut tobacco can yield as many as 1000 cigarettes, but even in 2020, is likely to bear one-third less excise taxes when comparing the minimum rates of € 60 with the minimum of € 90 per 1000 cigarettes.

Setting excise taxes on cut tobacco at rates higher than the minimum is at the discretion of the member states. The effectiveness of high taxes risks being dampened if, in future years, Poland succeeds in increasing cigarette taxes considerably higher than the EU-mandated minimum but fails to synchronize these increases with correspondingly high cut tobacco tax rates.

Graph 5.6: % Share of VAT and Excise Tax in Retail Price (in PLN) of Various Tobacco Products, 2007 versus 2008



Source: Gazeta Prawna, March 17, 2008 (nr. 54)

Note: The MPPC price here pertains to a pack of 20 cigarettes; RYO and Pipe tobacco prices are for quantities used in 20 cigarettes.

Tobacco Tax Revenues

Revenue from tobacco excise taxes

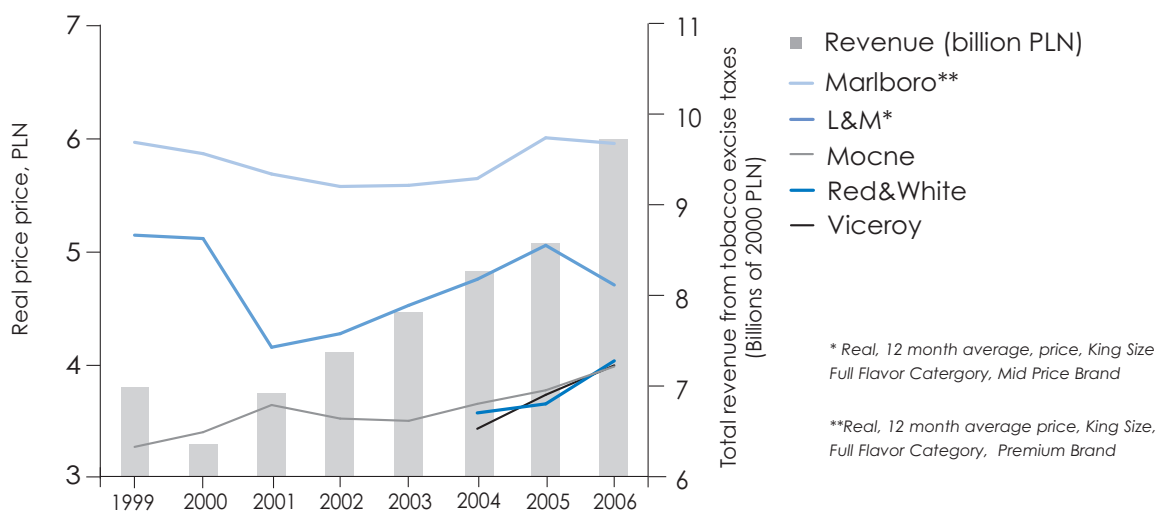
Tobacco excise taxes are among the most effective fiscal tools as they garner revenues at relatively low cost.⁵ On the one hand, tobacco taxes are relatively easy to administer, particularly in Poland where the number of producers is small. At the same time, the level of revenues collected is significant given the relative inelasticity of demand for cigarettes. As a result, despite real increases in cigarette prices and gradual decreases in cigarette consumption, Poland's revenues from tobacco taxes continue to rise steadily even adjusting for inflation.

Graph 5.7 shows historical data on rising tobacco tax revenues in the context of rising real cigarette prices of top selling brands including Philip Morris' L&M (12% of market share in 2006), Marlboro (6.6% of market share in 2006), Mocne (5.4% of market share in 2006), as well as Viceroy (introduced in fall 2003) and Red & White (introduced in summer 2004).

Graph 5.7 and Graph 5.8 show that over the last decade, tobacco tax revenues have continued to increase despite rising cigarette prices and falling per capita cigarette consumption in Poland. A notable decrease in per capita cigarette use occurred between 1998 and 2000. In both 1999 and 2000, the tax on cigarettes rose by 30% per year and a total ban on advertising was passed in 1999. While tax revenues fell in real terms between 1999 and 2000, they promptly recovered and continued to grow in subsequent years. Poland's experience provides further evidence of the observation that declines in tobacco consumption and rising tax revenues are not incompatible policy outcomes.²⁹

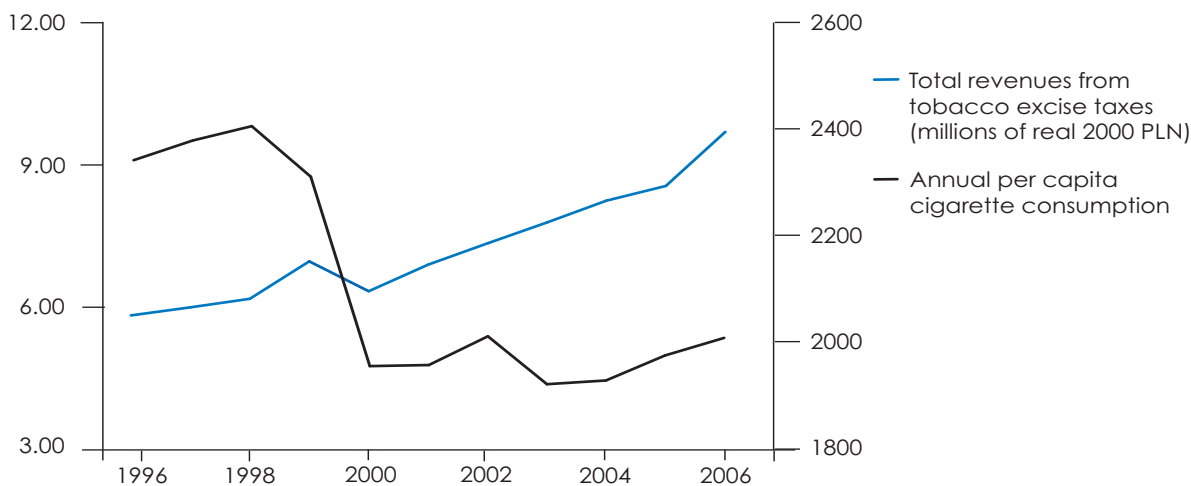
Graph 5.9 is an example of projected revenues from excise tax increases in the future in Poland from the Gdańsk Institute for Market Economics.³⁰ The analysis assumes an annual 6.52% increase in tobacco excise taxes (along with a falling incidence rate of smuggled cigarettes) to derive a 10-year forecast of trends in cigarette sales and tobacco tax-related revenues. The simulation estimates a decrease in sales of approximately

Graph 5.7: Tobacco Tax Revenues and Real Price of Top 5 Cigarette Brands, 2006



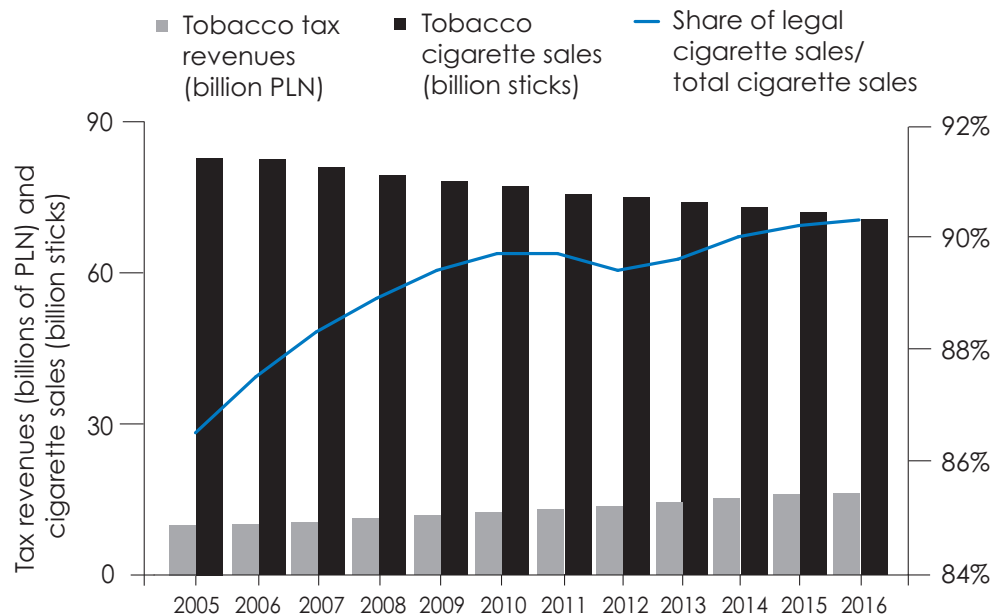
Source: Ministry of Finance of the Republic of Poland; market databases

Graph 5.8: Tobacco Tax Revenues versus per Capita Cigarette Consumption



Source: Ministry of Finance of the Republic of Poland; Central Statistical Office

Graph 5.9: Projected Tobacco Tax Revenues, Cigarette Sales and Share of Smuggled Cigarettes in Poland given annual 6.52% increase in excise taxes, 2005-2016



Source: in Zdanowicz J., Ratajczak J., 2006. Rynek wyrobów tytoniowych w Polsce - raport. Poradnik handlowca, February

Table 5.5: Excise Tax Revenues from Manufactured Tobacco in Poland, 2007-2010*

Year	Excise Revenue, millions of PLN	Excise Revenue, millions of €
2007	13483.0	3521.6
2008	13460.1	3737.6
2009	16057.8	3846.5
2010	17436.3	4249.7

* The data include excise revenues (i.e. without VAT revenues) from cigarettes (the largest component), cigars, cigarillos and other smoking tobacco. Euro equivalents are at year-specific PLN-€ exchange rates used by the EU.

Source: European Union Excise Duty Tables, July 2011, (Tax receipts – Manufactured Tobacco)

1.3 cigarette packs per capita per year between 2005 and 2015. Despite rising tobacco excise taxes and falling rates of cigarette consumption, the simulation estimates a rising percentage of legal cigarette sales in total cigarette sales. As a result, tobacco tax revenues are expected to rise from just under 10 billion PLN in 2005 to 15.96 billion PLN in 2015. Recent official data from the European Union, while not directly comparable to the estimates in Graph 5.9 due to the inclusion of smoked tobacco categories beyond cigarettes, confirm the considerable growth in excise revenue in Poland over the period 2007-2010 (Table 5.5).

Based on the annual increase in tobacco excise taxes in Poland in recent years, the 6.52% annual growth in excise taxes does not appear to be unreasonably high. The excise yield on the weighted average price brand in January 2011 was 301.85 PLN (6.04 PLN a pack) or

€ 76.67 Euro per 1000 cigarettes (equivalent € 1.53 a pack). A 6.52% annual increase on this amount would imply reaching the EU minimum of € 90 as early as 2015, with accompanying gains in revenue. Chapter VII models the impact of further accelerating the pace of increase of tobacco taxes.

Earmarking of Tobacco Excise Tax Revenues

Article 4 of the Act on the Protection of Public Health against the Effects of Tobacco Use of November 9th, 1995,* governs Poland's Tobacco Control Program. It is financed by the State fiscal budget through a 0.5% earmark on tobacco excise tax revenues. Based on Table 5.5, this translates into 67 million PLN in 2008 and 87 million PLN in 2010. In practice, Poland's tobacco-control program does not appear to receive the entire 0.5% allocation and continues to lobby the government for larger funds for prevention programs.†³¹

* Journal of Laws (Dziennik Ustaw z 1996 r.) Nr. 10, poz. 55 with amendments

† This portion of tobacco tax revenues have, to an extent, provided a source of sustained funding for tobacco control as well as other health promotion activities including: the subsidized treatment of HIV/AIDS, tuberculosis and malaria; administration of disease prevention and information campaigns; provision of opportunities in capacity building for health professionals, otherwise not accessible in Poland. (Levine, 2004)

Endnotes for Chapter IV

- ²³ Gazeta Prawna, Unia Europejska: Kryteria opodatkowania wyrobów tytoniowych. Konieczny jest wybór między stawką kwotową a procentową", Podatkowy Raport Branżowy, Nr. 123, 27 czerwiec 2007 (in Polish), 2007.
- ²⁴ European Commission Directorate General Taxation and Customs Union. Excise Duty Tables. 2009.
- ²⁵ Euromonitor International, Tobacco-Poland. Country profile, September 2007.
- ²⁶ Ciecierski, 2008 (interviews with Industry sources).
- ²⁷ European Commission Directorate General Taxation and Customs Union. Excise Duty Tables. July 2010.
- ²⁸ World Health Organization. Joint National Capacity Assessment on the Implementation of Effective Tobacco Control Policies in Poland. 2009.
- ²⁹ World Health Organization. WHO Technical Manual on Tobacco Tax Administration. World Health Organization, Geneva, 2010.
- ³⁰ Zdanowicz J, Ratajczak J. Rynek wyrobów tytoniowych w Polsce - raport. Poradnik handlowca, 2006.
- ³¹ Levine R. "Millions Saved: Proven Successes in Global Health", Case 14: Curbing Tobacco Use in Poland. Peterson Institute, 2004.

VI. The Demand for Cigarettes in Poland

Empirically valid estimates of the responsiveness of tobacco product demand to price changes are central to economic modeling of the impact of tax increases on consumption and, ultimately, prevalence. This chapter summarizes findings from studies of the demand for cigarettes in Poland. Chapter VII then utilizes the estimates of price elasticities of demand here to model the impact of alternative tobacco tax policies in Poland.

Price Elasticity Estimates

Numerous empirical studies have estimated the responsiveness of cigarette demand to changes in price. The main measure used to quantify this responsiveness is the price elasticity of demand, which is the percentage change in quantity demanded as the result of a one percent change in price.

Most studies that report real measures of price elasticity of demand report estimates of price elasticity of demand for cigarettes of between -0.4 and -0.8 for low and middle income countries (World Bank, 1999), implying that a 10% increase in the price of cigarettes is associated with a 4 to 8% decline in consumption.

Estimates using time series data from Poland have suggested a relatively low price elasticity of demand measured at -0.11 (for the period 1959–1985, Florkowski and McNamara's 1992 estimates)³² and -0.12 (for the period 1977–2002, Ciecierski's 2005 estimates).³³ Stated differently, findings from Poland suggest that a 10% increase in cigarette price results in a decline in cigarette consumption of 1.1% to 1.2%.

Time series models are extensively employed to estimate elasticities due to aggregate data being more readily available. Some studies have also been able to exploit panel data sets to control for a larger set of correlates and model demand behavior. Because tobacco is an addictive good, price increases tend to

reduce consumption less in the short run and more in the long run. One set of estimates of price elasticity of demand based on panel data for 1987 through 1990 from Poland suggests that demand for tobacco is fairly inelastic in the short run (price elasticity of -0.4) with greater long run price elasticity measuring around -0.7 .³⁴

Evidence from other countries also reveals that young smokers and smokers at lower levels of income are particularly sensitive to increases in the prices of tobacco products. For these subpopulations, increases in tobacco prices may be particularly effective in decreasing use. As in many countries around the world, tobacco use in Poland begins in childhood or adolescence. Recent studies reveal that price elasticity of demand among youth exceeds adult elasticity of demand for tobacco by approximately three times. This implies that young smokers are more likely to alter their smoking behavior in response to increases in the prices of tobacco products.^{35, 36} To this extent, it is imperative to increase the price of tobacco products regularly at or beyond levels of inflation so as to prevent the uptake of tobacco product use among youth and also, to decrease current consumption and/or encourage cessation among young smokers.

Income Elasticity Estimates

Increases in tobacco taxes and their consequent effect on reducing tobacco use may be weakened or even completely offset by rising income which tends to increase the demand for all products, including tobacco. The trend is not universal at all levels of income — research suggests that income growth in the United States and Europe have been associated with reduction in tobacco use. The empirics of the income-demand relationship are particularly relevant to Poland, where average household income has been rising quite steadily, particularly since Poland's accession to the EU. Poland witnessed a growth of real GDP of over 5% per annum between 2006 and 2008,

was the only EU member (in addition to Malta) to register positive growth in 2009, and has predicted real GDP growth rate of 3.8% for 2011 and 3.6% for 2012.³⁷ With little population growth, real GDP per capita has risen at similar rates.

The responsiveness of demand to income changes is measured using the income elasticity. Studies on the income elasticity of cigarette demand in Poland predict positive income elasticities of approximately .09 to .10,¹⁴ suggesting that a 10% rise in real income leads to an approximate 1% increase in tobacco consumption. It follows that any tax increase that aims to reduce tobacco consumption in Poland must be large enough to offset rising inflation as well as any expected increases in household incomes.

Affordability

Recent studies have begun to examine the affordability of cigarettes across countries, arguing

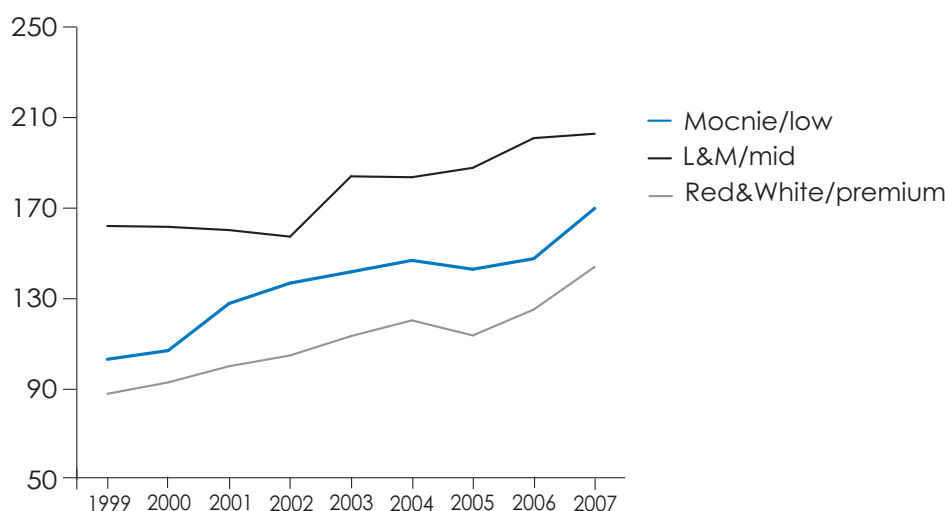
that in many countries, cigarette prices have failed to increase with the general price level of all goods and services and as a result, became more affordable over the 1990-2000 period.³⁸

Affordability: Income

Notwithstanding increases in inflation-adjusted prices, the affordability of cigarettes has risen in Poland as a result of household incomes rising throughout the last decade. Graph 6.1 depicts the number of cigarette packs afforded by a monthly per

Notwithstanding increases in prices, the affordability of cigarettes has risen in Poland as a result of household incomes rising throughout the last decade.

Graph 6.1: Affordability of Cigarettes in Poland: number of cigarettes packs afforded by monthly per capita disposable income, 1999-2007



Source: Trade Sources and the Central Statistical Office of the Republic of Poland

capita disposable income in Poland between 1999 and 2007. Across brands, even as prices rose, cigarettes actually became more affordable during much of this period.

One study has extended the principle of price elasticity of demand for cigarettes to an affordability* elasticity of demand measure.³⁹ The value of this measure was estimated at -0.53 for a group of 72 countries for the period 1990–2000, indicating that for a 10% increase in the RIP (Relative Income Price), per capita cigarette consumption decreases by 5.3%.

The value of the affordability elasticity of demand measure for Poland over the period 1982–2006 is -0.166^\dagger and indicates that every 10% decrease in the relative income price or increase in the affordability of cigarettes, will lead to approximately 1.7% increase in cigarette consumption.[§] The magnitude of the affordability elasticity is very similar to the price elasticity of demand for cigarettes (-0.12) estimated for the period 1977–2002 and reported above.¹⁴

Affordability: real prices and price distributions

In Poland, excise taxes on tobacco have increased quite significantly in the last 15 years and have resulted in increases in the nominal prices of cigarettes. Real, or inflation-adjusted prices of cigarettes in Poland have also increased in Poland, but depending on the

cigarette category, not necessarily at or above the average rate of inflation.

Increases in Poland's tobacco taxes have resulted in some rise in the real** price of cigarettes but these increases have generally been limited to low-priced, local brands such as Popularne and Klubowe as Graph 6.2 suggests.^{††} Between 1997 and 2006, the price of the premium brand, Marlboro, increased at an annual average rate of only 1.3% while lower-category brands, such as Klubowe and Popularne, came close to meeting the average rate of inflation over this period and increased at an average annual rate of 5.3% and 6.9%, respectively. From the perspective of the impact of tax policy on tobacco control objectives, increases in the price of economy brands and the resulting reduction in the gap in prices between premium and economy brands are important in reducing the potential for substitution between brands.

Data from 2010 and 2011, depicted in Graph 6.3, suggest that price differences between cigarette brands in Poland have not been very pronounced in recent years. The economy, medium and premium price segments for 2010 were defined as brands priced below PLN 9, between PLN 9 and 10 and above PLN 10. Most brands, including economy brands sold at tobacco specialists were clustered between 8 and 12 PLN in both years, with nearly all brand prices in January 2011 being higher than the same brands'

* Affordability here is defined as the relative income price (RIP) and is defined as the percentage of per capita GDP required to buy 100 packs of cigarettes. The higher the RIP, the less affordable cigarettes become.

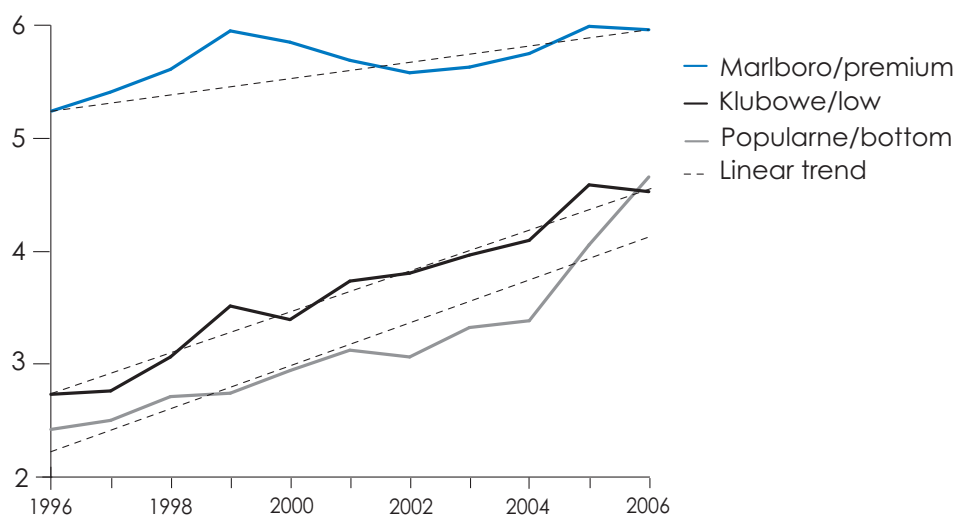
† Author's calculations based on cigarette price data (Mocne brand) obtained from the Central Statistical Office of the Republic of Poland for years 1980–2006 and GDP data provided by the United States Department of Agriculture (USDA) for the same period. A constant growth regression line was fitted across all observations and entailed fitting regression line: $\ln(\text{RIP}_t) = \alpha + \beta_t + \varepsilon_t$ where $t=1,2,3$, etc. The estimated weighted constant growth rate of the RIP is represented by the value of β and was calculated at -0.2829 or 2.83%.

§ This estimation utilized ordinary least square methods to estimate the equation: natural log (per capita cigarette consumption) = $\ln(\text{RIP}_t) = \alpha + \beta_t + \varepsilon_t$. Here, α is estimated at -0.166 with an R-squared = 0.3762. Also, correlation coefficients between the RIP of cigarettes and per capita cigarette consumption in Poland computed for the period 1982–2006 show a consistent and relatively strong relation ($r = -0.61$) between the two variables.

** The deflator used is the Consumer Price Index for Tobacco and was obtained from Poland's Central Statistical Office (GUS).

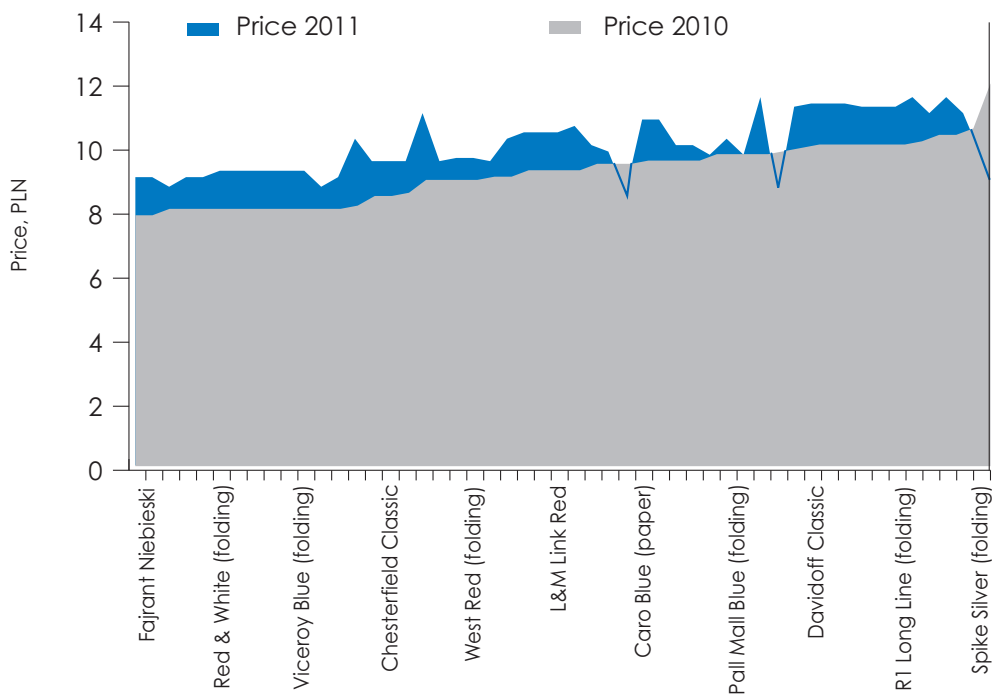
†† Popularne is a brand within the "bottom" price category and exhibit a 35 % increase in price between 1996 and 2006. Klubowe a "low" price category brand and reveal a 17 % increase in price since 1996. The "Marlboro and Sobieski, are "premium" and "mid" price categories, respectively. Between 1996 and 2006, the real price of Sobieski cigarettes actually decreased 2 % while the price of a pack of Marlboro fell by 20 %. The deflator used in the Consumer Price Index for Tobacco and was obtained from Poland's Central Statistical Office (GUS).

Graph 6.2: Real Cigarette Prices of Select Cigarette Brands in Poland, 1996-2006



Source: Ministry of Finance of the Republic of Poland.

Graph 6.3: Comparison of brand prices, January 2010 and January 2011^a



Notes

^a Price comparisons here were restricted to 50 brands for which data was available in both January 2010 and January 2011 in the Euromonitor database, arranged in increasing order of 2010 prices. Most prices were as derived from surveys of tobacco specialists.

prices in 2010, though there is some evidence that manufacturers are broadening their offerings in the economy segment.³¹ Graph 6.3 suggests that an important concern for tobacco control going ahead will be to ensure the gap between low and high priced brands does not widen, even as cigarette prices rise in the aggregate.

A related concern, and one that Graph 6.3 does not capture, is prices of substitutes in relation to cigarette prices as a whole. As Chapters II and V suggest, the affordability of loose tobacco makes roll-your-own cigarettes an attractive substitute for many smokers.

Endnotes for Chapter VI

- ³² Florkowski WJ, McNamara KT. "Policy Implication of Alcohol and Tobacco Demand in Poland", *Journal of Policy Modeling* 14(1):93-98, 1992.
- ³³ Ciecierski C. "Analysis of the Impacts of Poland's Population-Based Tobacco Control Policy on Smoking Behaviors and its Comparative Cost-Effectiveness to Clinic-Based Smoking Cessation Programs". (Technical Report submitted to The Initiative for Cardiovascular Health Research in the Developing Countries), August 2005.
- ³⁴ Gardes F, Starzec C. "Are tobacco and alcohol expenditures price elastic? The case of Poland consumption" Cersem-Team Working Paper, 2004. Accessible at: [http://team.univ-paris1.fr/teamperso/starzec/Price percent20effectsPoland.pdf](http://team.univ-paris1.fr/teamperso/starzec/Price%20effectsPoland.pdf)
- ³⁵ World Bank. *Curbing the Epidemic: Governments and the Economics of Tobacco Control*. The World Bank: Washington, D.C., 1999.
- ³⁶ Jha P, Chaloupka FJ, Moore J, Gajalakshmi V, Gupta PC, Peck R, Asma S, and Zatonski W. "Tobacco addiction" Chapter 46 in *Disease Control Priorities in Developing Countries* (2nd Edition). pp 869-886. New York: Oxford University Press, 2006.
- ³⁷ International Monetary Fund. *World Economic Outlook*, April 2011.
- ³⁸ Guindon GE, Tobin S, Yach D. Trends and affordability of cigarette prices: ample room for tax increases and related health gains. *Tobacco Control* 2002; 11:35-43, 2002.
- ³⁹ Blecher EH and Van Walbeek CP, 2004. *Tobacco Control*; 13: 339-346; 2004.

VII. Simulations of the Impact of Cigarette Tax Increases in Poland

The previous chapters suggest a few considerations at the intersection of fiscal policy and public health concerns relevant to Poland in the years ahead. Poland continues to have a high prevalence of tobacco consumption, and its continued per capita income growth will result in rising affordability of tobacco products if price increases do not keep up with growing incomes and inflation. Higher tobacco excise taxes have been a key driver of price increases in Poland in recent years, with the European Union's excise tax rules providing a framework for tax, and consequently price increases. Changes in the EU's rules allow for an even larger role of specific excise taxes in member states going ahead. While Poland is allowed a longer transition period to reach a minimum tax of € 90 per 1000 cigarettes, it is conceivable that fairly large increases in taxes in Poland and other accession members of the EU will continue to be needed to reduce price gaps across the EU.

To model the impact of alternative cigarette tax policy options, we use the estimates of price elasticities for Poland in Chapter VI, to simulate the effects of alternative strategies in implementing cigarette taxes increases on several outcomes related to smoking in Poland, including cigarette consumption, government tax revenues, the number of current and potential future smokers, and changes in preventable mortality from smoking. In line with standard assumptions, all other factors including per capita income are held constant. There is assumed to be no impact on smuggling, and no substitution away from cigarettes towards other forms of tobacco when cigarette price increases occur. The chapter concludes with a discussion of the scope of illicit trade and substitution towards other products.

Tax and Price Increases: Alternative Scenarios

Table 7.1 first presents baseline data on the price and pack structure in Poland as of July 2011, derived from official European Commission (EC) excise tables. The price of 9.14 PLN is the weighted average price. Specific tax as a fraction of total (Excise plus VAT) tax is 41% in Poland, below both the 55% allowed under previous rules and the maximum 76.5% allowed under new EU guidelines. Poland's current excise tax yield of 6.04 PLN per pack translates into € 76.67 per 1000 cigarettes at the reference exchange rate of 3.937 PLN to a Euro. The VAT rate of 23% (up from 22% previously) on price exclusive of tax translates into 18.7% on final price.

Scenario 1 depicts prices under a regime where Poland applies the new EU minimum of € 90 at the October 2010 exchange rate, with no change in ad valorem rates (31.41% of price) or VAT rates. While Poland has till 2018 to reach this target, this scenario predicts that imposing a 7.09 PLN specific tax will increase price by 14% to 10.43 PLN a pack, or € 2.65. Excise taxes reach 68% of retail price in this Scenario 1 and the specific tax is 42% of total tax (excise + VAT).

Scenario 2 depicts the impact of a larger tax increase, where Poland adjusts specific taxes to obtain the current median excise yield of EU member states of € 107.6 per 1000 cigarettes. In this scenario, raising specific taxes by a little less than 2.50 PLN results in price rising to 33% to 12.13 PLN a pack. At € 3.08, this price is still lower than pack prices in most EU countries. Excise taxes reach 69.8% of retail price in Scenario 2 and the specific tax is 43% of total tax (excise + VAT).

Scenario 3 provides a situation where Poland raises its specific excise tax so that total excise taxes are 70% of retail price, as recommended by the World

Table 7.1 Prices and Taxes under Alternative Tax Scenarios

	2011 baseline	Scenario 1 Applying the EU minimum excise of € 90	Scenario 2 Applying the median excise of EU member countries as of July 2011	Scenario 3 Setting specific taxes so that so that excises are 70% of price	Scenario 4 Approaching the median excise of EU-15 countries as of July 2011
Average pack price, PLN	9.14	10.43	12.13	12.31	13.72
Ad valorem tax rate	31.41%	31.41%	31.41%	31.41%	10.00%
Ad valorem tax per pack	2.87	3.28	3.81	3.87	1.37
Specific tax per pack, PLN	3.17	3.81	4.66	4.75	8.39
VAT (tax inclusive)	18.7%	18.7%	18.7%	18.7%	18.7%
VAT amount per pack, PLN	1.71	1.95	2.27	2.30	2.57
Total excise tax per pack, PLN	6.04	7.09	8.47	8.62	9.76
Total tax per pack, PLN	7.75	9.04	10.74	10.92	12.33
Excise taxes as % of price	66.1%	68.0%	69.8%	70.0%	70.0%
Total tax as % of price	84.8%	86.7%	88.5%	88.7%	89.9%
% price increase		14.1%	32.8%	34.7%	50.2%
Specific tax/total tax	41%	42%	43%	44%	68%
Average pack price, €	2.32	2.65	3.08	3.13	3.49
Excise tax per 1000 cigarettes, €	76.67	90.00	107.60	109.44	124.00

An exchange rate of 3.937 PLN= 1 € is used, corresponding to the official exchange rate on October 1, 2010 in European Commission Excise Tax Tables.

Health Organization.²⁹ The resulting increase in price is nearly 35%, to 12.31 PLN a pack, or € 3.13. Excise taxes are adjusted to exactly equal 70% of average retail price in Scenario 3, and the specific tax is 44% of total tax (excise + VAT).

Scenario 3 is very similar in its impact to Scenario 2: applying the current EU median excise yield to Poland is nearly equivalent to reaching the WHO recommended excise tax rate. For the analysis of the impact below, we therefore drop Scenario 2 and focus on Scenario 3.

Scenario 4 provides a more ambitious approach to raising taxes, while still complying with EU guidelines. The benchmark applied here is an excise of € 124 per 1000 packs (€ 3.1 or 9.76 PLN excise tax per pack at the reference rate of € 1 = 3.937 PLN), a figure closer to the median excise yield of the EU-15 (original EU signatories) as of July 2011. The effect is to raise price by 50% to 13.72 PLN or € 3.5, still below prices in the EU-15. To reduce incentives for substitution between high priced and economy cigarettes, Scenario 4 also suggests an altered structure of taxes, with the ad

Applying an excise of € 124 per 1000 packs, closer to the median excise yield of the EU-15 countries would increase average price by 50% to 13.72 PLN or € 3.5 a pack.

valorem component reduced to 10% (for illustrative purposes), and a larger role for specific taxes. Excise taxes amount to 70% of retail price under Scenario 4. The 8.39 PLN per pack specific tax is more than twice the existing tax, but at 68% of total tax, is still within the share permitted by the EU.

The impact of Scenarios 1, 3 and 4 are analyzed below, with results for Scenario 2 omitted since they are very similar to those for Scenario 3.

Table 7.2 summarizes the results of simulations of the impact of Scenarios 1, 3 and 4 outlined in Table 7.1. The baseline population for the purpose is taken to be 38.2 million (World Bank indicators, 2011). The adult prevalence of 30.3%, derived from the Global Adult Tobacco Survey and discussed in Chapter II, is applied to arrive at an estimate of 9.9 million current adult smokers and 1.7 million likely future smokers in the current cohort of Poland's 0–14 year olds. One third of all current and future smokers are taken to be likely to die prematurely, implying that over 3.3 million adults and 0.57 million youth will die prematurely in Poland in the absence of stronger tobacco control interventions.

Three alternative elasticity estimates discussed in Chapter VI were considered: -0.1 (derived from time series studies), -0.4 (derived from a panel data (Gardes and Starzec, 2004) and an intermediate estimate of -0.25 , half way between these two values. For purposes of exposition, the results of the estimates with the midpoint estimate of -0.25 are discussed. All three

estimates represent inelastic demand for cigarettes. The -0.1 estimate, while lower than in most countries, is also derived from time series elasticity estimates over periods when real price increases were not very large. Consumption declines are proportionately lower and revenue increases higher if the -0.1 estimate is used.

For a given price change, evidence suggests that about half of the impact on reduced consumption in current adults is through a reduction in prevalence (that is, smokers quitting).³⁶ In light of findings on the health benefits of cessation, we estimate that 70% of those who would otherwise die prematurely from diseases caused by smoking are able to avoid premature death by quitting. As an illustration of the steps in computing the impact of a price increase, a 10% increase in prices and an elasticity of -0.25 , the reduction in consumption would be 2.5% and the reduction in prevalence of adult smoking would be one-half, or an estimated 1.25%. A third of these individuals, or 0.41% would die prematurely if they did not quit, and 70% of these premature deaths are avoided through tax-driven price increases.

The response of youth smoking to price increases tends to be much larger than the response of current adult smokers. Evidence from high-income and, more recently, from low-income countries suggests a price elasticity two or more times the price elasticity for adults. With an average estimated adult elasticity of -0.25 , the likely youth elasticity is -0.5 , so that 10% increase in prices deters an estimated 5% potential smokers, and thereby reduces premature deaths from smoking in youth by the same percent.

Scenario 1 estimates the impact of a switch to the EU recommended minimum of € 90 with immediate effect. Such a move is predicted to raise prices 14.1%, reduce consumption by 3.5% and result in 174,000 fewer adults smoking in Poland, or a 1.8% decline in prevalence. It would also result in 60,500 fewer youth

Table 7.2: Estimated impact of cigarette excise tax increases in Poland on consumption, prevalence, smoking-related mortality and tax revenues

Baseline Parameters			
Average price per pack (PLN)			9.14
Total population (million)			38.2
Population age 15+ (million)			32.5
Adult prevalence			30.3%
Number of current smokers			9.9
Number of future smokers			1.7
Premature deaths caused by smoking in current smokers (millions)			3.3
Premature deaths caused by smoking among future smokers			0.57
Premature deaths caused by smoking among current and future smokers (millions)			3.9
Consumption (millions of packs)			2,847
Excise tax revenue (millions of PLN)			17,186
Total revenue (excise + VAT), millions of PLN			22,050
Elasticity assumption			-0.25
	Scenario 1	Scenario 3	Scenario 4
	Applying the EU minimum excise of € 90	Setting specific taxes so that so that excises are 70% of price	Approaching the median excise of EU-15 countries as of July 2011
Excise per pack (PLN)	7.04	8.62	9.76
Average price per pack (PLN)	10.43	12.31	13.72
% increase in price	14.1%	34.7%	50.2%
% change in consumption	-3.5%	-8.7%	-12.5%
Reduction in prevalence (%)	1.8%	4.3%	6.3%
Reduction in number of adult smokers (quits), 000s	174.1	403.9	618.1
Reduction in premature mortality in current adult smokers due to quits (000s)	58	142.7	206
% reduction in adult deaths	1.8%	4.3%	6.3%
% reduction youth prevalence	3.5%	8.7%	12.5%
Reduction in initiation of smoking in current cohort of 10–14 year olds ('000s)	60.5	148.7	214.7
Reduction in premature mortality in current cohort age 10–14 due to lower initiation ('000s)	20.2	49.6	71.6
% reduction youth deaths	3.5%	8.7%	12.5%
Reduction in premature mortality, total (current adults and current 10–14 year olds)	78.2	192.2	277.6
Additional excise tax revenue, millions of PLN	2,275	5,216	7,123
Additional tax revenue (excise + VAT), millions of PLN	2,766	6,336	8,647
Additional tax revenue, millions of US\$	734	1,682	2,789
Additional total tax revenue (excise + VAT), millions of US\$	691.57	1,584.00	1,261.71
% increase excise tax revenue	13.2%	30.3%	41.4%
% increase total tax revenue	12.5%	27.3%	39.2%

taking up smoking, or 3.5% fewer future smokers in the current cohort of 0-14 year olds. Taken together, this implies 78,000 fewer premature deaths in Poland's current population, or a 2% reduction in premature mortality. At the same time, the 1.05 PLN increase in excise tax per pack of cigarettes would outweigh the reduction in consumption, and result in excise revenue increasing by 2.3 billion PLN or US\$ 734 million at the October 2011 exchange rate (1 US\$ = 3.13 PLN). This is a 13.2% increase in excise revenues; total tax revenues (excise + VAT) increase over 12.5% over the baseline.

Scenario 3 estimates the impact of increasing specific taxes on cigarettes in Poland to enable total excise taxes to reach 70% of retail price, in line with the World Health Organization's recommendations (WHO, Technical Manual on Tobacco Tax Administration, 2011). Scenario 3 would raise prices 34.7%, resulting in an 8.7% reduction in consumption. The number of current adult smokers quitting as a result is nearly 404,000, or a 4.3% decline in prevalence. Scenario 3 also results in nearly 149,000 fewer individuals in the under-15 population initiating smoking. The reduction in adult and youth prevalence together implies an estimated reduction in mortality of over 192,000 or 4.9% fewer smoking-related premature deaths in Poland's current population. The revenue impact of the higher excise tax is an additional 5.2 million PLN or (US\$ 1.7 billion at the October 2011 exchange rate of 1 US\$ = 3.13 PLN), or 30.3% more in excise revenues and 27.3% more in total (excise plus VAT) revenues.

Scenario 4 models the impact of raising excise taxes to levels that yield € 124 per 1000 cigarettes (a figure closer to the median yield in the EU-15 members in July 2011). The public health and revenue impact of Scenario 4, are the largest. The impact of a 50% increase in average cigarette price is an estimated 618,000 fewer adult smokers, or a 6.3% reduction in adult prevalence. In addition, the price rise is estimated to result in 215,000 fewer initiations in the under-15

A 50% increase in average cigarette price in Poland would result in 618,000 fewer adult smokers or a 6.3% reduction in adult prevalence ... The impact of the reduction in adult and youth prevalence together is a 7.2% reduction in premature mortality.

population. The impact of the reduction in adult and youth prevalence together is 278,000 premature smoking-related deaths averted or a 7.2% reduction in mortality over the baseline scenario of unchanged taxes and prices. The revenue impact of the increase in average excise taxes to 9.76 PLN per pack is an additional 7.1 billion PLN in excise collections (US\$ 2.3 billion), or a 41.4% increase in excise revenue, and, a 39.2% increase in total (excise plus VAT) revenues.

The consumption and revenue impact here are modeled to vary with the level of excise tax but not the mix of specific and ad valorem excise taxes. However, by relying on a larger share of specific taxes (ad valorem taxes in this scenario were reduced to 10% of final price) and potentially reducing the price gap between the most and least expensive brands, Scenario 4 is likely to reduce the availability of cheaper cigarette options and increase the success of smokers looking to quit their habit.

The simulations here assume there is no substitution towards non-cigarette tobacco, whether

The revenue impact of the increase in average excise taxes to 9.76 PLN per pack is an additional 7.1 billion PLN in excise collections (US\$ 2.3 billion), or a 41.4% increase in excise revenue.

smoked or smokeless. The ease with and price at which these substitutes are available are important to influencing the extent to which higher cigarette prices ensure successful quit attempts. A key component of stronger tobacco tax policy is ensuring that tax increases on cigarettes are accompanied by higher taxes on all tobacco products.

Tobacco Taxes and Concerns on Impact Across Socio-economic Groups

Significant expenditures on tobacco products by households can have serious implications for social welfare. As presented in Table 7.3, in 2008, while the lowest level of expenditure on all goods and services (674 PLN/capita) was observed among households living from manual labor salaries, these households allocated the largest share of their income, 2.2 percent, towards tobacco purchases. By comparison, the average national household expenditure on all goods was higher (865 PLN/capita) but the share of expenditures on tobacco was less (1.6 percent). Higher income earning populations (e.g. those who are self-employed or hold non-manual employment) spend an even smaller share, 1 percent, of their income on tobacco.

Overall, lower-income groups, including non-skilled manual laborers and pensioners spend a higher

percentage of their total household expenditure on tobacco than wealthier households. Households in the lowest income groups spend nearly 3 percent of their total household income on tobacco; hence tobacco expenditures may displace spending on essential goods and services, such as health care, nutritious food and education (i.e., the opportunity cost of smoking).

Opponents of increases in tobacco tax increases sometimes argue that because low-income households spend a larger share of their income on tobacco, they may also pay disproportionately more in tobacco taxes. Lower income households however also tend to be more price-sensitive and more likely to reduce tobacco-related expenditure in response to price increases. As Graph 7.1 shows, in recent years, household expenditures on tobacco have begun to comprise a lower portion of household expenditures both overall (the share of tobacco expenditures in total expenditures on all goods and services decreased from 1.74 percent in 2004 to 1.60 percent in 2008) and particularly among lower socio-economic groups. The share of tobacco expenditures in total expenditures on all goods and services decreased between 2004 and 2008 for three relatively low-income groups: manual laborers (from 2.6 percent in 2004 to 2.4 percent in 2008), farmers (from 1.77 percent in 2004 to 1.46

Table 7.3: Household Income Expenditures, including Tobacco, 2008

	Total	Manual laborers	Non-Manual employees	Farmers	Self-employed	Retirees	Pensioners
Average per capita expenditures: Total consumer goods & services	865.32	674.09	1116.1	662.98	1142.72	922.62	736.08
Average per capita expenditures: Tobacco products	13.81	15.07	13.27	9.68	13.14	13.44	14.61
Share of tobacco in total expenditures	1.6%	2.2%	1.2%	1.5%	1.1%	1.5%	2.0%

Source: Central Statistical Office of the Republic of Poland.

percent in 2008) and the self-employed (from 1.44 percent in 2004 to 1.15 percent in 2008).

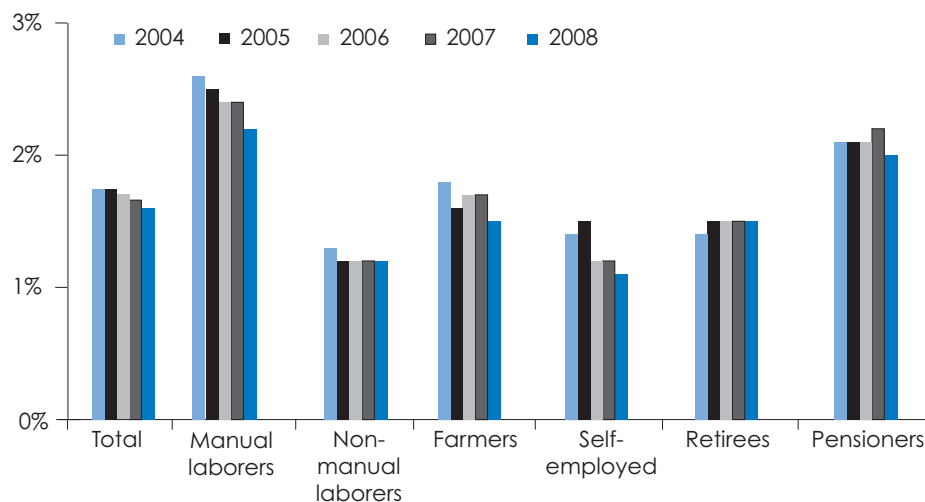
The differential trends across economic groups suggest that the impact of increases in real cigarette prices have been relatively larger among lower-priced segments of Poland's cigarette market. Three related observations are worth noting here—smoking prevalence is high among Poland's lower socio-economic groups; smokers of lower socio-economic status tend to smoke cigarettes from low-priced cigarette segments; and smokers tend to spend a greater proportion of their income on tobacco than richer smokers. Taken together, this suggests that concerns about the regressivity of tobacco taxes are often misplaced. Tobacco control economists generally agree that government should not reduce excise tax.³⁵ Instead, continued increases in the excise tax are likely to reduce regressiveness over time given that poorer individuals are more sensitive to price changes. When facing a tax-induced increase in tobacco prices, households from a lower socio-economic status are

likely to reduce their cigarette consumption by a larger proportion than their wealthy counterparts. As a result, the relative tax burden on the poor, when compared to the wealthy, would fall as the excise tax is increased. Especially important from a public health perspective is the corresponding decline in prevalence and the gains in health across all socio-economic groups.

Illicit Trade and Issues in Tax Administration

An important priority in implementing successful tobacco tax increases is countering incentives to evade taxes through different forms of illicit trade practices across borders as well as within the country. This section examines some trends and emerging developments in the context of the trade in contraband (genuine cigarettes that escape taxation in Poland) and counterfeit (fake) cigarettes within and across Poland's borders with its EU and non-EU neighbors, and briefly considers the topic of tax differences across the EU and incentives for illicit trade.

Graph 7.1: Share of Tobacco Expenditures in Total Expenditures, by Work Status, 2004-2008



In Poland, recent years have been characterized by declining levels of reported cigarette contraband. These falling rates are attributed to Poland's accession to the EU as the country's territory now forms an external border for the EU community. As a member state, Poland must implement strict border rules to restrict both illegal immigration and trade along its eastern boundary with Belarus, Russia and the Ukraine.

Graphs 7.2 and 7.3 draw upon various data sources to report the pervasiveness of cigarette contraband in Poland during the period 2000-2006.

The first benchmark study surrounding levels of contraband cigarette consumption in Poland was commissioned from the ALMARES Institute by Zakłady Tytoniowe w Lublinie, the last of Poland's entirely government-owned tobacco firms. Study results were released in November 2000.⁴⁰ According to this report, in early 2000, the average share of contraband cigarette use in national cigarette consumption in Poland amounted to 15.9%. In addition, the study reported variations in contraband cigarette use across Poland's regions with the penetration of illegal cigarettes along Poland's eastern border amounting to a near 50% of market share. Finally, the study reported that the value of confiscated cigarette imports was 180% larger in 1999 than in 1996.

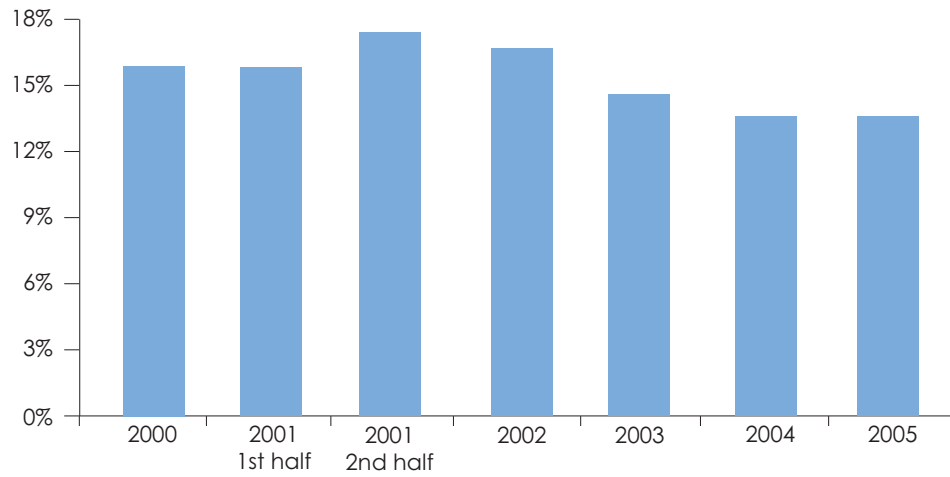
A subsequent study (ALMARES, 2003) indicated that the incidence of contraband was approximately 16% annually across years 2000-2003 with a peak of 17.4% occurring in the second half of 2001. A 2006 trade report suggested that 13.6% of cigarettes smoked in Poland in 2004-2005 were of illicit nature, with the majority originating from Russia, the Ukraine and Belarus.⁴¹

Ciecierski collected and utilized nationally representative consumer survey data to estimate the average share of contraband cigarette use in national cigarette consumption (Graph 7.3).⁹ Her study found that approximately 2.7% of cigarettes present in Poland's tobacco market lack any evidence of excise tax stamps while an average of 8%, display excise tax stamps originating in Russia, the Ukraine or Belarus. Similarly, some 8% of the packs displayed a combination of foreign health warning, tar, nicotine and/or CO labels. The study concluded that on average, some 10-11% of cigarettes brought to sale in Poland between the years of 2004 through 2006 were of illicit nature (i.e. bootlegged, counterfeit, etc).

Ciecierski's study also noted that the rate of illicit pack penetration fell from 2004 to 2005 but then remained fairly steady over the two year period between 2005 and 2006. Finally, the study reported variations in contraband cigarette use across Poland's regions. More recent evidence suggests that the prevalence of illicit cigarette consumption has remained steady or even declined and suggests that Poland, in its new role as an EU external border state, has been more successful in limiting illegal border crossing, including the bootlegging of tobacco products, from Russia, Belarus and the Ukraine and elsewhere.⁴²

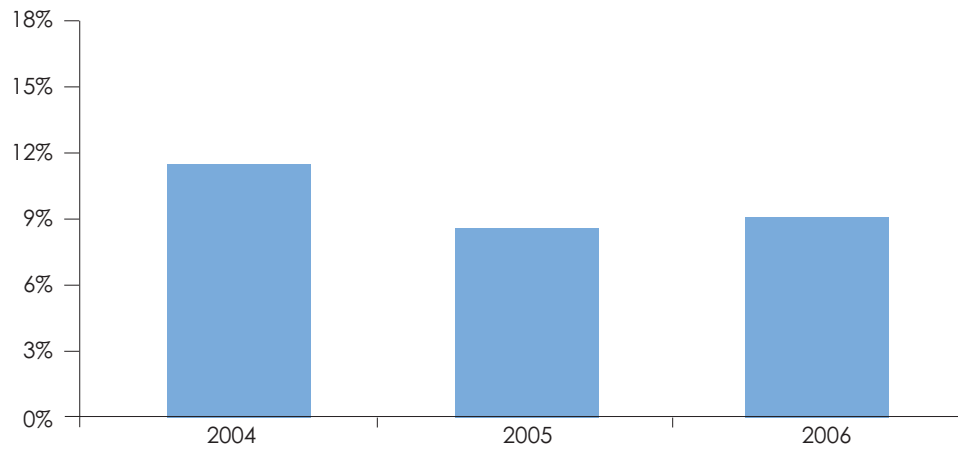
More restrictive border control along Poland's eastern boundary has led to a decline in local tobacco bootlegging activity. A tight eastern border also works to alleviate larger-scale, cross-border smuggling that's driven by supply-side factors and like bootlegging, is characterized by fraud through the illegal evasion of taxes. Such smuggling is usually large scale and is run by sophisticated networks of participants, including organized crime.⁴³ It has also been argued that the beneficiaries of large smuggling operations are

Graph 7.2: Share of Contraband Cigarettes in Poland, 2000-2005



Source: Almares Consulting and Market Research Group, results commissioned and reported by various venues including: Zakłady Tytoniowe w Lublinie (2000); Ministry of Finance of the Republic of Poland (2003); British American Tobacco (2006)

Graph 7.3: Share of Contraband Cigarettes in Poland, 2004-2006



Source: Ciecierski, 2007b

tobacco companies that use smuggling to sell their products at lower prices to specific market sub-groups, which under legal conditions, could not be penetrated.⁴⁴ At present, Poland has not been identified as a final destination country for such shipments of cigarettes given that moving duty-free cigarettes further west to countries in the United Kingdom and Germany, for example, have the potential to yield significantly higher profits for tobacco smugglers. Eastern mafia groups have also been linked to counterfeit cigarette production in China coupled with seaway transit into the UK.⁴⁵ The risk for such smugglers is high but so are the returns. A legally purchased cargo container filled with legal Ukrainian cigarettes (with excise stamps) houses approximately 7 million cigarette sticks and is worth 1.4 million pounds in revenues in the UK.⁴⁵

A reduced capacity to bring contraband cigarettes into Poland from the Ukraine, Russia and Belarus has raised concern over the in-country production of counterfeit cigarettes.* In recent years, Poland's customs officials have exposed at least thirteen counterfeit cigarette manufacturing plants in Poland and the frequency of such crackdowns appears to be increasing.²⁵ In general, the production of counterfeit cigarettes in Poland involve premium brands as the payoff associated with the sale of higher priced cigarettes is the higher potential profits for counterfeiters. Counterfeit cigarettes are typically produced for special-order and are potentially highly profitable. It is estimated that the production of a cargo container's worth of counterfeit cigarettes yields at least 1 million PLN, a sum high enough to cover all

input costs, including the one-time purchase of cigarette production machinery.⁴⁵

Cigarette contraband is a concern for governments as a large black market for tobacco translates into lost tax revenues for the State. In Poland, revenues from excise taxes have been rising despite falling rates of consumption. This is due to the changing composition of the tobacco tax base. A smaller share of contraband cigarettes goes with more of Poland's smokers consuming legal, taxed cigarettes. Overall, while smokers in Poland are smoking fewer cigarettes, the cigarettes consumed are expected to increasingly derive from legal sources.

Poland's neighbors and other EU countries are the natural context in which to examine how both illicit trade and the free movement of tobacco products within the EU's internal market might evolve in the future.† Lithuania has among the lowest cigarette prices in the EU. Within EU guidelines, an indicative limit of 800 cigarettes currently exists for private individuals crossing the border. Both Poland and Lithuania are required to increase their excises under EU regulations to reach the € 90 minimum. If, Lithuania postpones its tax increases, incentives for the entry of lower priced tax-paid cigarettes into Poland are likely to be magnified. This need not deter ambitious tax increases within Poland. EU regulations allow that once member states reach the monetary minimum excise of € 77 per 1000 cigarettes, they may impose a quantitative limit of 300 cigarettes to be bought into their territory as a means of safeguarding the effectiveness of their domestic tax policy.

* According to police interviews summarized by Polityka in February, 2008, in Poland, counterfeit factories are generally established in older, further removed and less conspicuous buildings. To minimize exposure, the production process takes place in separate stations (i.e. a building for machine production, another for machine packaging, a warehouse for storing tobacco and another for the manufacture of filters and paper) within a vicinity. Such producers seek out small printing companies which, for a small price, are willing to print required packaging graphics. Production machinery is imported into Poland as salvage material from countries shutting down their national cigarette production (i.e. Bulgaria). The machinery is dated (often 15-20 years old) but functional.

† This section is adapted from a reviewer's comments on Poland's obligations arising from EC taxation and customs union regulations.

Within the domestic context, a recent instance of a different type of illicit activity was in 2010 and 2011, when an EU directive establishing common rules for direct support schemes for farmers under the common agricultural policy (Council Regulation EC 73/2009) resulted in Poland's tobacco farmers not being granted EU subsidies. With this amendment to EU financial obligations, a number of agricultural regulations that once governed the consequent processes of the tobacco harvest were also annulled. Most significantly, this deregulation eliminated a national registry that tracked contracts for the purchase of raw tobacco in Poland. The deregulation also eliminated the formal registration of tobacco wholesalers and processing facilities. In turn, a market for untaxed raw tobacco emerged.

Poland's customs agencies estimate large increases in the circulation of raw tobacco leaf throughout Poland – from only 38 tons of illegal raw tobacco discovered in 2009 to 170 tons disclosed in 2010 and 135 tons revealed in circulation during the first-half of 2011.⁴⁶ With easy access to shredders, cigarette filter paper and roll-your-own cigarette

machines, those smokers in Poland who seek to circumvent the tobacco tax may do so effectively easily. Moreover, this growing trend in the unregulated trade of raw tobacco leaf among ordinary consumers creates additional concern over the potential emergence of in-country factories specializing in the production of counterfeit cigarettes.

Fines for the possession of untaxed tobacco (that is, tobacco containers not displaying an official Polish excise tax stamp) exist but are low (400 PLN) when compared to potential payoffs. Higher excise taxes on tobacco must be accompanied by increased effectiveness of customs and police agencies as well as increases in the penalties for the possession and dealing of untaxed and/or raw tobacco.

More generally, internal and external policies and macroeconomic factors can generate year-to-year changes in the nature and scale of illicit activity. Well-coordinated fiscal, regulatory and enforcement policies are all vital to anticipating and reducing illicit activity, and strengthening the effectiveness of tax policy in attaining revenue and tobacco control objectives.

Endnotes for Chapter VII

⁴⁰ Zakłady Tytoniowe w Lublinie, "Przemył Papierosów Niszczy Polskich Plantatorów i Polskie Miejsca Pracy", (Cigarette Smuggling Ruins Polish Planters and Poland's Employment" (in Polish), Press Conference Release, Lublin 11.IX.2000. Accessed January 2003 at: <http://www.zak-tyt.lublin.pl/aktualnosci/przemyt.html>

⁴¹ British American Tobacco, "Dialog Społeczny: Raport Odpowiedzialności Społecznej", (Societal Dialogue: A Report on Social Responsibility), in Polish, ISSN: 1897-3353. Available at: http://www.odpowiedzialnosc.pl/pdf/raport2006_pl.pdf

⁴² Euromonitor International, Tobacco-Poland. 2011.

⁴³ Joossens L, Raw M. Cigarette smuggling in Europe: who really benefits? *Tobacco Control* 1998; 7:66-71.

⁴⁴ Joossens L, Raw M. How can cigarette smuggling be reduced? *British Medical Journal* 2000; 321:947-950.

⁴⁵ Polityka. "Ulotni jak dym", nr 8 (2642), February 23, 2008.

⁴⁶ Rzeczpospolita, "Rosnie popyt na nielegalne papierosy", Drewnoska, Beata i Lentowicz, Zbigniew, September 15, 2011. Accessible at: www.rp.pl/artykul/717866.html

Conclusions and Recommendations

Higher tobacco excise taxes are key to reducing Poland's high adult and youth tobacco use prevalence. Compliance with the European Union's excise tax regulations have been an important incentive in increasing taxes, in particular, specific excise taxes, in recent years. The impact of further sustained tax rises is likely to be substantial—the simulations in Chapter VII suggest that increasing specific excise component to near the median level in the EU-15 countries would avert nearly 300,000 premature smoking-related deaths in Poland. The structure of excise taxes is likely to be important in ensuring reduced chances for substitution between tobacco products and ensure successful quits by smokers.

Given the evidence and opportunities ahead for Poland, we recommend the following:

(1) **Rely on the specific rather than the ad valorem component of the excise tax to drive tax increases and revenue collection, and impose a high minimum duty**

From 2000 to 2008, Poland relied heavily on the ad valorem tax relative to the specific excise tax on tobacco. With no established minimum price during this period, the country's cigarette market developed into one characterized by large market shares of low priced cigarettes, rapidly increasing market shares for bottom category brands (a rise of 35% in 2007) and also, price wars among brands/producers.

Because the total tax due under an ad valorem tax varies with price, firms have the incentive and ability to set prices low, often at the expense of quality, and minimize their tax liability to the state. This incentive is absent in the case of specific taxes. Since 2011, European Union rules stipulate that specific taxes in member countries can be

between 7.5% to 76.5% of total tax (excise + VAT). This is a higher share of specific taxes than was allowed in the past, and an opportunity for Poland to increase the specific component of its cigarette excise.

A high minimum duty on top of the mixed structure is recommended by the EU as an effective way to increase the price of cheap cigarettes and reduce the price gap, in addition to increasing tax revenues and improving predictability of those revenues.

(2) **Allow for automatic increases to the specific component so as to meet or exceed rates of inflation and per capita income growth**

Specific excise taxes keep up with inflation only if they are systematically adjusted according to movements in an economy's consumer price index (CPI). To be effective, such adjustment should be automatic. Given the potential impact of tobacco tax policy to improve public health and reduce societal costs associated with smoking, there is an urgent need to implement ongoing tobacco tax increases in Poland that rise at or above the general level of inflation, as well as narrow the gap in tobacco tax rates levied by Poland and other EU countries.

(3) **Increase excise taxation on all other tobacco products substantially to ensure the effectiveness of cigarette tax increases**

In order to align fiscal policies with public health objectives, the excise tax on various types of tobacco products must be synchronized. The single excise tax rate for all types of loose tobacco, should be increased to the same rate levied on factory-made cigarette products to eliminate large price differentials both within the domestic market and internationally. In order to avoid substitution of cigarettes by loose tobacco a high

specific tax on other smoking tobacco products (which in most cases are cheaper than cigarettes) and/or a high minimum duty on these products should be considered.*

(4) Raise excise taxes to make yields (Euros of excise per 1000 cigarettes) in Poland comparable to those in other EU member states

The EU's requirement to impose a minimum excise tax has led to price increases in a number of EU countries, but has not eliminated the large differences in price and tax levels that characterize the EU cigarette market. In 2010, tax rates varied widely across the EU states as did average prices. While tax as a percentage of price is fairly high in Poland, tax levels and pack prices in Poland are among the lowest in Europe. Accelerated tax

increases in Poland to narrow the price gap between Polish and other European cigarettes will be important in coming years.

(5) Earmark a portion of tobacco taxes for public health efforts, medical treatment, law enforcement as well as to other sectors vital for tobacco control.

Tobacco taxes are complemented by other tobacco control policies. It is therefore important to earmarking a portion of revenues to fund a broader range of health and social sector programs more generally, and tobacco control specifically. A first step is to ensure that the entire 0.5% of excise revenues currently allocated to tobacco control is made available for the purpose.

* If ISO norms, which establish a conversion rate between 1333 and 2500 sticks for 1 kilogram of loose tobacco are taken into account, taxes on loose smoking tobacco would be much higher in Poland.

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Bibliography

- Blecher EH and Van Walbeek CP, 2004. *Tobacco Control*; 13: 339-346; 2004.
- British American Tobacco. "Dialog Społeczny: Raport Odpowiedzialności Społecznej", (Societal Dialogue: A Report on Social Responsibility), in Polish, ISSN: 1897-3353. Available at: http://www.odpowiedzialnosc.pl/pdf/raport2006_pl.pdf
- Chaloupka FJ, Warner KE. The economics of smoking. In: J.P. Newhouse and A.J. Cuyler, editors, *The Handbook of Health Economics*. New York: Elsevier, North Holland, 1999. 1539-1627.
- Ciecierski C. "Analysis of the Impacts of Poland's Population-Based Tobacco Control Policy on Smoking Behaviors and its Comparative Cost-Effectiveness to Clinic-Based Smoking Cessation Programs". (Technical Report submitted to The Initiative for Cardiovascular Health Research in the Developing Countries), August 2005.
- Ciecierski C, Chaloupka FJ. "Collection and analysis of longitudinal, individual-level tobacco control survey data in Poland", presented during the 13th World Conference on Tobacco or Health, 2006 in Washington D.C., USA. 2006.
- Ciecierski C. "Poland: The Market for Legal and Illegal Cigarettes - A Closer Look at Demand and Supply-Side Characteristics", IDRC Working Paper Series, 2007.
- Ciecierski C. Technical Report submitted to the Development Research Program, Roswell Park Transdisciplinary Tobacco Use Research Center (TTURC), 2007.
- Ciecierski, 2008 (interviews with Industry sources).
- Czart, Christina., K. Przewozniak, F.J. Chaloupka, and W. Zatonski. Descriptive analysis of the impact of tobacco taxes on reported smoking behavior in Poland. Unpublished report prepared for the World Bank. Washington, DC, USA: World Bank, 2000.
- Euromonitor International, Tobacco-Poland. Country profile, January 2007.
- Euromonitor International, Tobacco-Poland. Country profile, September 2007.
- European Commission Directorate General Taxation and Customs Union. Excise Duty Tables. 2009.
- European Commission Directorate General Taxation and Customs Union. Excise Duty Tables. July 2010.
- Euromonitor International, Tobacco-Poland. Country profile, 2010.
- Euromonitor International, Tobacco-Poland. 2011.
- Florkowski WJ, McNamara KT. "Policy Implication of Alcohol and Tobacco Demand in Poland", *Journal of Policy Modeling* 14(1): 93-98, 1992.
- Gardes F, Starzec C. "Are tobacco and alcohol expenditures price elastic? The case of Poland consumption" Cersem-Team Working Paper, 2004. Accessible at: [http://team.univ-paris1.fr/teamperso/starzec/Price percent20effectsPoland.pdf](http://team.univ-paris1.fr/teamperso/starzec/Price%20percent20effectsPoland.pdf)
- Gazeta Prawna, Unia Europejska: Kryteria opodatkowania wyrobów tytoniowych. Konieczny jest wybór między stawką kwotową a procentową", *Podatkowy Raport Branżowy*, Nr. 123, 27 czerwiec 2007 (in Polish), 2007.
- Global Youth Tobacco Survey, GYTS, Poland, 2003.
- Global Adult Tobacco Survey (GATS), Poland, 2009.
- Global Youth Tobacco Survey, GYTS, Poland (Mazovia Province), 2009.
- Guindon GE, Tobin S, Yach D. Trends and affordability of cigarette prices: ample room for tax increases and related health gains. *Tobacco Control* 2002; 11:35-43, 2002.
- International Monetary Fund. *World Economic Outlook*, April 2011.
- Jha P, Chaloupka FJ, Moore J, Gajalakshmi V, Gupta PC, Peck R, Asma S, and Zatonski W. "Tobacco addiction" Chapter 46 in *Disease Control Priorities in Developing Countries* (2nd Edition). pp 869-886. New York: Oxford University Press, 2006.
- Joossens L, Raw M. Cigarette smuggling in Europe: who really benefits? *Tobacco Control* 1998; 7:66-71.
- Joossens L, Raw M. How can cigarette smuggling be reduced? *British Medical Journal* 2000; 321:947-950.
- Krzyanowska A, Głogowski C. "Nikotynizm na świecie: Następstwa ekonomiczne" (The Global Nicotine Addiction and its Economic Consequences), *Mened_er Zdrowia*, 2/2004, pp. 98-103 in Polish, 2004.
- Levine R. "Millions Saved: Proven Successes in Global Health", Case 14: Curbing Tobacco Use in Poland. Peterson Institute, 2004.

- Mazur J, Woynarowska B, Kowalewska A. Palenie tytoiu. Zdrowie młodzieży szkolnej w Polsce" (Tobacco smoking: The Health of School-Aged Children in Poland). Katedra Biomedycznych Podstaw Rozwoju i Wychowania, Wydział Pedagogiczny UW, Warszawa, 2000.
- Mruk J and Teleyńska K. Rynek papierosów i wyrobów tytoniowych-raport. Poradnik Handlowca, 2009.
- Niewada M, Filipiak K. "Analiza kosztów choroby: Ekonomiczne następstwa nikotynizmu", (An Analysis of Health Costs: The Economic Consequences of Nicotine Addiction) *Polski Przegląd Kardiologiczny* 2, 4, pp.367-371 (in Polish), 2000.
- Peto R, Lopez A, Boreham J, Thun M, Heath C Jr., Mortality from smoking in developed countries 1950-2000, 2nd edition, 2006.
- Polityka. "Ulotni jak dym", nr 8 (2642), February 23, 2008.
- Rzeczpospolita, "Rosnie popyt na nielegalne papierosy", *Drewnoska, Beata i Lentowicz, Zbigniew*, September 15, 2011. Accessible at: www.rp.pl/arttykul/717866.html
- Szczęśna J. Diagnoza problemu palenia tytoniu w Polsce i w województwie opolskim", General Sanitary Inspectorat, Opole. Poland, 2007.
- World Bank. *Curbing the Epidemic: Governments and the Economics of Tobacco Control*. The World Bank: Washington, D.C., 1999.
- World Health Organization. *Joint National Capacity Assessment on the Implementation of Effective Tobacco Control Policies in Poland*. 2009.
- World Health Organization. *The Current Status of the Tobacco Epidemic in Poland*.
- WHO Regional Office for Europe. Copenhagen, 2009.
- World Health Organization. *WHO Report on the Global Tobacco Epidemic, 2009: Implementing smoke-free environments*. Geneva: World Health Organization, 2009.
- World Health Organization. *WHO Report on the Global Tobacco Epidemic, 2011: Warning about the dangers of tobacco*. Geneva: World Health Organization, 2011.
- World Health Organization. *WHO Technical Manual on Tobacco Tax Administration*. World Health Organization, Geneva, 2010.
- Zakłady Tytoniowe w Lublinie, "Przemyt Papierosów Niszczy Polskich Plantatorów i Polskie Miejsca Pracy", (Cigarette Smuggling Ruins Polish Planters and Poland's Employment" (in Polish), Press Conference Release, Lublin 11.IX. 2000. Accessed January 2003 at: <http://www.zak-tyt.lublin.pl/aktualnosci/przemyt.html>
- Zatonski W. "Democracy and Health: Tobacco Control in Poland", in *Strategies, Successes and Setbacks*, edited by Joy de Beyer and Linda Waverley Brigden. Co-published by the World Bank and Research for International Tobacco Control, 2003.
- Zatonski W. "Tobacco Smoking in Central European Countries: Poland" in *"Tobacco and Public Health: Science and Policy"*, edited by P. Boyle, N. Gray, J. Henningfield, J. Seffrin and W. Zatonski. Oxford University Press, Oxford, 2004.
- Zdanowicz J, Ratajczak J. Rynek wyrobów tytoniowych w Polsce - raport. Poradnik handlowca, 2006.

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