PPACTE

PRICING POLICIES AND CONTROL OF TOBACCO IN EUROPE

Policy Recommendations for Tobacco Taxation in the European Union Integrated Research Findings from the PPACTE project

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International Agency for Research on Cancer

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Policy Recommendations for Tobacco Taxation in the European Union Integrated Research Findings from the PPACTE project

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Executive summary

Smoking is the largest single cause of death and disease, accounting for some 650 000 premature deaths each year in the European Union. Price and tax measures are recognized by the International Monetary Fund, the World Bank and the World Health Organization (WHO) as important instruments for reducing tobacco use, while generating revenue for governments.

Price and tax measures are important in the European Union for addressing both price harmonization and the disease burden due to tobacco use. The diversity of tobacco prices, smoking prevalence, tobacco market structures and economic and cultural environments in European Member States tend to make tax regulation in the European Union complex.

Aim of the project

The aim of the project Pricing Policy and Control of Tobacco in Europe (PPACTE) is to develop evidence-based policy recommendations to improve market regulation of tobacco products, for more effective and more equitable control of tobacco use in Europe.

Methods

To achieve this aim, PPACTE undertook several studies with different methods to provide insight into designing a tobacco tax policy within the complex European Union policy environment. It was structured in seven 'work packages' (WPs).

For one of the work packages (WP7), a working group of international experts was convened by the International Agency for Research on Cancer (IARC) to produce a handbook, *The effectiveness of tax and price policies for tobacco control* (IARC Handbooks of Cancer Prevention, Volume 14), produced within PPACTE and referred to below as 'the Handbook'. It contains a review and critical appraisal of the current international literature on the effectiveness of tobacco tax and price policies (Principal Investigator, Dr Maria Leon-Roux, International Agency for Research on Cancer, France).

Over 18 000 citizens in 18 European countries were surveyed with regard to their attitudes towards and responses to tobacco tax and price policies (WP2; Principal Investigator, Dr Silvano Gallus, Istituto di Ricerche Farmacologiche Mario Negri, Italy).

Time series datasets from 11 European Union Member States were used to estimate the impact of price, income and tobacco control policies on the demand for tobacco products in each of these countries (WP3; Principal Investigator, Professor Gunnar Rosenqvist, National Institute for Health and Welfare, Finland).

Dynamic simulation models were adapted to assess independently, for each of 15 European countries, the present impact of their tobacco tax policies and other tobacco control policies on smoking prevalence and smoking-attributable deaths and to make predictions for the future (WP4; Principal Investigator, Professor David Levy, Pacific Institute for Research and Evaluation, United States).

Industry influence on, and responses to, tobacco taxation were examined from key informant interviews, analysis of tobacco industry documents in case-study countries and a detailed analysis of data on the British cigarette market (WP5; Principal Investigator, Professor Anna Gilmore, University of Bath, United Kingdom).

A policy panel was convened to integrate the PPACTE findings and distil policy recommendations (WP6; Principal Investigator, Fiona Godfrey, International Union Against Tuberculosis and Lung Disease, France).

Main findings

Effectiveness of tobacco taxation for public health (Chapter 2)

There is substantial evidence from the vast body of international literature reviewed that tobacco taxation improves public health by preventing initiation of smoking among people who have never smoked, promoting cessation among current smokers and reducing consumption among continuing smokers. The effectiveness of tobacco taxes for tobacco control, as reported in the literature, is substantiated by econometric analysis of time series from 11 European countries (WP3). The results confirm convincingly that price is a major determinant of demand for cigarettes, with an average price elasticity of demand of -0.3 to -0.4; income is also shown to affect demand for cigarettes, with an average income elasticity of demand of +0.3 to +0.4. Price is also found to be a significant factor in the demand for pipe tobacco and *snus*, but income appears to be negatively related to the demand for these other tobacco products. Price and taxation of tobacco are therefore key factors for public health as well as generators of national revenue.

The SimSmoke simulation modelling of WP4 indicates that increasing taxes has immediate effects on smoking prevalence and smoking-attributable mortality, and the effects increase over time. It also indicates varying but predictable interactive effects of multiple tobacco control interventions, including implementation of WHO MPOWER strategies.

The European survey undertaken for WP2 indicates that the majority of smokers would attempt to quit in response to a substantial increase in price. One in five smokers said they would quit smoking given a 20% price increase, while a majority said they would quit given a price rise of 41–60%. Furthermore, the survey responses demonstrated strong public support for tax increases when at least some of the tax is earmarked (hypothecated) for supporting smoking cessation and prevention. Overall, 79% of nonsmokers and 49% of current smokers supported a price increase of 5%, with revenues allocated to support smoking cessation measures; 74% of nonsmokers and 40% of smokers supported a 20% increase in price; 76% of nonsmokers and 67% of smokers perceived provision of free smoking cessation support to be useful for controlling smoking. There is general support for significant and substantial increases in tobacco tax, particularly when some revenues are dedicated to helping smokers to quit. Tobacco tax increases are acceptable to smokers and nonsmokers alike. The Handbook gives evidence, however, that the tobacco industry has lobbied strongly against earmarking of tobacco tax, as it sees it as detrimental to its interests.

Tobacco tax structures and rates (Chapter 3)

At present, all countries tax fine-cut hand-rolling tobacco for roll-your-own cigarettes at a lower rate than manufactured cigarettes. Evidence from WP2 shows that, in many European Union countries, considerable numbers of smokers, particularly in low-income groups, have been switching from manufactured to roll-your-own cigarettes. The proportion of smokers smoking hand-rolling tobacco was highest in England (32%), France (17%) and Finland (14%). Some tobacco companies are exploiting this tax difference further by selling kits to convert hand-rolling tobacco into cigarettes, at a price much lower than that of the equivalent manufactured cigarettes.

The conversion rate used by the European Union between fine-cut and manufactured cigarettes is based on the assumption that a

roll-your-own cigarette contains 1 g of tobacco; however, there is evidence from PPACTE WP2 that the weight of one roll-your-own cigarette is nearer to 0.7 or 0.8 g. The ISO norm 15592–3 for measuring tar and nicotine in hand-rolling tobacco gives a somewhat lower estimate of 0.4–0.75 g of tobacco per hand-rolled cigarette.

WP5 demonstrates how tobacco companies seek to minimize the impact of any given tax structure by providing cheaper alternatives, particularly for poor smokers, who are the most price-sensitive, as shown in WP2 and WP3. WP5 reports that "detailed analysis of the British market suggests a multifaceted strategy to keep prices low on the 'ultra low' segment of the market. Between 2006 and 2009, the price of cigarettes in the ultra low segment increased by less than 1% with real price decreases for some brands, while mid-priced and economy brands increased by 5–6%."

These pressures have undermined the basis and intentions of European Commission legislation and directives for tobacco tax in the European Union. The main issues to be addressed in future European Union directives are: the availability of cheap and ultra-cheap cigarettes, including 'dumped' cheap cigarettes; the relatively very low taxes on alternative products, such as fine-cut tobacco for roll-your-own cigarettes; illicit trade and smuggling; and the pernicious interference and influence of tobacco companies on the development of tobacco tax policy. WP5 also suggested that selling cigarettes below cost and low price-based marketing, including selling below the tax level, should be addressed. It is no easy matter to address all these problems or loopholes, but specific changes to the tobacco tax structure and other supportive legislation could go a long way in this regard.

Illicit tobacco trade (Chapter 4)

Illicit trade in tobacco includes smuggling and illicit production of tobacco products. These activities represent a serious threat to tobacco tax policy, government revenue and public health. Estimates from WP5 suggest that tax avoidance and evasion represent about 11.8% of consumption in middle-income and 9.8% of consumption in high-income countries. There is, however, little transparent or public data on illicit tobacco trade in European Union countries. Research on illicit tobacco trade has been carried out by KPMG (a consultancy firm providing audit, tax and advisory services) as part of an agreement between the European Union and the tobacco company Philip Morris International. According to the KPMG report, total cigarette consumption in the European Union was 685 billion units, 8.9% of which was illicit trade. A redacted version of the report has now been published, but the full version and its method are still confidential and available only to European Union or Member State officials.

Following lawsuits by the European Union against tobacco companies, enforceable and legally binding agreements have been concluded in recent years with Philip Morris International, Japan Tobacco International and subsequently with British American Tobacco and Imperial Tobacco. These agreements have had some success in reducing illicit trade but entail a close relationship between the tobacco industry and the European Union, with the industry itself monitoring and measuring illicit trade, in contravention of Article 5.3 of the WHO Framework Convention on Tobacco Control (FCTC). As shown in WP5, it is important for the European Commission to instigate monitoring of illicit trade that is unbiased and fully independent of the tobacco industry.

Parties to the WHO FCTC are negotiating a protocol for a universal system for counteracting illicit trade in tobacco. The main element is tracing (re-creation of the route of seized illicit cigarettes) based on unique, secure, non-removable markings on all unit packets and packages and outside packaging of cigarettes, within 5 years (and of other tobacco products within 10 years) of entry into force of the protocol.

There is extensive illicit trade into the European Union, particularly from its eastern border with the Russian Federation and the Ukraine, indicating major supply factors. No public data are available on the extent of this illicit trade or on the transparency of contacts between the transnational tobacco companies and enforcement officials, including information on any agreements. Corruption contributes to the success of illicit trade and must be confronted, as shown in WP5.

Industry influence on tobacco taxation (Chapter 5)

The European Union and all Member States with the exception of the Czech Republic are Parties to the WHO FCTC and, under

Article 5.3, are bound to prohibit the influence of the tobacco industry on the formulation of public health policy. The WHO FCTC states that "in setting and implementing their public health policies with respect to tobacco control, Parties shall act to protect these policies from commercial and other vested interests of the tobacco industry in accordance with national law."

As the PPACTE case studies and research from WP5 clearly show, however, governments continue to engage with the tobacco industry when formulating tobacco taxation policy, so that tobacco companies lobby Member State governments constantly and persuade them to keep tobacco taxes low, arguing incorrectly that if taxes increase tobacco revenue will decrease and smuggling will occur. It is clear from documents on countries acceding to the European Union ('accession countries') that transnational tobacco companies were greatly concerned to prevent any significant increase in excise duties on accession of the country to the European Union and to ensure that any such increases would be gradual. The companies worked collectively to prevent and postpone increases in excise and lobbied successfully for derogation of the excise level. As a result of the derogations, and with European Union accession also leading to higher incomes, cigarettes actually became slightly more affordable in some accession countries.

To influence policy, industry targeted key government officials at both national and European Union level (WP5).

Tobacco taxation and health inequalities (Chapter 6)

Groups with lower socioeconomic status, lower incomes or lower educational attainment tend to have a higher prevalence of cigarette smoking. As a consequence, the burden of smoking-related ill health and mortality (including lung cancer, ischaemic heart disease and chronic obstructive airways disease) is increasingly concentrated in these groups. Tobacco companies tend to target low-income groups, young people and women, considering these to be their growing or continuing markets, and therefore exacerbate these trends, as shown in WP5.

Conclusions and policy recommendations (Chapter 7)

The following recommendations derive from evidence in the PPACTE research work packages conducted over the past 3 years. To realize the potential of taxation to improve tobacco control and reduce the burden of disease caused by tobacco, future European Union directives must address the following contextual problems: the availability of cheap and ultra-cheap cigarettes, including 'dumped' cheap cigarettes; the relatively very low taxes on alternative products, such as fine-cut tobacco for roll-your-own cigarettes; illicit trade and smuggling; and the pernicious interference and influence of tobacco companies in the development of tobacco tax policy.

Recommendation 1:
We strongly recommend a continuing increase in tobacco taxes, so that the price of cigarettes and other tobacco products is greater than the general rise in price of other goods and rises in incomes. This would make tobacco increasingly less affordable to smokers and potential smokers and result in increased national revenues from tobacco taxes for Member State governments.

There is general support for significant increases in tobacco tax, particularly when revenues are allocated to tobacco control measures. The European Commission should consider and act upon the high levels of support for substantial tobacco tax increases and the evidence of their effectiveness for public health, by introducing tax increases and encouraging Member States to dedicate some of the revenues generated to support cessation, public education and prevention, as indicated in WP2.

Recommendation 2:
The European Commission should consider and act upon the high level of support from the citizens of Member States for substantial increases in tobacco taxes, particularly if some of the tax revenue is used to support cessation, public education and prevention.

Addressing the problem of low-price cigarettes would require setting a high minimum tax in monetary terms for each country as the main tobacco tax. This would eliminate the tax advantage of cheap or ultra-low-priced cigarettes. For example, the minimum excise tax plus value-added tax (VAT) could be set at 80% of the weighted average price of cigarettes (or preferably 83%, as in Turkey). As some countries have very low pre-tax prices, the tax would have

to be set at a minimum in euro equivalents also, if greater than 80% of the weighted average price, possibly initially at €125 per 1000 cigarettes in 2012 terms, subsequently increasing to allow for future inflation and income changes. Member States would be free to, and encouraged to, set this minimum tax at any higher level.

Recommendation 3:
We also suggest that selling cigarettes below cost and low-price-based marketing, including selling below the tax level, should be banned, as the deleterious effects of these practices were demonstrated in WP5. Member States should be transparent about all aspects of the taxes and publish an annual report showing all aspects of tobacco taxation and revenue and the weighted average price.

Recommendation 4:
We recommend that the European Commission move to a tobacco tax structure that makes trading down to cheap cigarettes less attractive. This would avoid the unintentional widening of health inequalities promoted by existing tax structures.

Frequently, while persuading Member States that tobacco tax increases reduce tax revenue or increase smuggling, the tobacco companies raise their own prices, particularly for higher-price cigarettes. This serves to increase industry profit, while the Member States miss out on potential increases in tobacco tax revenue and opportunities to optimize the health benefits. The industry recognizes the segmentation of the market and the low, often zero, price elasticity of higher-income smokers. They raise the price of higher-priced cigarettes to subsidize the ultra-low-price market. Using this strategy, they increasingly circumvent the high price sensitivity (high price elasticity of demand for cigarettes) of low-income smokers and attempt to retain them as smokers by providing ultra-low-priced cigarettes.

Recommendation 5:
To avoid this anomaly, we recommend that the *ad valorem* tax proposed above (minimum 80%, ideally 83%) be applied to all cigarettes priced above the weighted average price. This means that the excise tax plus VAT would be at least 80% of the retail price, with a minimum monetary tax equivalent to at least 80% of the average weighted retail price, or €125 per 1000 cigarettes, whichever is higher. Examples of the effects of these rates are given in Annex 4.

Incomes and cost of living vary among Member States, creating differences in the level of affordability for a given tax or price. At present, the minimum monetary tax is set at €64 per 1000 cigarettes, but it must be raised to €90 per 1000 cigarettes by January 2014 to comply with Directive 2010/12/EC. Even at this low level, some Member States, under pressure from tobacco companies, have negotiated for derogation for several years, allowing their taxes to remain at even lower levels. This has the effect of causing governments to lose valuable tax revenue and increase both cigarette use and the prevalence of disease related to smoking. (These Member States are mostly those with the highest smoking rates.) This also aggravates the problem of cross-border shopping by neighbours with higher tax levels.

Recommendation 6:
We recommend consideration of tailoring the minimum tax so that it is comparable in affordability between countries, thereby allowing higher levels to be set automatically in higher-income countries.

This adjustment could be based on the 'comparative price level' or 'purchasing power parity', which are available for all countries. The basic minimum tax could be set for the lowest-income Member State and adjusted upwards for others. The basic minimum tax would then be adjusted annually in line with inflation, income levels and the relative cost of living. The minimum could be set, for example, at €125 per 1000 cigarettes for a specific low-price country and adjusted by comparative price level for all other countries.

At present, all countries tax fine-cut hand-rolling tobacco for roll-your-own cigarettes at a lower rate than manufactured cigarettes. Evidence from WP2 shows that, in many European Union countries, considerable numbers of smokers, particularly in low-income groups, have been switching from manufactured to roll-your-own cigarettes, thus avoiding the effects of tax increases on manufactured cigarettes. The conversion rate used by the European Union between fine-cut and manufactured cigarettes is based on the assumption that a roll-your-own cigarette contains 1 g of tobacco; however, there is evidence from PPACTE WP2 that the weight of one roll-your-own cigarette is nearer to 0.7 or 0.8 g. The ISO norm 15592–3 for measuring tar and nicotine

in hand-rolling tobacco gives a somewhat lower estimate of 0.4–0.75 g of tobacco per hand-rolled cigarette.

Recommendation 7:
We recommend that there be full alignment of tax rates, so that fine-cut tobacco for roll-your-own cigarettes (and also pipe tobacco) is taxed at the same rate as manufactured cigarettes and at an appropriate conversion rate. The tax should include both a specific component, based on the weighted average price of cigarettes, and an *ad valorem* component and not provide a choice between specific and *ad valorem*, as at present.

Illicit trade in tobacco represents a serious threat to tobacco tax policy, government revenue and public health. Estimates suggest that tax avoidance and evasion represent about 11.8% of consumption in middle-income and 9.8% in high-income countries, although some countries have been highly successful in combating it. There are, however, little transparent or public data on illicit tobacco trade in European Union countries. Tax verification should remain in the independent domain of Member States and not with tobacco companies. Sufficient resources are required to support strong, effective enforcement, with severe penalties for people engaging in illicit trade.

Recommendation 8:
We recommend that, to support tobacco tax reforms, the European Union support the proposed WHO FCTC protocol on illicit trade in tobacco products. This should include linking codes for individual packs with cartons and master cartons, a measure that is both feasible and essential. It should also be entirely independent of the tobacco industry.

For this to be effective, all bodies engaged in tobacco production, distribution and retail sales should be licensed and independent, and regular audits should be conducted to guarantee the validity of the system. The current KPMG audit is neither independent nor transparent and should undergo peer review and be open to scrutiny. PPACTE will provide a brief critical appraisal of its method and findings, if they are made available. Smuggling of cigarettes is a particular problem on the European Union eastern border, and we commend the recent European Commission anti-fraud strategy to address the problem. The European Union must continue working with officials in the Russian Federation, the Ukraine and other neighbouring countries on upwards harmonization of taxes with the European Union (Chapter 1, WP6).

As the PPACTE WP5 case studies and research clearly show, governments continue to engage with the tobacco industry in formulating tobacco taxation policy, so that tobacco companies constantly lobby Member State governments to persuade them to keep tobacco taxes low. This occurs despite the requirements of the WHO FCTC, to which all Member States with the exception of the Czech Republic are signatories. Tobacco companies tell governments incorrectly that if taxes go up tobacco revenue will decrease and smuggling will greatly increase.

Recommendation 9:
We recommend that the European Commission educate Member States and the public about the beneficial effects of increased tobacco taxes and of improved tobacco tax structures in terms of government tax revenue and better health of citizens. The International Monetary Fund recommends, even insists, that European Union countries with high debt should increase their tobacco taxes, and the European Commission should reinforce that policy to counteract the misinformation from the tobacco industry.

There should also be greater recognition of, and publicity about, the known influence of transnational tobacco companies on the level and structure of tobacco taxes, particularly to the public in accession countries, where derogations harm health and financial interests and also harm revenue and public health in other Member States.

Recommendation 10:
We recommend that European Union institutions and Member States take action to ensure that tobacco taxation policies are developed without tobacco industry involvement, in conformity with Article 5.3 of the WHO FCTC.

The surveys in WP2 included questions on the use of and access to *snus* in 18 countries. There is no clear agreement about the safety of *snus* or its role or the extent to which it is used as an alternative to smoked tobacco temporarily or permanently or as a cessation method. The embargo on *snus* should remain, unless further research establishes unequivocally that *snus* use is safe and sustainably improves public health by increasing smoking cessation.

Furthermore, online test purchases of *snus* within WP5 showed that it is currently sold illegally online by Swedish vendors to European Union nationals other than Swedes.

This is an important finding, considering that the transnational tobacco companies have now all had a stake in the Scandinavian *snus* market, are profiting from the illegal sales and are lobbying to have the European Union ban on *snus* sales removed.

Recommendation 11:
We recommend that the embargo on *snus* remain, unless clear evidence is provided on its safety and its overall beneficial effects on health. Reversing the European Union ban on *snus* sales without an appropriate regulatory framework would present a danger to public health and should therefore be considered extremely cautiously.

Recommendation 12:
We recommend that the European Commission (which is responsible for ensuring that European Union law is correctly applied) should investigate illegal sales of *snus* and Sweden's apparent failure to fulfil its responsibilities under European Union law. To remove any ambiguity, a specific clause should be inserted in the text of the revised Tobacco Products Directive, prohibiting the sale of *snus* via the Internet, with a clear indication of the penalties facing those who contravene the legislation.

As confirmed by WP2 surveys, groups with lower socioeconomic status, lower income or lower educational attainment have a greater tendency to smoke cigarettes. Therefore, the burden of smoking-related ill health and mortality (including lung cancer, ischaemic heart disease and chronic obstructive airways disease) is increasingly concentrated in these groups. Tobacco companies tend to target low-income groups, young people and women, considering these to be their growing or continuing markets. The tax structure we propose would tend to equalize the tax on cheap and high-price cigarettes and fine-cut tobacco and thus help to reduce inequalities in smoking and smoking-related diseases, as indicated in WP5.

Recommendation 13:
We recommend the tax levels and structures proposed above as important contributions to reducing health inequalities resulting from socioeconomic inequalities in the prevalence of smoking.

Raising tobacco taxes leads some smokers to give up smoking. Many smokers achieve this without much support; however, smoking is a serious addiction, cessation is difficult for many, and support should be offered, particularly to smokers in low-income groups. The SimSmoke analyses described in Chapter 2 highlight the gains that can be achieved from improving smoking cessation services, as well as the importance of good mass media campaigns to support low-income smokers in quitting (WP4).

Recommendation 14:
We recommend that a percentage of the extra revenue from increases in tobacco tax be earmarked (hypothecated) for smoking cessation services and well-designed mass media campaigns, particularly focused on the needs of low-income smokers.

Given the industry's documented willingness to sell ultra-low-priced brands at a loss and evidence of a growth in price-based cigarette marketing, our research on the industry pricing strategy (WP5) supports a prohibition on below-cost selling and price-based marketing. Packages displaying the product price are one form of price-based marketing used by the industry. Current discussions on the revision of the Tobacco Products Directive 2001/37/EC include the introduction of plain packaging. This would prevent the use of price-marked packs and thus limit the industry's use of this marketing strategy.

Researchers on this project found it expensive and sometimes difficult or even impossible to obtain adequate up-to-date information. Effective tobacco taxation policy requires access to the necessary data to allow independent observers to calculate the price and tax elasticities of demand, to verify the direction of tax revenues, to detect movements to lower-priced tobacco products, to estimate the extent of illicit trade and to describe annual changes in smoking prevalence and levels of initiation and relapse.

At a minimum, data on the following variables should be reported by the relevant government departments of Member States to the European Commission and made publicly available through Eurostat:

- Annual weighted average price by tobacco product type (e.g. cigarettes, pipe and hand-rolling tobacco, smokeless tobacco, including *snus*, snuff and chewing tobacco); and
- Annual tax-paid sales or releases for consumption of tobacco, by tobacco product type.

To allow more detailed monitoring and more sophisticated analysis of the effectiveness of tobacco taxation across Europe, data on the following variables should be reported to the European

Commission and made publicly available through Eurostat:

- Annual (or more frequent) weighted average price by tobacco product type and price category;
- Annual (or more frequent) tax paid sales or releases for consumption of tobacco by tobacco product type and price category;
- Market share by tobacco product type and price category;
- Annual tobacco tax revenue;
- Tobacco tax structures and rates;
- Data on illicit trade when available; and
- Lists of licensees and registered products.

Furthermore, Eurobarometer and/or national population-based surveys should regularly collect and make publicly available data on:

- Tobacco use prevalence by age, gender, socioeconomic status and tobacco product type, with agreed definitions and measures. In particular, smoking rates at early ages, such as 15–17, 18–21, 21–24 and 25–29 years are needed; and
- Prevalence of former smokers by the number of years since they quit, so that cessation rates can be estimated and tracked.

Recommendation 15:
We recommend that all Member States be required to collect data and make them public, to allow monitoring and analysis of tobacco taxation and smoking prevalence.

Further research is needed on the impact of increased flexibility in the tobacco excise structure on: the demand for cigarettes, industry pricing strategy and illicit trade. Research is needed to provide evidence on the methods and consequences of further tobacco tax harmonization in the European Union and to facilitate alignment of tobacco taxes in neighbouring non-European Union states. The effects of changes in tax rates on revenues generated should be monitored. Research is needed into the relevant conversion rate between roll-your-own and manufactured cigarettes. Further methods for measuring illicit trade are required, with more detailed examination of its public health consequences. The effects of Internet sales and advertising on smuggling and illicit trade in the European Union should be evaluated. Lastly, independent research into the safety and role of smokeless tobacco is required.

Structure of the report

Chapter 1 gives an overview of the policy context and current developments in tobacco taxation. **Chapters 2–7** summarize the main findings of the PPACTE research work packages, according to five policy themes: (i) the effectiveness of tobacco taxation for public health (**Chapter 2**), (ii) tobacco tax structures and rates (**Chapter 3**), (iii) illicit tobacco trade (**Chapter 4**), (iv) industry influence on tobacco tax policy (**Chapter 5**) and (v) tobacco taxation and health inequalities (**Chapter 6**). Each chapter contains an overview of the international literature, as reviewed and evaluated in the Handbook, followed by a summary of the new evidence emerging from the PPACTE research work packages. **Chapter 7** concludes and summarizes the recommendations for tobacco tax policy in the European Union.

CHAPTER 1

THE POLICY CONTEXT FOR TOBACCO TAXATION

1.1 Introduction

In the European Union, smoking continues to be the largest single cause of death and disease, accounting for over 650 000 premature deaths each year *(1)*. Europe has only 15% of the world population but nearly one third of the worldwide burden of tobacco-related diseases *(2)*. In addition to the considerable death toll from smoking, tobacco is estimated to cost the economy €98–130 billion, or 1.04–1.39% of the European Union's gross domestic product (GDP) for 2000 *(2)*.

Despite increasing awareness of the health consequences of smoking, a third of all citizens in the European Union over the age of 15 currently smoke tobacco products *(3)*. While smoking prevalence trends across the European Union have shown a decline in recent years, the rates remain alarmingly high and continue to rise among females in some Member States. In addition, the average age of initiation has dropped to 11 years of age *(2)*.

In response to the health, economic and social costs of tobacco use, governments have implemented increasingly stringent tobacco control regulations during the past two decades. Action at Member State level has been reinforced and reinvigorated by the WHO FCTC, a widely embraced public health treaty that represents a legally binding agreement between Parties to implement evidence-based tobacco control measures *(4)*. In addition to measures regulating the supply of tobacco products, the FCTC calls on Parties to implement measures to reduce the demand for tobacco products, including price and tax measures, protection from exposure to tobacco smoke, product content regulations, packaging and labelling regulations, education and awareness-raising campaigns, smoking cessation support and bans on tobacco advertising, promotion and sponsorship. The European Union and all but one Member State (the Czech Republic, at the time of writing) are Parties to the FCTC.

The degree of implementation of tobacco control policy varies among Member States. Joossens and Raw *(5)* quantified implementation of tobacco control policies at country level on the 'tobacco control scale' and ranked 30 countries by their total score on the 100-point scale. In 2005, only four countries scored 70 or more (Iceland, Ireland, Norway and the United Kingdom), two countries scored above 60 (Malta and Sweden), seven scored above 50 (Belgium, Cyprus, Finland, France, Italy, the Netherlands and Poland) and the rest scored 49 or below *(6)*. In 2010, while the average score on the scale had increased by 5%, suggesting some improvement in the implementation of tobacco

control measures, a similar pattern emerged. The new European Union accession states of central and eastern Europe continue to be strongly represented among the countries scoring lowest on this scale *(7)*.

Taxation of tobacco products is an important means of tobacco control under European Union competence. Previously, tobacco tax policies reflected the sole priority of creating a strong single market economy. Early tobacco tax directives issued by the European Union were primarily concerned with harmonization of tax structures and approximation of tax rates to prevent market distortions and create a functioning single market. More recently, with the acceptance of health protection of all European Union citizens as a mandate, the importance of tobacco pricing policies in controlling tobacco has been increasingly emphasized.

Currently, there are large price discrepancies among European Union Member States, despite attempts to harmonize tobacco tax rates. As of March 2011, tobacco prices for 20 cigarettes in the most popular price category ranged from as high as €8.50 in Ireland and €6.90 in the United Kingdom to as low as €1.87 in Poland, €2.03 in Estonia and €2.14 in Lithuania. Total tax (inclusive of VAT) as a percentage of total tax-inclusive retail sales price ranged from 71.6% in Sweden to 88.7% in Bulgaria *(8)*.

Increased integration within the European Union and the large price discrepancies in tobacco products among Member States provide incentives for tax avoidance. Tobacco taxation for tobacco control is further complicated and undermined by the presence of an extensive eastern land border with Belarus, the Russian Federation and the Ukraine—countries with high prevalences of smoking, very low real prices of tobacco products and relatively weak tobacco control policies. This border complicates the policing of illicit trade and exaggerates 'grey-market' activity, with a particular influence in new European Union Member States such as the Baltic States, Bulgaria and Romania. Tax avoidance and tax evasion have implications for government revenues and the effectiveness of tobacco control policies for public health.

Furthermore, tobacco control is one of the few public health issues that has an active opponent—the tobacco industry—which is making calculated strategic attempts to undermine policy and thereby minimize public health gains, in the interest of protecting profits.

Effective and equitable control of tobacco in the European Union by the use of fiscal policies is both significant for addressing the disease burden caused by tobacco use and highly complex, because of the diversity among Member States in their stage in the tobacco epidemic, their level of tobacco control and their tobacco market structure, as well as their economic, cultural and political environments.

The main aim of the PPACTE project is to make evidence-based policy recommendations to improve market regulation of tobacco products, for more effective, equitable control of tobacco in Europe. To achieve this aim, the PPACTE consortium undertook several studies with different methods to provide insight into the challenge of designing a tobacco tax policy within the complex policy environment of the European Union. It was structured into seven work packages as follows:

- A working group of international experts was convened to produce a handbook, The effectiveness of tax and price policies for tobacco control (*IARC Handbooks of Cancer Prevention*, Volume 14), as a deliverable of PPACTE, referred to below as 'the Handbook'. It consists of a review and critical appraisal of the current international literature on the effectiveness of tobacco tax and price policies (WP7; Principal Investigator, Dr Maria Leon-Roux, International Agency for Research on Cancer, France).
- Over 18 000 citizens in 18 European countries were surveyed on their attitudes towards and responses to tobacco tax and price policies (WP2; Principal Investigator, Dr Silvano Gallus, Istituto di Ricerche Farmacologiche Mario Negri, Italy).
- Time series from 11 European Union Member States were used to estimate the impact of price, income and tobacco control policies on the demand for tobacco products in each country (WP3; Principal Investigator, Professor Gunnar Rosenqvist, National Institute for Health and Welfare, Finland).

• Dynamic simulation models were adapted to assess independently for each of 15 European countries the present impact of their tobacco tax policies and other tobacco control policies on smoking prevalence and smoking-attributable deaths and to make predictions for the future (WP4; Principal Investigator, Professor David Levy, Pacific Institute for Research and Evaluation, United States).

• Industry influence on and responses to tobacco taxation were examined in key informant interviews, analysis of tobacco industry documents in case study countries and a detailed analysis of data on the British cigarette market (WP5; Principal Investigator, Professor Anna Gilmore, University of Bath, United Kingdom).

• A policy panel was convened to integrate the PPACTE findings and distil the policy recommendations (WP6; Principal Investigator, Fiona Godfrey, International Union Against Tuberculosis and Lung Disease, France).

1.2 Role of the European Union in tobacco control policy

The European Union's role in tobacco control has evolved over the past 25 years. In 1985, the European Council called on the European Commission to launch a programme against cancer, in an effort to expand the focus of the community beyond economic issues to 'areas closer to the concerns of ordinary citizens' *(2)*. The 'Europe Against Cancer Programme' was established, with the objective of reducing the number of cancer deaths by 15% by the year 2000. As the leading preventable cause of cancer is tobacco use, tobacco control was thereafter considered to be within European Union competence, as long as actions could be justified under the Single European Act of 1986 *(2)*. Previously, tobacco control was exclusively the jurisdiction of individual Member States. Inasmuch as tobacco control legislation could be justified on the basis of improved functioning of the internal market, it now came within the competence of the European Union. This formal role of tobacco control was enhanced by the Maastricht Treaty (1993) and the Amsterdam Treaty (1999). Article 129 of the Maastricht Treaty (now renamed Article 152) states: "A high level of human health protection shall be ensured in the definition and implementation of all Community policies and activities. Community action, which shall complement national policies, shall be directed towards improving public health, preventing human illness and diseases, and obviating sources of danger to human health. Such action shall cover the fight against the major health scourges, by promoting research into their causes, their transmission and their prevention, as well as health information and education." *(9)*

All legislation enacted by the European Union, whether in the form of directives, regulations or non-binding resolutions, requires a legal basis in the founding treaties of the European Union *(2)*. While Article 152 EC obligates the Community to ensure a high level of health protection in all its policies, there are no explicit provisions in the founding treaties to give the European Union authority to regulate public health; Article 152 *(4)*(c) explicitly excludes harmonization of Member States' laws and regulations solely for the protection of public health. The legal basis for much of the tobacco control legislation initiated by the European Union is therefore legislation on the functioning of the internal market, specifically Article 95 EC (previously Article 100a EC) *(2)*.

Within tobacco control, legislation in the form of directives or non-binding resolutions is initiated and drafted by the European Commission and then approved by the Council of Ministers and the European Parliament (*10)*. European law takes precedence over Member States' domestic law. Therefore, directives must be implemented by Member States within the defined period and become legally enforceable after the stated period *(9, 10)*. (European Union tobacco control legislation during the period 1989–2010 is summarized in Annex 2.)

In addition, the European Union played an important role in negotiation of the WHO FCTC. In 1999, the Member States agreed a mandate issued by the Council of Ministers to the Commission, which authorized the Commission to negotiate on behalf of Member States in areas of European Union competence *(10)*. During negotiation of WHO FCTC provisions, the Commission spoke on behalf of all Member States on any issue covered by European Union law, and the country holding the rotating European Union Presidency presented agreed positions on issues outside

Community competence *(11)*. At the periodic Conferences of the Parties, the European Union is an intergovernmental organization working alongside Member States' representatives to prepare protocols and guidelines for implementation of provisions of the WHO FCTC *(11)*.

Tobacco taxation and the role of the European Union

Taxation of tobacco products is an important area of tobacco control under European Union competence. While early tobacco tax directives were primarily concerned with harmonization of tax structures and approximation of tax rates to prevent market distortions and create a functioning single market, more recent directives have reflected the acceptance of health protection of all European Union citizens as a mandate by placing emphasis on tobacco control objectives.

Tobacco taxation in the European Union continues to be a policy initiative that takes place against a complicated backdrop of national, European Union and international interests and obligations. Guarded national sovereignty concerns compete with attempts by the European Commission to assert its control over a key area of public policy, and the harmonization requirements of the single market often compete with the interests of public health.

Legal decision-making procedure for European Union tobacco taxation

Proposals for tobacco tax directives are drafted by the Tax Directorate of the European Commission after a 4-year review of existing legislation *(12)* and whether it requires amendment. Reports on the implementation of existing legislation are generally subject to a public consultation *(13)* before the final proposal is published.

All such legislation must be adopted unanimously by a special legislative procedure and in consultation with the European Parliament and the Economic and Social Committee. This means that the European Parliament can give its opinion on draft legislation, but that opinion is not binding on the Council. Notwithstanding, case law from the European Court of Justice prevents the Council from adopting legislation under the special legislative procedure until the Parliament has given its opinion *(14)*. Generally, the European Parliament gives a favourable opinion *(15)*.

Unanimity in the adoption of tobacco taxation directives

The adoption of proposed tobacco taxation directives requires unanimous agreement by all European Union Member States. The role of this unanimity requirement in tobacco taxation legislation has not been analysed. The European Commission has suggested that the unanimity requirement makes it harder for European Union taxation measures to be adopted and has called for a move to a qualified majority voting *(16)*; however, a treaty change would be required, and all treaty changes must be passed unanimously. Changes to the unanimous decision-making processes for taxation policy are unlikely to be agreed, particularly by Luxembourg and the United Kingdom, which have previously opposed such a move to protect other national taxation powers.

Even with the requirement for unanimity, the Council has generally agreed to most of the Commission's proposals on tobacco taxation, albeit with some compromises. The question for European Union tobacco taxation is whether the unanimity requirement substantially weakens Commission proposals or even acts as a limiting factor when proposals are being drafted. To secure unanimous agreement on proposals, longer derogations have been granted to many Member States, irrespective of whether they are needed. For example, of the Member States given derogations until 2018 on implementation of key provisions of Directive 2010/12/EU, all except Poland had met and even exceeded the provisions by July 2011. Unanimous decision-making may render tobacco industry lobbying (see Chapter 5) more effective, as they target certain Member States, knowing that a veto by just one Member State could stop the whole proposal.

The internal market and the case for harmonization of indirect taxes

With a view to creating a single, integrated European market, the 1957 Treaty of Rome established the European Economic Community, made it possible to abolish customs barriers within the Community and established a common customs tariff to be applied to all goods from non-Community countries. When the customs union was achieved in 1968, it was apparent that the

removal of tariffs was only one step towards achieving a common market; differentials in indirect taxation were a source of market distortion and thus a barrier to the creation of a functioning internal market *(17)*.

It was acknowledged that the removal of frontier controls in the presence of substantial differentials in indirect taxation would create distortionary trade flows, incentives for smuggling and incentives for cross-border shopping, all of which would have implications for Member States' revenues and income distribution *(17)*. Indirect taxes are levied in the country of consumption. With the free movement of people, it would be impossible to distinguish between legitimate travellers and cross-border shoppers and it would be unfeasible to tax individuals. To resolve this issue, travellers' allowances were established in 1969; however, the provision of these allowances faced resistance from Member States that feared revenue losses. As stated in the White Paper, "The very existence of travellers' allowances, their modest amounts and the disproportionate difficulty in obtaining agreement to limited increases, all demonstrate that it would be impossible to dismantle the fiscal frontiers unless there was a considerable measure of approximation of indirect taxation." *(17)*.

The challenge posed by differential tax rates and structures for tobacco and other excisable goods was foreseen in the 1957 Treaty; Article 99 provided that the Commission would make proposals for the approximation of indirect taxation when this would contribute to the establishment and functioning of the internal market, and Article 100 established the legal foundation to do so.

In the case of tobacco, a limited degree of harmonization was achieved through Directive 72/464/EEC. This Directive defined the structures of excise duty on manufactured tobacco (defined to include cigarettes, cigars and cigarillos, smoking tobacco, snuff and chewing tobacco), provided for harmonization in successive stages and defined a range of relations between specific duty and total duty *(18)*. While this Directive defined the first stage of harmonization, subsequent stages were decided after review and a proposal by the Commission to the Council and could be deferred if the revenue of any Member State would be substantially adversely affected. Subsequent directives (described in Annex 3) responded to issues raised in the regular reviews and provided for further harmonization by tightening definitions of various tobacco product types, setting overall minima, establishing reference values for the calculation of tax and allowing for progressive increases.

Overview of Council Directive 2010/12/EU of 16 February 2010

As required by Directive 2002/10/EC (see Annex 3), the Commission was required to report every 4 years on the structure and rates of excise duty on tobacco. In preparation for the 2006 report, the European Commission commissioned a study on "the collection and interpretation of data concerning the release for consumption of cigarettes and fine-cut tobacco for the rolling of cigarettes", which was conducted by KPMG (a consultancy firm providing audit, tax and advisory services) and published in December 2005 *(12)*.

The KPMG study was based on data collected for the years 2002, 2003 and 2004 from Member States and the European tobacco industry by means of a questionnaire *(12)*. The conclusion of the study was that, between 2002 and 2004, the quantities released for consumption had decreased by 10%, while the average tax-inclusive retail selling price had increased by 12%. This decrease in the quantities released was explained by decreases in consumption, an increase in circumvention (4–5% legitimate circumvention and 8–9% illegitimate circumvention) and a switch to other tobacco products. Tobacco products with a growing market share included fine-cut rolling tobacco and cheaper cigarettes. Substitution of fine-cut rolling tobacco for cigarettes was encouraged by the price differential between the products: in 2004, the average tax-inclusive retail selling price of cigarettes was €2.37 higher than that of rolling tobacco. The study recommended a gradual increase in excise duty for fine-cut tobacco such that it would reach two thirds of the overall minimum excise for tobacco. Further, the study highlighted the discrepancies in determination and application of the most popular price category as a reference value in calculating tax incidence and recommended that it be abolished. Lastly, the report noted that, while the quantity of cigarettes released for consumption in the new Member States had decreased by 7%, total duties collected had increased by 17% and the tax-inclusive retail selling

price had increased by 23%. The new Member States were far from reaching European Union excise duty minima, and bootlegging and smuggling from eastern land borders was soaring.

Following publication of the KPMG report, a pre-consultation was conducted. Subsequently, bilateral discussions took place between the Commission, national administrations and stakeholders from tobacco manufacturing and health organizations.

On the basis of the KPMG study and the pre-consultation, the Commission launched a consultation in 2007 and released a reflection paper *(13)* highlighting the issues and inviting views from businesses involved in the manufacture and distribution of tobacco products, government administrations, health organizations, nongovernmental organizations and other organizations representing consumers and other stakeholders on the review and possible changes to the structure and rates of excise duty applied on cigarettes and other manufactured tobacco.

Council Directive 2010/12/EU of 16 February 2010 amended directives 92/79/EEC, 92/80/EEC and 95/59/EC on the structure and rates of excise duty applied to manufactured tobacco and Directive 2008/118/EC. On the recommendation of the KPMG report, this Directive abolished use of the most popular price category as the basis for calculating minimum rates for cigarettes. Instead, it introduced the weighted average retail selling price (weighted average price) as the calculation base, the weighted average price being equal to the total value of all cigarettes released for consumption (tax-inclusive retail selling price) divided by the total quantity of cigarettes released for consumption.

To reflect this change in the reference value for calculating tax incidence, Directive 2010/12/EU requires that the overall excise duty (specific and *ad valorem*) on cigarettes represent 57% of the weighted average retail selling price of cigarettes released for consumption and maintains the minimum tax floor of €64 per 1000 cigarettes, irrespective of the weighted average price. The escape clause also references the weighted average price: Member States that levy an excise duty exceeding €101 per 1000 cigarettes on the basis of the weighted average price need not comply with the 57% rule. To achieve greater convergence of prices and reduce consumption, this Directive increases the minimum levels of taxation on cigarettes (as well as rolling tobacco). As of 1 January 2014, Member States are required to levy an overall excise duty of at least 60% of the weighted average price, with a minimum tax floor of €90 per 1000 cigarettes. The reference value for the escape clause is also increased: from 2014, Member States that levy an excise duty exceeding €115 per 1000 cigarettes based on the weighted average price will not need to comply with the 60% requirement. Derogations were introduced for Bulgaria, Estonia, Greece, Hungary, Latvia, Lithuania, Poland and Romania until 31 December 2017.

This Directive introduced a change in the band of specific excise, from between 5% and 55% of the total tax burden (specific, *ad valorem* and VAT) levied on the weighted average price to between 5% and 76.5% of the reference value until the end of 2013. In 2014, this band will be narrowed to 7.5% and 76.5%.

Directive 2010/12/EU introduced quantitative restrictions, limiting the quantity of cigarettes that may be brought into higher-tax Member States without further duty payment from a Member State applying a transitional period. Similarly, if a Member State is applying a transitional period and has reached a monetary level of €77 per 1000 cigarettes, it may impose a quantitative limit on the number of cigarettes that may be brought in from other Member States in the transitional phase that have not reached this monetary limit.

To discourage the substitution of fine-cut rolling tobacco for cigarettes in response to increasing cigarette prices, amendments were introduced to create a partial alignment of excise on rolling tobacco and cigarettes. First, the minimum rates of excise on fine-cut rolling tobacco are based on the new weighted average price as the reference value for calculations. Secondly, the rates of excise will be gradually increased to make a better approximation between the rates for fine-cut tobacco and the rates for cigarettes, such that the rates on fine-cut are up to two thirds of those for cigarettes. Effective 1 January 2011, the minimum rate of excise on fine-cut tobacco was 40% of the weighted average price or at least €40 per kilogram. This will increase to 43% of the weighted average price or at least €47 per kilogram by

January 2013, 46% of the weighted average price or at least €54 per kilogram by January 2015, 48% of the weighted average price or at least €60 per kilogram by January 2018 and 50% of the weighted average price or at least €60 per kilogram by 2020 (compared with 60% of the weighted average price of cigarettes and €90 per 1000 cigarettes by 2014). Gradual increases were also introduced for cigars and cigarillos, bringing the minimum rate to 5% of the tax-inclusive retail selling price or €12 per 1000 items or per kilogram, with derogations for Germany and Hungary until January 2015. Similar increases were introduced for other smoking tobacco, bringing the minimum rate to 20% of the tax-inclusive retail selling price, or €22 per kilogram.

Lastly, in an effort to ensure uniform, fair taxation, Directive 2010/12/EU introduced revised definitions of the different tobacco products, which serve to ensure that competing products are taxed similarly. For example, under the new definitions, rolls of tobacco, which could be considered two cigarettes on the basis of their length, should be treated as two cigarettes for excise purposes. These new definitions restrict the freedom of the tobacco industry to counter increasing excises with product innovations.

European Union tax directives allow Member States flexibility in designing tobacco tax policy within a specified framework. Figure 1.1 shows specific and *ad valorem* excise as a percentage of the tax-inclusive retail selling price of cigarettes in European Union Member States in January 2011 when Directive 2010/12/EU came into effect.

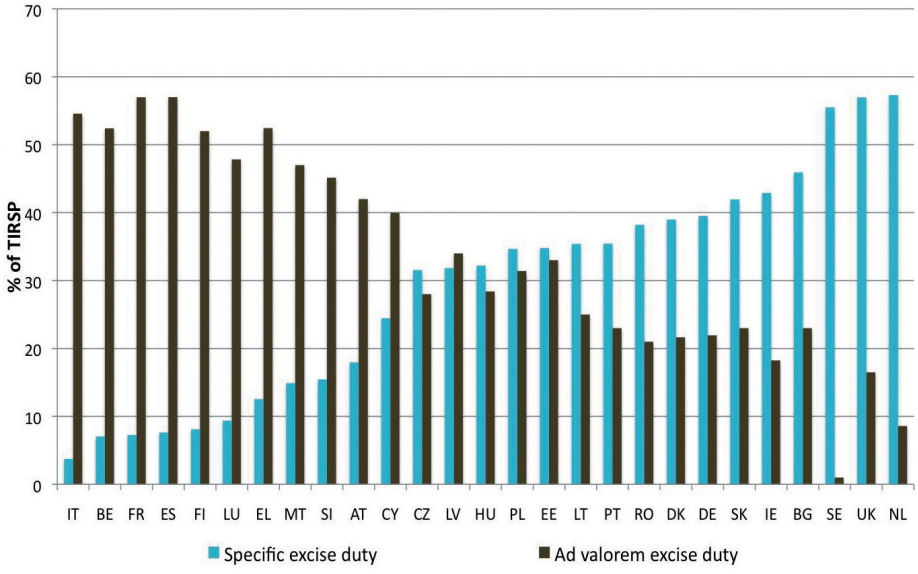

Figure 1.1. Specific and *ad valorem* excise as a percentage of the tax-inclusive retail selling price of cigarettes in European Union Member States, 2011

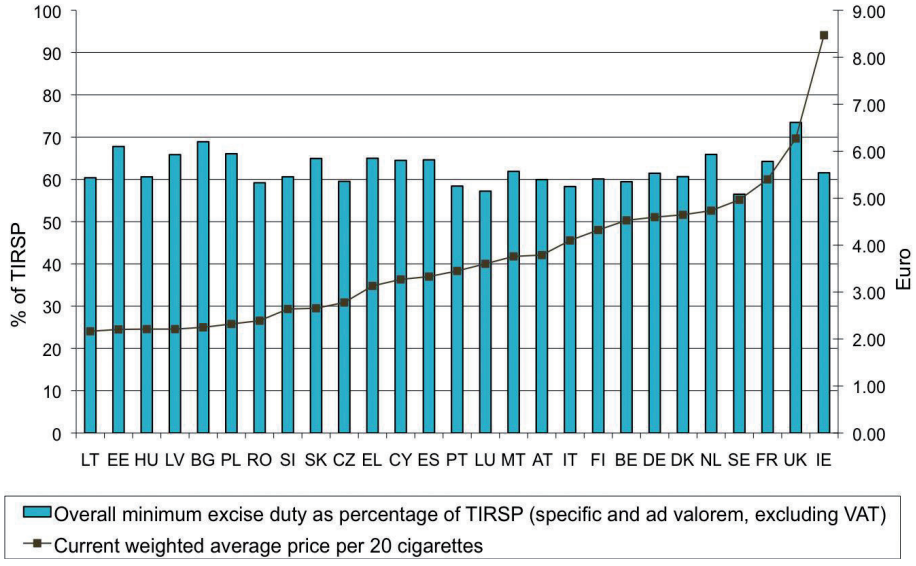

Figure 1.2. Overall minimum excise duty as a percentage of the tax-inclusive retail selling price (TIRSP) and current weighted average price for 20 cigarettes in European Union Member States, 2011

Figure 1.2 shows the overall minimum excise duty as a percentage of the tax-inclusive retail selling price for 20 cigarettes across the European Union. These figures illustrate the substantial differences in tax structure—whether predominately specific or *ad valorem* or a balance between the two—and weighted average prices across the European Union.

Council Directive 2011/64/EU

The most recent Directive (2011/64/EU) entered into force retroactively from 1 January 2011. As Council directives 92/79/EEC, 92/80/EEC and 95/59/EC had been substantially amended several times, Directive 2011/64/EU repealed and codified those directives by assembling them

into a single act *(18)*. This Directive defines the various categories of manufactured tobacco (cigarettes, fine-cut tobacco intended for rolling cigarettes, cigars and cigarillos, other smoking tobacco), lays down the general principles governing taxation of manufactured tobacco and provides for application of overall minima to the various tobacco product types as established by Directive 2010/12/EC.

1.3 Role of the European Court of Justice in tobacco taxation

In line with its approach in other areas of policy, the European Court of Justice has become increasingly involved in European Union tax legislation. One key area of tobacco taxation on which the Court has been asked to rule concerns the imposition of minimum prices for the sale of cigarettes. Four countries—Austria, France, Ireland and Italy—were referred by the Commission to the Court in 2008 for imposing minimum prices for packs of cigarettes in addition to their existing excise tax burden mandated by Directive 95/59/EC.

The French Government argued that Article 9(1) did not establish the principle that manufacturers and importers were free to determine prices. It also pointed out that, if it was obliged to approve prices, that implied that it could reject prices set by producers. It also relied on the public health exception under Article 30 of the European Commission Treaty, Article 6 of the WHO FCTC and the Council Recommendation in the Prevention of Smoking, which call for higher taxes on tobacco products. France also argued that manufacturers and importers regularly absorbed tax increases and did not pass them on to customers, thus undermining the objective of higher taxes, which is to reduce cigarette consumption. France was found to be in breach of European Union law *(19)*. The European Court of Justice came to the same conclusion in cases by the Commission against Austria *(20)*, Ireland *(21)* and Italy *(22)*.

These rulings were handed down after the political agreement on the draft directive was reached in Council, but their provisions are respected in the consolidated Directive of 2011. The WHO FCTC and health protection are mentioned, but the 2011 Directive remains primarily an instrument to further internal market and competition policy in the European Union. The overriding objective of European Union tax measures is still to open up and harmonize the internal market in tobacco products and to promote competition. Since the adoption and ratification of the WHO FCTC, European Union tobacco taxation measures now refer to the protection of public health, but the internal market and competition policy still take priority.

1.4 The European Union response to low taxes in the Russian Federation and the Ukraine

European Union Member States that border the Russian Federation and the Ukraine have argued that their ability to increase taxes is restricted by the low taxes in these neighbouring countries. A shared border with these two countries, as well as some others in the region (Belarus, the Republic of Moldova), is also likely to result in more smuggling of cigarette products *(23, 24)*. In response, the European Union is developing links with these countries, with the aim of strengthening cooperation, especially in customs control and cooperation in law enforcement.

The Eastern Partnership

The Eastern Partnership was established in 2009. All 27 European Union Member States are members, plus Armenia, Azerbaijan, Georgia, the Republic of Moldova and the Ukraine. Belarus was a member but withdrew in September 2011. The main initiatives of the Partnership in relation to tax and smuggling are:

- New association agreements, including deep, comprehensive free-trade agreements and easier legitimate travel to the European Union, while at the same time increasing efforts to combat corruption, organized crime and illegal migration; and
- Multilateral platforms to support countries by providing a framework in which common challenges can be addressed.

Four policy platforms are proposed: on democracy, on good governance, on stability and on economic integration and convergence with European Union policies. Under the Partnership, the European Union has negotiated an association agreement with the Ukraine, which covers action on corruption, customs cooperation and taxation *(25)*. It was finalized in late 2011 but not signed at the summit between the two countries on 19 December because of European

Union concerns about the political climate in the Ukraine *(26)*.

1.5 The European Commission anti-fraud strategy

Smuggling is also addressed in other instruments. In June 2011, the Commission adopted a Communication on its anti-fraud strategy *(27)*. As part of that strategy, the Directorate-General for the Taxation and Customs Union (DG TAXUD) issued a plan to combat tobacco and alcohol smuggling (28), with four objectives, to:

- Support enforcement capacity with technical assistance, capacity-building and training;
- Strengthen disincentives and raise awareness (make smuggling less profitable);
- Strengthen enforcement by better operational cooperation, including shared intelligence; and
- Enhance international cooperation.

The action plan involves cooperation among the 27 countries of the European Union, the Eastern Partnership countries and the Russian Federation, facilitated by DG TAXUD and the European Anti-fraud Office (known as OLAF from its French name, Office de Lutte Anti-Fraude). Engagement with the Russian Federation has been more limited than with the Ukraine. A more far-reaching agreement that would address common issues, such as smuggling and organized crime, has been under negotiation for some time *(29)*.

Corruption and tobacco control

Tobacco control can be influenced by corruption in many ways. First, smuggling of tobacco products is related to corruption, as the illegal tobacco market thrives in countries where law enforcement is undermined. Secondly, tobacco companies have a vested interest in attempting to inhibit enactment and compliance of effective tobacco control policies *(30)*. In some cases, in the United Kingdom for example, tobacco companies have provided financial benefits to politicians in return for changes in legislation beneficial for their business *(8, 17)*. In relatively corrupt societies therefore, corruption is likely to undermine a range of policies but particularly those such as price, enforcement of smoke-free policies and access to products by children.

Across the European Union, the prevalence of smoking tends to be higher in countries with more corruption and less wealth and well-being *(31)*. Bogdanovica *et al.* related data on corruption with implementation of tobacco control policy using 'tobacco control scale' scores and corresponding 'corruption perception index' figures for 2005, 2007 and 2010. In the European Union, there is generally less corruption in the Nordic countries (Denmark, Finland, Sweden) and more in southern European countries (Greece, Italy) and eastern European countries that joined the European Union recently (Bulgaria, Latvia, Romania, Slovakia). Bogdanovica *et al.* found that strong governance is important in preventing tobacco smoking, and strong, transparent political leadership plays a key role in ensuring that effective tobacco control policies are both implemented and observed in the European Union *(31)*.

Corruption and organized crime in cigarette smuggling in Europe

One area of tobacco control policy in which corruption plays an important role is in the facilitation of smuggling, which, as noted elsewhere in this report, undermines tobacco tax and control policies. As the findings of WP2 and WP5 indicate (see Chapter 4), a shared border with key neighbouring countries significantly increases the risk of cigarette smuggling, irrespective of lower tobacco taxes in the European Union Member States that border those countries. Cigarette smuggling is a big business in the European Union, largely aided by corruption in customs and other related sectors.

In a detailed study of organized crime and corruption in the European Union, Gounev and Bezlov analysed the links between illicit cigarette trade, corruption and organized crime *(32)*. They found that, although "each Member State has a specific illegal market structure…several generalizations could be made to sketch the illegal cigarette markets in the European Union." These included large hierarchal structures, large networks, small networks, individual smugglers and counterfeiting networks. The targets of 'corruption pressures' included customs, politicians, the private sector and the police. Large-scale cross-border smuggling was found to give rise to large amounts

of corruption. The reasons given included relatively low salaries, inadequate organization of operations to prevent corruption, an organizational cultural history of tolerating corruption and lack of economic alternatives. Corruption was found to be prevalent throughout the private sector, ranging from the tobacco manufacturers themselves to small duty-free shops. The authors found that "no particular evidence of political corruption was provided, although allegations were made about existing problems in Bulgaria, Lithuania, Poland and Romania". It was generally considered that corruption was used to influence customs officers to provide protection to private sector players and that corruption was more prevalent in small border towns.

European Union corruption control and prevention

While corruption is not necessarily an impediment to the adoption of tobacco control legislation, it can be an impediment to its effective implementation. It is clearly important therefore that the European Union and its Member States take their obligation to prevent corruption seriously. According to the most recent 'corruption perceptions index' of Transparency International *(33)*, the performance of European Union Member States on corruption varies widely. Three Member States (Denmark, Finland and Sweden) were in the top four globally, while four others (Bulgaria, Greece, Italy and Romania) ranked considerably lower.

European Union and Member States' legal commitments on corruption

The European Union and its Member States are signatories to several anti-corruption mechanisms at national, European Union, European and global level:

- A framework decision on combating corruption in the private sector *(34)*;
- Accession of the European Union to the United Nations Convention Against Corruption in 2008 *(35)*;
- The Treaty on the Functioning of the European Union (the Lisbon Treaty), which recognizes that corruption is a serious cross-border problem for the European Union and grants it the power to enact legislation to tackle it *(36)*;
- The Organisation for Economic Co-operation and Development Convention on Combating Bribery of Foreign Officials in International Business Transactions (Anti-Bribery Convention) *(37)*;
- The Council of Europe Criminal Law Convention on Corruption *(38)*;
- An additional protocol to the Criminal Law Convention on Corruption (ETS 191), adopted on 15 May 2003;
- The Council of Europe Civil Law Convention on Corruption *(39)*; and
- Twenty Guiding Principles against Corruption (resolution *(97)* 24 of the Council of Europe Committee of Ministers) *(40)*.

Three European Union Member States have not ratified the Criminal Law Convention on Corruption (Austria, Germany and Italy); 12 have not ratified its protocol; seven have not ratified the Civil Convention on Corruption (Denmark, Germany, Ireland, Italy, Luxembourg, Portugal and the United Kingdom); and three have not ratified the United Nations Convention against Corruption (Czech Republic, Germany and Ireland). The efforts of the European Union and Member States to prevent corruption can therefore be characterized as inconsistent at best. European Union anticorruption legislation is not transposed in all Member States; some countries have not ratified the most important international anticorruption instruments, and, more importantly, even where anticorruption institutions and legislation are in place, enforcement is often insufficient in practice *(41)*.

The Communication proposed several areas of action on corruption:

- A European Union anticorruption report to monitor Member States' activities against corruption, consequently encouraging more political engagement;
- European Union participation in the Council of Europe's Group of States against Corruption;
- A stronger focus on corruption in all relevant external and internal European Union policies, including proposals for legislation on asset seizure, and a requirement that more be done by neighbouring countries to combat corruption; and

- Public–private dialogue on corruption *(41)*.

In response to the consultation, Transparency International Germany noted the lack of a European Union strategy to fight corruption and proposed that one be prepared. This suggestion was not taken up in the 2011 Communication *(42)*. It is imperative that Member States ratify and implement their existing international commitments, especially in the customs sector, where most corruption takes place.

1.6 Tobacco tax administration

To achieve the revenue objectives of tobacco taxation, an efficient, effective system for accurate assessment of excise liability and collection of tax payments is required. An effective tax administration system ensures good compliance with tax laws, while an efficient system ensures compliance for a low administrative cost relative to the revenue collected. These require both technical capacity within the tax administration agency and a well-designed, transparent, clearly defined tax *(43)*.

Compliance measures

Compliance with tax directives can be promoted in several ways, including: licensing and registration systems, monitoring of domestic production and trade activities, requiring tax returns to be filed regularly, adopting state-of-the-art tracking and tracing systems and ensuring a sufficient number of enforcement officers and investigators *(43)*.

To collect excise duties, all excise liability must be identified. For this, all producers, importers, warehouse keepers and exporters of tobacco products should be required to register with tax authorities and apply for a license for production, distribution and retail sales. Furthermore, retailers should be required to purchase products only from licensed importers, wholesalers or producers *(44)*.

Domestic production and trade can be monitored by conducting physical checks and accounting audits and using verification techniques, including fiscal markings *(43)*. Tax authorities should ensure that shipments into and out of tobacco production facilities are controlled. Producers should be required to make records available for inspection by the tax authorities on a regular basis, and authorities should audit production and shipment records periodically *(44)*. Excise duty payments are based on manufacturers' declarations of production levels. Within the European Union (and Turkey), tax is paid within a minimum of 15 and a maximum of 30 days after cigarettes leave the factories. Taxes on imported products are paid at the point of importation, and products are not distributed until all duties have been collected. Fiscal markings or tax stamps (discussed in detail in Chapter 4) are a means of monitoring production and importation and allow differentiation of licit products from illicit ones *(43)*. The costs of tax stamps are borne by the companies at the time of tax payment.

Countries in the European Union oblige warehouse keepers to produce, hold and distribute tobacco products under suspension of the excise duty. Tax authorities apply strict criteria when granting authorization for duty suspension, including preauthorization visits to warehouses, detailed plans for facilitating checks and audits and adequate stock control measures.

Producers can purchase a bond or similar security to ensure that all tax liabilities are paid. For bonded production facilities, the excise is levied when the excisable goods are removed from the facility and released for consumption *(44)*. Under the duty suspension arrangement in the European Union, guarantees can be requested from warehouse keepers, the amount of which should reflect the risks inherent in the activities of the warehouse keeper or the registered trader; this requires regular review for alignment with changes in trade volume.

Enforcement

Tax administration can be strengthened by ensuring sufficient capacity for enforcement. Authorities responsible for administration and enforcement of tobacco tax policy, which may include police, other law enforcement authorities and public health inspectors, should be clearly designated and authorized to search, seize, retain and dispose of products, in line with law enforcement practices.

Penalties for noncompliance

Penalties for noncompliance with tax laws usually include suspension or cancellation of business licenses, fines, forfeiture of products or equipment or other administrative sanctions. Penalties and interest are applied to the late payment of taxes.

In November 2000, the European Commission filed a civil action against Phillip Morris, R.J. Reynolds and Japan Tobacco *(45)*, accusing the companies of tax evasion by their involvement in smuggling. In 2004, the European Commission and the 10 Member States that joined the civil action dropped the case in return for a legally binding, enforceable agreement. This agreement required Philip Morris to pay the European Commission US$1 billion over 12 years and to make payments in the event of any seizures of its genuine products above 50 000 cigarettes in the 10 European Union countries. If more than 90 million genuine cigarettes are seized in those 10 countries in any one year, Philip Morris agreed to pay five times the taxes due *(45)*.

Forestalling

When manufacturers, wholesalers or retailers can anticipate a tax increase, they may increase production or stocks of tobacco products to take advantage of the lower tax rate. This form of tax avoidance is called 'forestalling'. It can result in a loss to governments of tax revenue and the availability of cheaper tobacco products when the tax increase is significant. To prevent forestalling, releases for consumption can be restricted in advance of a tax increase, or tax administrators could be entitled to collect a 'floor tax', applying the new tax for the tobacco products that were produced and kept in stock before the higher tax became effective *(43)*.

Contact between taxpayers and tax administrators

Effective administration of excise taxes requires well-established integration between taxpayers and the tax administrative agency to facilitate monitoring of production and verification of compliance with tax laws *(43)*. Any contact between tax administration agencies and the tobacco industry should respect obligations under Article 5.3 of the WHO FCTC.

1.7 International context of tobacco taxation policy

Tobacco taxation is part of an ever-expanding international framework of policies for tobacco control, trade, intellectual property, corruption, criminality, foreign affairs and home affairs. Tobacco taxation also plays a role in the global economic crisis, as governments look to 'sin taxes' to raise revenue in dire economic times. It has also been considered a potential source of 'own funds' for the European Union budget. Another form of tobacco taxation—taxing tobacco companies—is now being put forward as a means of financing long-term development and helping countries to meet their Millennium Development Goals. This section describes current developments and innovations in the wider international context with implications for European Union tobacco tax policy.

Tobacco taxation and the WHO Framework Convention on Tobacco Control

The importance of tobacco taxation as a tobacco control intervention measure is recognized explicitly in the WHO FCTC in Article 6: "The Parties recognize that price and tax measures are an effective and important means of reducing tobacco consumption by various segments of the population, in particular young persons." It calls on Parties to: "Determine and establish their taxation policies, each Party should take account of its national health objectives concerning tobacco control and adopt or maintain, as appropriate, measures which may include:

- Implementing tax policies and, where appropriate, price policies, on tobacco products so as to contribute to the health objectives aimed at reducing tobacco consumption; and
- Prohibiting or restricting, as appropriate, sales to and/or importations by international travellers of tax- and duty-free tobacco products." *(4)*

The first guidelines on priorities for Parties after entry into force of the Convention were for Article 8 (smoke-free policies). These were followed by the adoption of guidelines on Article 5.3 (tobacco industry interference in health policy) *(46)*, Article 11 (warning labels) *(47)* and Article 13 (tobacco advertising, promotion and sponsorship) *(48)* at the third Conference of the Parties in November 2008. At the fourth Conference, in November 2010, guidelines on Article 12 (education, information and awareness raising) *(49)* and Article 14 (cessation) *(50)* were adopted.

The second Conference of the Parties authorized the negotiation of a protocol on illicit trade in tobacco products *(51)*, and the first negotiations took place in Geneva in February 2008. Three further intergovernmental negotiating sessions have been held, and the

final session is due to take place in March and April 2012.

In addition, at the second Conference of the Parties, working groups were established on Articles 9 and 10 (regulation of contents and disclosure) and 17 and 18 (alternative crops) *(52)*, and work on Article 6 was mandated by commissioning a report from the WHO Tobacco Free Initiative *(53)*. The report, on the international evidence on tobacco taxation, was presented at the fourth Conference of the Parties in November 2010 *(54)* and concluded:

- When governments set taxes, they should reduce the affordability of tobacco products to such an extent that tobacco use and its consequences are reduced significantly, particularly by those most at risk of taking up tobacco (young people) and those who bear a disproportionate burden of the health and economic consequences of tobacco use (economically disadvantaged people).
- A tax structure that raises the prices of all tobacco products and minimizes the gap between the prices of low- and high-priced brands of a given type of tobacco product reduces the opportunities for tobacco users to switch to cheaper brands or products in response to tax increases, thus maximizing the health effect of a tobacco tax increase.

The significant new revenue that can be generated by increasing tobacco tax could be used to support comprehensive tobacco control, thereby adding to the health and economic benefits of such an increase *(54)*.

After considering this report, the Parties authorized establishment of a working group to elaborate guidelines on Article 6 *(55)*. The Working Group is expected to make recommendations for adoption of guidelines at the fifth Conference of the Parties in November 2012.

Also relevant to tobacco fiscal policy is Article 5.3, on the protection of tobacco control policies from vested interests. Article 5.3 requires that all Parties, "In setting and implementing their public health policies with respect to tobacco control,… shall act to protect these policies from commercial and other vested interests of the tobacco industry in accordance with national law."

To assist Parties, guidelines were adopted at the third Conference of the Parties in 2008, which established several principles *(46)*:

- **Principle 1:** There is a fundamental and irreconcilable conflict between the tobacco industry's interests and public health policy interests.
- **Principle 2:** Parties, when dealing with the tobacco industry or those working to further its interests, should be accountable and transparent.
- **Principle 3:** Parties should require the tobacco industry and those working to further its interests to operate and act in a manner that is accountable and transparent.
- **Principle 4**: Because their products are lethal, the tobacco industry should not be granted incentives to establish or run their businesses.

The impact of the global financial crisis on tobacco taxation

The global financial crisis has given an incentive to governments to exploit the revenue-generating potential of tobacco taxes by introducing tax increases. Since 2008, many European Union Member States have raised their tobacco taxes to supplement revenues *(56)*. The end of the accession derogations on tax levels contributed to this trend, but some countries took the opportunity to increase taxes above the new minimum limits. Others have already reached the new tax limits required in Directive 2010/12/EC, without waiting to make use of the further derogations granted to them. Some countries, however, such as Estonia *(57)*, have delayed acquiring much-needed revenue in order not to raise inflation too much. Other countries avoided this problem by removing tobacco products from the consumer price index, as had been done in Luxembourg and the United Kingdom. The Ukraine also took advantage of the crisis in 2008 to increase taxes significantly in three phases over 18 months. (See Chapter 3 for a discussion of Ukrainian tax policy.)

Innovative tobacco taxation policies

While some governments have long realized the potential of tobacco taxation for raising revenue for domestic budgets, attention has turned recently to use of tobacco taxation as a source of revenue for funding international development.

Two recent initiatives have taken this forward: the 'innovative health financing' mechanism and the Gates Foundation report to the G20 summit in November 2011.

The taxation options being considered include 'solidarity levies' such as on air tickets, currency transactions and tobacco. It was considered that tobacco taxation could potentially generate more than US$ 10 billion in revenue each year with some of the lowest pro rata implementation costs (less than 5% of revenue per year), taking into account the fact that 152 countries already have some kind of tobacco taxation system in place *(58)*.

The High-level Task Force on Innovative International Financing for Health Systems considered increased tobacco taxation to be politically feasible and desirable, for several reasons. First, tobacco taxation is not new, and most countries in the world already levy some kind of tobacco tax. Tax administration structures therefore already exist in countries, and no new structures would be necessary to collect revenues from this source. Additionally, high-income countries could use contributions from tobacco taxation to meet their target of 0.7% of gross domestic product for overseas development assistance, and low-income countries could contribute to their own health-care systems. They would also have greater ownership and flexibility in funding and be less dependent on aid. Both would reap the benefits of lower tobacco consumption and smoking without a reduction in overall tobacco tax revenues.

Tobacco taxation and accelerated implementation of the FCTC were put forward as means of preventing noncommunicable diseases and financing health systems at the United Nations General Assembly High-level Meeting on Noncommunicable Diseases in September 2011, although the recommendations of the Task Force were not referred to specifically *(59)*. If the European Commission can propose a tax on financial transactions, it should no longer be unthinkable for the Commission to consider levying a tax on the turnover of tobacco companies doing business in the European Union.

Implications for European Union tobacco taxation policy

European Commission directives are powerful, effective instruments for achieving tobacco tax increases and offer great possibilities for tobacco control. The complexity and variety of Member States' taxation structures and administrations, with revenue and political implications, pose significant challenges to the implementation of directives. All European Union countries (except the Czech Republic) and all significant neighbouring countries are Parties to the WHO FCTC. Compliance with requirements under this Convention should facilitate partnerships and give an incentive to resolve international border control issues and tackle illicit trade. Transparency in institutional decision-making and full implementation of the Article 5.3 guidelines are requisites for progress in European tobacco taxation policy. Implementation of strong anticorruption measures is also essential to achieving effective, equitable tobacco taxation in Europe.

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CHAPTER 2

EFFECTIVENESS OF TOBACCO TAXATION FOR TOBACCO CONTROL IN EUROPE

Historically, revenue generation has been the main objective of tobacco taxation. Tobacco is a subject for efficient taxation, given the large sales volumes, the relatively inelastic demand, the lack of close substitutes and the relative ease of administration and enforcement *(1)*. Demand for tobacco products is relatively 'price inelastic', meaning that the proportional reduction in consumption is less than the proportional change in price. As a result, significant increases in tobacco taxes generate increases in associated revenues for governments. Furthermore, tobacco taxes are relatively easy to collect with a low administration cost, as there are few producers and large sales volumes *(1)*.

While tobacco taxes have long been used to generate revenues for governments, they also provide a means to increase the price of tobacco products, dissuade consumption and thereby improve public health. Economic theory suggests that, in a free, competitive market, society's scarce resources are most efficiently allocated by the consumption decisions of private individuals, assuming that consumers are well informed and that the costs and benefits of their decisions are borne solely by each of them. From an economic perspective, regulation of the tobacco market through taxation is justified on the basis of improved efficiency, by correcting failures in the market, specifically information asymmetries and externalities. Tobacco consumers may not be fully aware of the risks associated with smoking tobacco or may not consider themselves vulnerable to such risks. Furthermore, they may underestimate the risk for becoming addicted or the costs associated with quitting tobacco use. Consumers therefore take a decision to consume tobacco products without complete information on the costs and benefits of their choice (information asymmetry). Moreover, the consumer does not bear all the costs associated with his or her decision to consume tobacco products. Some of the costs borne by society or by individuals other than the tobacco consumer (externalities) include the harm caused by second-hand smoke, the costs associated with treating tobacco-related diseases and the loss to society of income and consumption taxes due to lost productivity and premature mortality among smokers.

Economic theory further suggests that young people and people with low incomes are likely to be more responsive to tax and price increases, for several reasons. First, the greater the proportion of an individual's disposable income spent on a good, the more responsive the individual will be to price changes. The proportion of disposable income spent on cigarettes is likely to be greater among young smokers

than among adult smokers *(2)* and among people with lower incomes than those with higher incomes, as people in lower socioeconomic groups are more likely to smoke and be heavy smokers than those in higher socioeconomic groups *(3–5)*. Secondly, young people have a greater propensity to discount the future costs of smoking in terms of the associated health consequences and place greater emphasis on the short-term costs, such as the price of tobacco *(2)*. Thirdly, young people are more likely to have a shorter smoking history than adults and therefore be more responsive to a change in price than those who are more addicted *(6)*. Furthermore, young people are both directly affected by price increases and indirectly affected by peer and parental influence. Peers and parents influence smoking through role modelling; an effect of price increases on peer and parent smoking will have an incidental effect on young people due to reduced modelling *(7–10)*.

Over 100 studies have been published worldwide on the impact of tobacco prices on the demand for tobacco products. Early empirical literature was based on aggregate data—data pooled for all relevant individuals for the relevant variables—typically produced by government agencies. The proportion of studies of tobacco demand based on aggregate data has been declining relative to studies based on microeconomic or household cross-sectional data *(11)*. Individual-level data allow researchers to estimate the impact of price or income changes on the consumption of tobacco products in different population groups (by e.g. age, gender, socioeconomic group) or to determine changes in smoking prevalence due to the effect of price on initiation and cessation or smoking intensity (the amount consumed by people who continue to use tobacco) *(11)*. Much recent empirical work has been based on large data sets from surveys and the unique research design resulting from the separate legislative, excise tax and retail pricing systems of the many states and territories of the United States of America. There is also a growing body of literature from other high-income countries and low- and middle-income countries.

Regardless of the data type or empirical strategy used, one of the aims of all studies of tobacco demand is to estimate price elasticity, which indicates by what percentage the quantity demanded changes in response to a 1% change in price. Estimates of price elasticity allow prediction of the probable decrease in consumption corresponding to a change in the tax-inclusive price of tobacco and the subsequent implications for government revenue.

The following sections summarize a comprehensive review of the literature conducted as part of the PPACTE project (WP7) and published in the *IARC Handbooks of Cancer Prevention* as Volume 14, *Effectiveness of tax and price policies for tobacco control* (11).

2.1 Summary review of studies of tobacco demand based on aggregate data

Despite many differences in research methods, estimates of the price elasticity of demand for tobacco products are robust. All the empirical studies of aggregate demand reviewed included cigarette price as a determinant of cigarette consumption, and the estimates of price elasticity varied from -0.15 to -0.90 in studies in the United States (12–40), from 0 (not significant) to -1.2 in studies in other high-income countries (4, 41–78) and from -0.2 to -0.8 in low- and middle-income countries (76, 79–106).

Most of the aggregate demand studies in Europe were conducted in the United Kingdom. With two exceptions, all the estimates of price elasticity in these studies lie between -0.2 and -0.6. Stone (1945) *(41)*, Prest (1949) *(42)* and Koutsoyiannis (1963) *(43)* were the first to estimate demand for tobacco in any country. The study of Townsend (1987) *(4)* was unique in that elasticity was measured for different social classes in the United Kingdom; she found that unskilled male workers were more responsive to price changes than male professionals. Expanding on this study, Townsend, Roderick and Cooper (1994) *(63)* estimated price elasticity for different socioeconomic and age groups from aggregate data and found that females were more sensitive to price changes than males and that elasticity was inversely related to social class. Young men were not price-responsive, but young women were.

Duffy (1991) estimated 'own price' and cross-price elasticity in the demand for cigarettes and alcoholic drinks (beer, wine and spirits) from aggregate data in the United Kingdom with an 'almost ideal demand system' *(59)*. He found that cigarettes and alcoholic drinks were not complementary goods, implying that consumption

of cigarettes did not significantly increase with a decrease in the price of alcohol, or vice versa. Escario and Molina (2004) used a similar modelling approach in Spain but for three different types of tobacco product: Virginia tobacco, black tobacco and cigars *(75)*. They found that price elasticity fell in absolute terms between 1964 and 1995. The price elasticity for all the tobacco products considered was negative, and Virginia tobacco and cigars were more price-sensitive than black tobacco. Furthermore, Virginia and black tobacco were found to be substitutes in consumption, as were black tobacco and cigars, meaning that the consumption of one product increased with an increase in the price of the other product. Virginia tobacco and cigars were complements in consumption.

Mindell and Whynes examined substitution between manufactured cigarettes and hand-rolling tobacco in the Netherlands *(69)*. They found that, when the price of hand-rolled cigarettes increased by a greater proportion than the price of manufactured cigarettes, the decline in consumption of manufactured cigarettes was accompanied by a decline in that of hand-rolled cigarettes, suggesting the importance of taxing hand-rolling tobacco at the same or higher rate than cigarettes.

Several studies were conducted in Greece to estimate the price elasticity of demand *(43, 55, 65, 66)*. Hondroyiannis and Papapetrou (1997) estimated a dynamic specification of demand and found a short-run elasticity of -0.33 and a long-run elasticity of -0.60 *(66)*. Other studies showed a short-run price elasticity of -0.01 to -0.08 *(55)*, while Koutsoyiannis (1963) and Cameron (1997) found that price was a nonsignificant determinant of consumption *(43, 65)*.

Studies to estimate price elasticity, also based on aggregate time series data, have been conducted in European Union accession states, including Estonia *(88)* and Poland *(80)*, a candidate country, Turkey *(93, 105)*, and an eastern border country, the Ukraine *(104)*. The estimates were -0.11 in Poland, -0.32 to -0.34 in Estonia and -0.09 to -0.44 in Turkey. Price was a nonsignificant determinant of demand in the study in the Ukraine. Most of the estimates indicate that the demand for tobacco in low- and middle-income countries lies between -0.2 and -0.8, suggesting that demand is less price-inelastic. Therefore, the populations of low- and middle-income countries are more responsive to price increases than those of high-income countries.

Overall, these findings imply that the demand for cigarettes is relatively price-inelastic, suggesting that excise taxes are effective for reducing cigarette consumption while still yielding revenue for governments. An increase in the excise tax increases the retail price of cigarettes, which in turn decreases cigarette consumption. Furthermore, as demand for cigarettes is price-inelastic, the increase in price will be greater than the decrease in consumption. Therefore, total tax revenue is likely to rise when taxes rise, as the tax increase more than compensates for declining consumption.

In many studies, the impact of income on smoking behaviour has been estimated simultaneously with the income elasticity of demand, i.e. the proportional change in consumption in response to a 1% change in income. Generally, the evidence suggests that income is a significant determinant of tobacco product demand. Estimates of income elasticity in Europe are between 0.07 and 1.2 *(11)*. While there is no consensus on the value of the income elasticity of demand for tobacco products for all countries, the value is generally between 0 and 1, suggesting that tobacco consumption increases as income grows. There is no evidence that income elasticity has changed, except in the United States, where it has declined *(11)*. Therefore, in a growing economy, the price of cigarettes would have to increase at the same rate as income to prevent tobacco from becoming more affordable and to prevent rises in consumption.

2.2 Summary of studies of tobacco demand based on microeconomic data

Individual or household data are being used in more and more studies to assess the impact of tobacco product taxation and prices on tobacco use. Survey data have been used to examine the differential impacts of tax and price on tobacco use in population subgroups defined by gender, age, socioeconomic status and other characteristics, as well as to assess the separate effects of price on aspects of tobacco use, including prevalence, frequency, intensity, initiation, uptake and cessation *(11)*. Most of the studies based on survey data were conducted in the United States, because of the extensive subnational and temporal differences in taxes and prices. These studies show that smoking prevalence, frequency and

intensity are negatively related to cigarette taxes and prices. As with the elasticity estimates obtained from aggregate data for the United States, most of the estimates for total elasticity fall in the range -0.2 to -0.6; approximately half the impact of price is on the decision to smoke (prevalence) and the other half on the number of cigarettes smoked by continuing smokers *(107–125)*. The few studies in the United States in which gender differences in price elasticity were considered show that smoking is more responsive to price among men than women *(117, 118, 121, 126)*.

Several studies of smoking cessation among adults show that higher taxes and prices reduce the duration of smoking, increase interest in quitting, boost quit attempts and increase the number of smokers who successfully quit smoking (122, 127–129). A few studies found similar effects of tax and price on the use of other tobacco products, such as smokeless tobacco and cigars, and gave some evidence for substitution among tobacco products in response to changes in the relative prices of these products *(115, 116, 130)*. Similarly, studies in the United States based on cross-sectional or longitudinal data consistently found that higher prices lead to smoking cessation among young people and deter progression to later smoking uptake *(123, 131–137)*.

Some studies have addressed the impact of taxes and price on smoking initiation among young people *(123, 127, 129, 132, 133, 138–148)*. Studies based on cross-sectional data are subject to the measurement error inherent in use of retrospective measures of initiation. Most studies based on longitudinal data show that higher prices of cigarettes significantly decrease smoking initiation among young people, while lower prices increase initiation *(11)*.

While several studies based on survey data of adult tobacco use have been conducted in other high-income countries, relatively few provided estimates of the effects of tax and price on tobacco use, largely because of the limited variation in price within most countries. Studies on price elasticity and adult smoking based on survey data have been conducted in Italy *(72)*, Spain *(129)* and the United Kingdom *(63)*. The general finding was that the prevalence and intensity of cigarette smoking are inversely associated with price (the price elasticity estimates varying by country), consistent with estimates based on aggregate data in high-income countries other than the United States.

Survey-based studies of adult tobacco demand have been conducted in low- and middle-income countries including Bulgaria *(149)*, Estonia *(88)*, Poland *(150)* and Turkey *(93)*, many based on data from household expenditure surveys. The sophistication of the methodological approaches used and the price elasticity estimates vary considerably; however, these studies generally confirm that various aspects of tobacco use are responsive to price, higher prices reducing smoking prevalence and intensity *(11)*.

No clear pattern emerges from the small number of studies from countries other than the United States concerning substitution among tobacco products in response to relative changes in their prices.

2.3 New evidence on the effectiveness of tobacco taxation for tobacco control from the PPACTE project

The PPACTE project built upon existing evidence for the use of tobacco taxation as a public heath measure in a number of ways. First, previous studies to estimate the elasticity of demand for tobacco products are based on different variables, inconsistent data sources and different methods *(151, 152)*. The PPACTE project analysed demand for tobacco with similar data sets for different countries over longer periods, with a consistent strategy for estimation and for model-building *(153)*. Furthermore, a novel approach to estimating the effect of other tobacco control policies on demand was applied consistently to all the time-series datasets used *(154)*. Secondly, the PPACTE project examined the potential impact on smoking prevalence rates and smoking-attributable deaths of increasing tobacco taxes to 70% of the tax-inclusive retail price (exclusive of VAT) in 15 European countries *(155–169)*. Thirdly, the PPACTE project collected recent and consistent survey data from 18 European Union Member States on individual responses to a hypothetical cigarette price increase and support for both tobacco tax increases and the hypothecation of additional tobacco tax revenues for public health purposes *(170)*.

Econometric analyses of demand for tobacco in 11 European countries (WP3)

Few studies have been conducted on the impact of tobacco price on tobacco product demand with data

from European Union Member States. In the available published European studies, varying specifications were used for the included variables, inconsistent data sources and divergent empirical strategies and modelling approaches. The PPACTE project analysed demand for tobacco in similar data sets from different countries over longer periods (30–60 years), with a consistent estimation strategy and model-building approach. The aims of these analyses were to: (i) estimate the price elasticity of demand for selected tobacco products in countries with suitable data sets; (ii) investigate whether cigarettes, pipe and hand-rolling tobacco and *snus* are substituted for each other; (iii) evaluate the impact of non-price tobacco control policies on consumption; (iv) evaluate the extent to which the estimates of price elasticity of demand for tobacco products differ in Europe; and (v) assess the extent to which demand for tobacco products can be controlled by price measures. Analyses were conducted in 11 Member States where suitable national aggregate time series datasets could be obtained for a sufficient duration. The countries were Austria, Finland, France, Germany, Ireland, Italy, the Netherlands, Portugal, Spain, Sweden and the United Kingdom.

A complete description of the methods used can be found elsewhere *(153)*. In brief, the annual time series covered periods ranging from 30 to 60 years that ended in 2009. The analyses addressed factors affecting per capita consumption of tobacco products (cigarettes and, where appropriate, pipe and hand-rolling tobacco or *snus*). Per capita consumption was the dependent variable, while the real price of tobacco products, real disposable income per capita and a tobacco control policy index quantifying implementation of tobacco control policies at country level were the explanatory variables. On the basis of the theory of demand and addiction, conventional, partial adjustment and rational addiction models were applied. In view of the non-stationarity of time series data, error correction models were also considered. Dynamic models were estimated by instrumental variables methods (2SLS) and the Engle-Granger two-step procedure. The estimated models were tested for autocorrelation in residuals, and recursive estimation was used to assess the estimated error correction models.

The results obtained with the preferred models indicate a negative relation between cigarette consumption and cigarette price, higher prices being associated with lower consumption. This relation was apparent in both the short and the long term. This negative relation is illustrated in Figures 2.1–2.11, which show trends in per capita cigarette consumption and the real price of cigarettes over the 30–60-year period in the countries studied. For cigarettes, short-run price elasticity estimates of demand obtained from our preferred models ranged from -0.30 to -0.40, suggesting that a 10% increase in the real price of cigarettes will reduce cigarette consumption by 3–4%. Outside this range are Ireland, with an elasticity estimate of -0.27, Germany, with an elasticity estimate of -0.79 (or -0.67 depending on the model chosen), and Austria, with a price elasticity estimate close to zero and statistically insignificant. In agreement with other studies, these estimates of price elasticity suggest that demand for tobacco is price-inelastic: the reduction in consumption is proportionately less than the increase in price. Therefore, increasing the price by raising taxes will discourage consumption and increase government revenues. These results lend weight to the considerable body of international evidence for using tobacco taxes as a public health measure to dissuade consumption of tobacco in the European context.

Similarly, a negative relation was found between the price of pipe and hand-rolling tobacco and its consumption in Finland, with a price elasticity of demand of -0.43, and between price and consumption of *snus* in Sweden, with an elasticity estimate of -0.24 (Figures 2.12–2.13). These own-price elasticity estimates lie between -0.2 and -0.4, similar to the estimates for cigarettes. Moreover, pipe tobacco was found to be a substitute for cigarettes in Finland, with a cross-price elasticity of 1.7, implying that a 10% increase in the price of cigarettes would result in a 17% increase in the consumption of pipe and hand-rolling tobacco (Figure 2.12).

These analyses show a positive relation between real disposable income and cigarette consumption, suggesting that consumption of cigarettes increases as income increases. While the estimates of income elasticity in this study vary between 0.1 in Italy and 1.2 in Sweden, most fall within a range of 0.1–0.6, with the median and

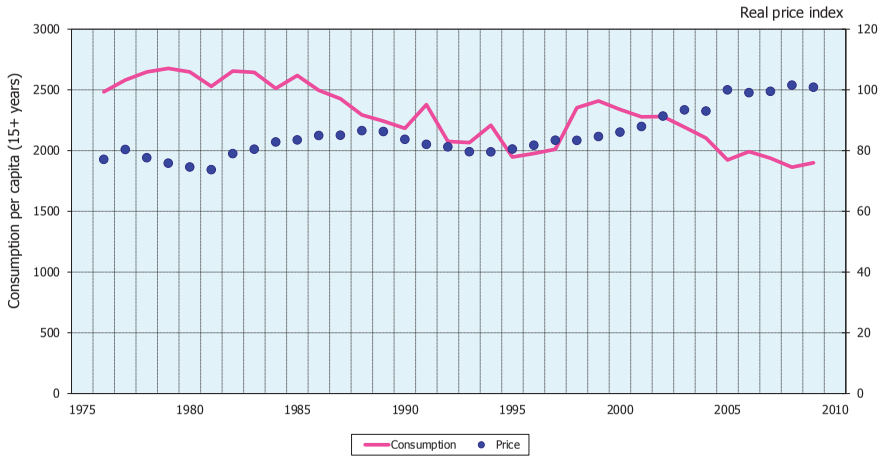

Figure 2.1. Consumption and real price of cigarettes, Austria, 1976–2009

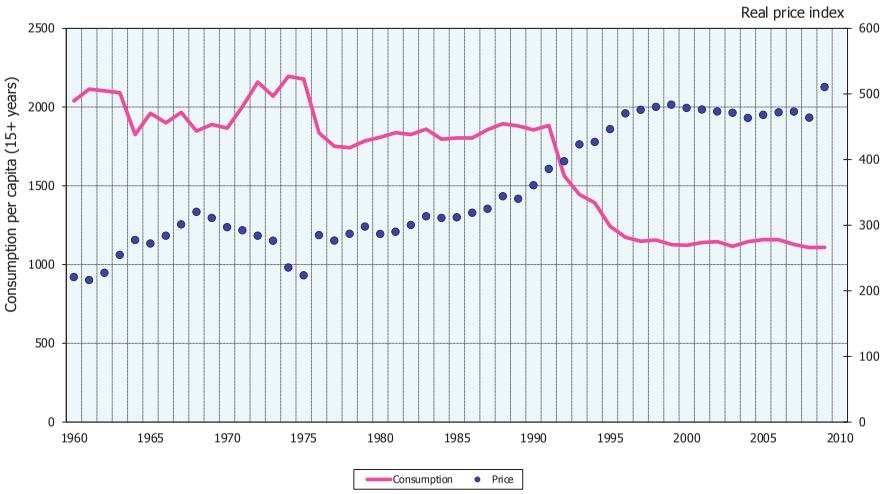

Figure 2.2. Consumption and real price of cigarettes, Finland, 1960–2009

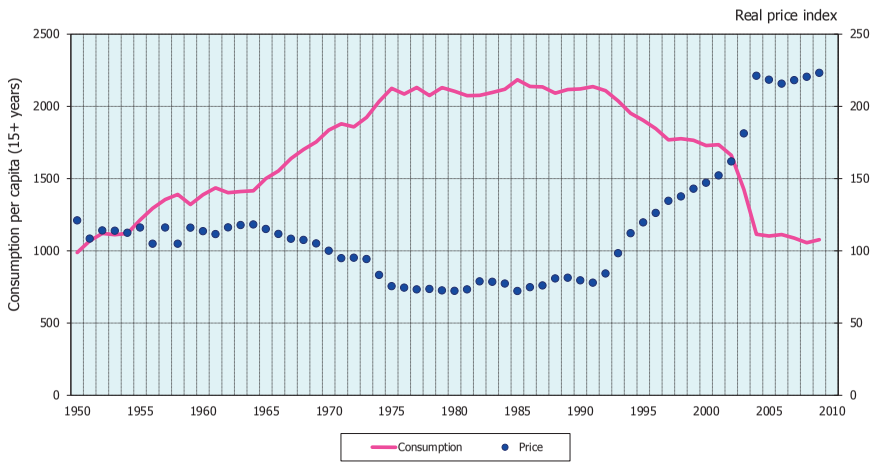

Figure 2.3. Consumption of cigarettes and real price of tobacco, France, 1950–2009

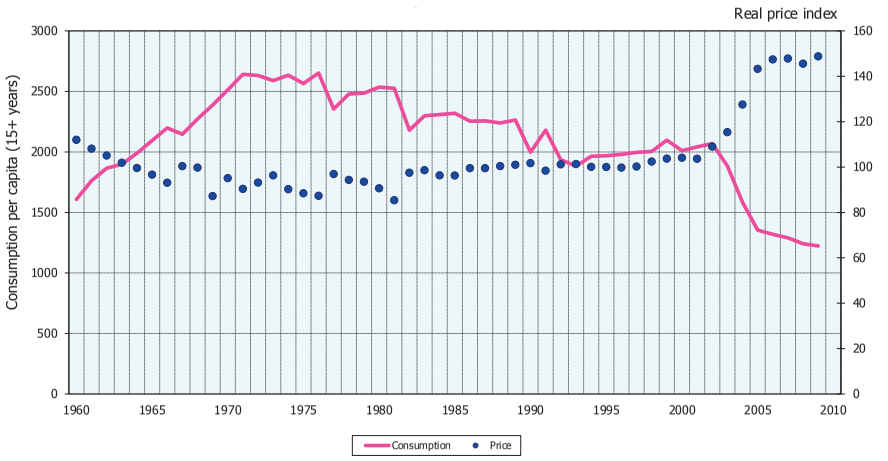

Figure 2.4. Consumption and real price of cigarettes, Germany, 1960–2009

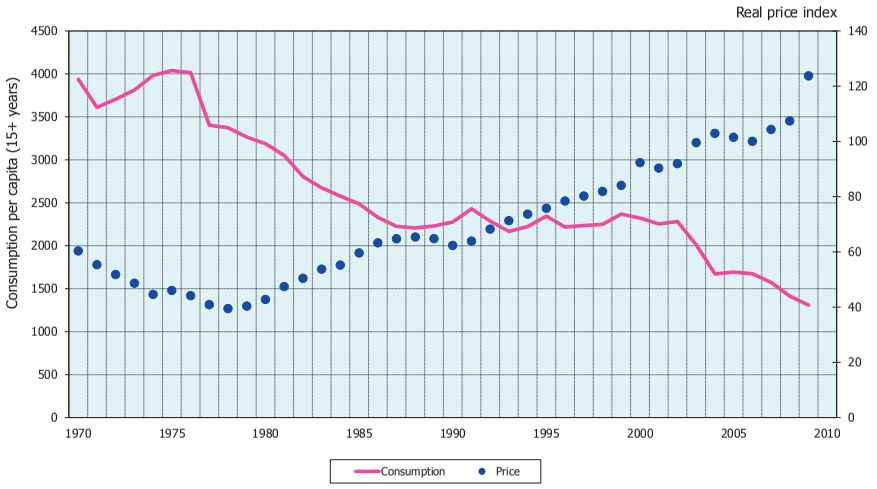

Figure 2.5. Consumption and real price of cigarettes, Ireland, 1970–2009

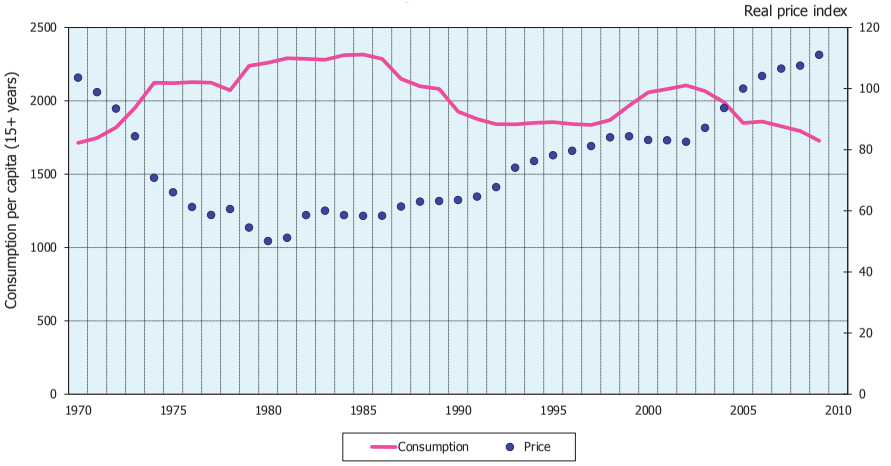

Figure 2.6. Consumption of cigarettes and real price of tobacco, Italy, 1970–2009

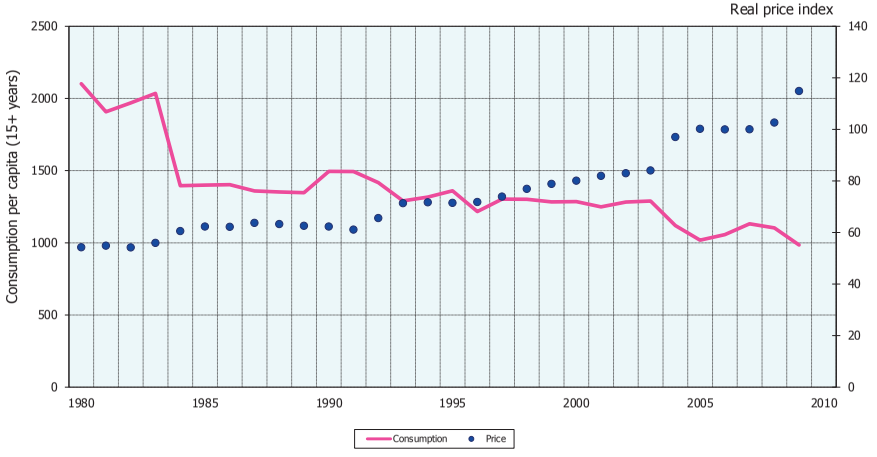

Figure 2.7. Consumption and real price of cigarettes, The Netherlands, 1980–2009

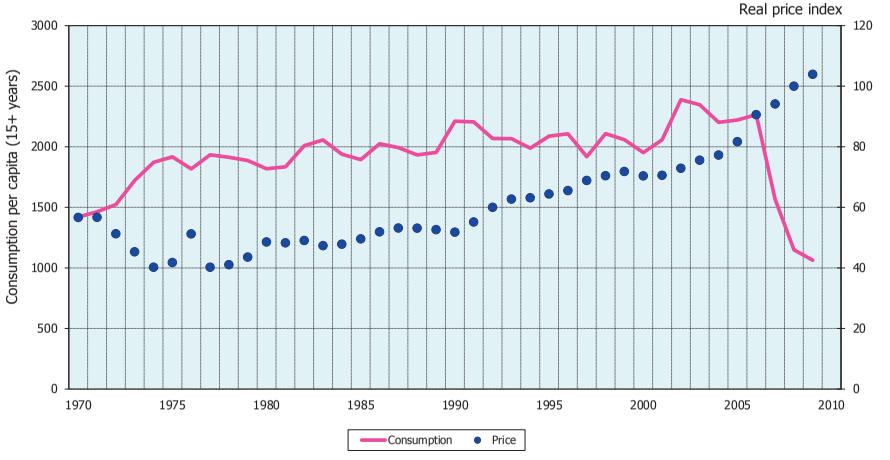

Figure 2.8. Consumption of cigarettes and real price of tobacco, Portugal, 1970–2009

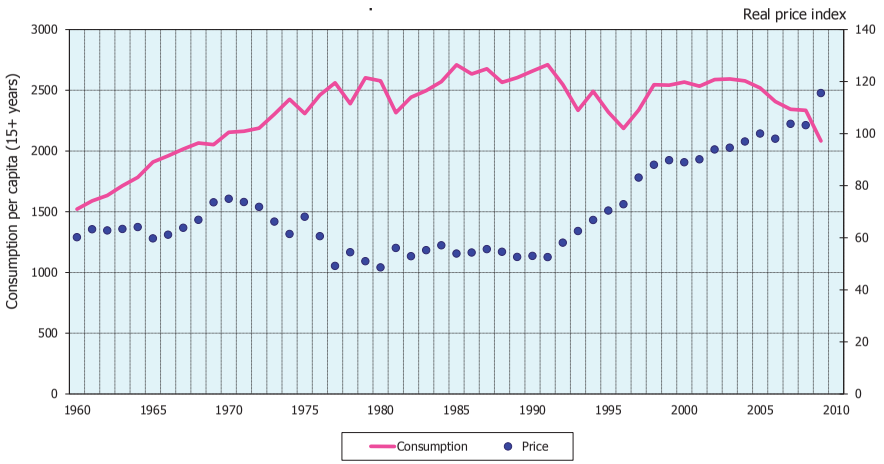

Figure 2.9. Consumption of cigarettes and real price of tobacco, Spain, 1960–2009

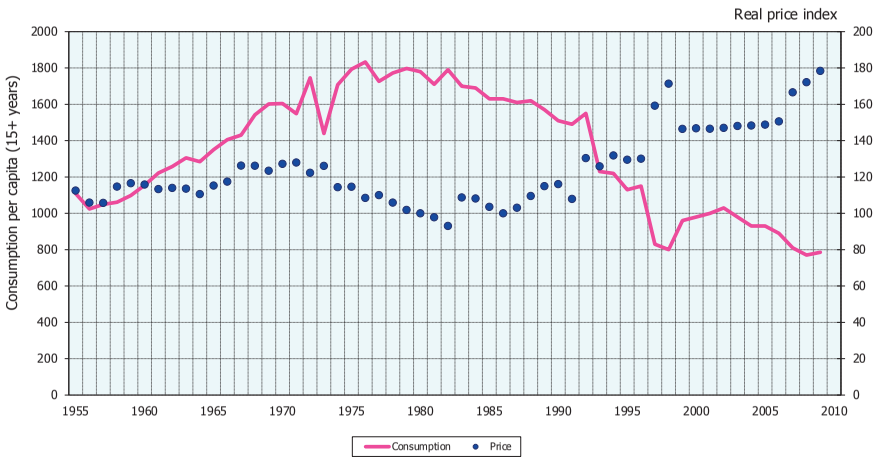

Figure 2.10. Consumption and real price of cigarettes, Sweden, 1955–2009

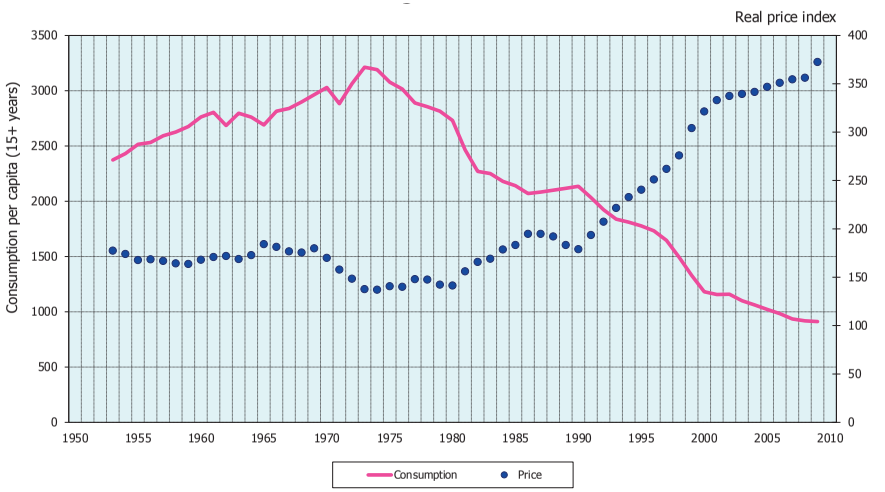

Figure 2.11. Consumption and real price of cigarettes, United Kingdom, 1953–2009

typical estimates between 0.3 and 0.4. In other words, a 10% increase in income increases consumption by 3–4%. In contrast, a negative relation was found between income and the consumption of pipe and hand-rolling tobacco in Finland and the consumption of *snus* in Sweden. This might suggest that users of pipe and hand-rolling tobacco in Finland and users of *snus* in Sweden with higher income will switch from these products to cigarettes and that users of pipe and hand-rolling tobacco and *snus* are poorer than cigarette smokers.

These findings suggest that the planning of tobacco price and tax policies must take into account the effect of real income growth on cigarette consumption. The real price of cigarettes must increase above the rate of income growth to prevent increases in the affordability of cigarettes and consequent increases in consumption. Furthermore, these findings suggest that taxation of pipe and hand-rolling tobacco and *snus* should be kept in line with that of cigarettes to discourage product substitution.

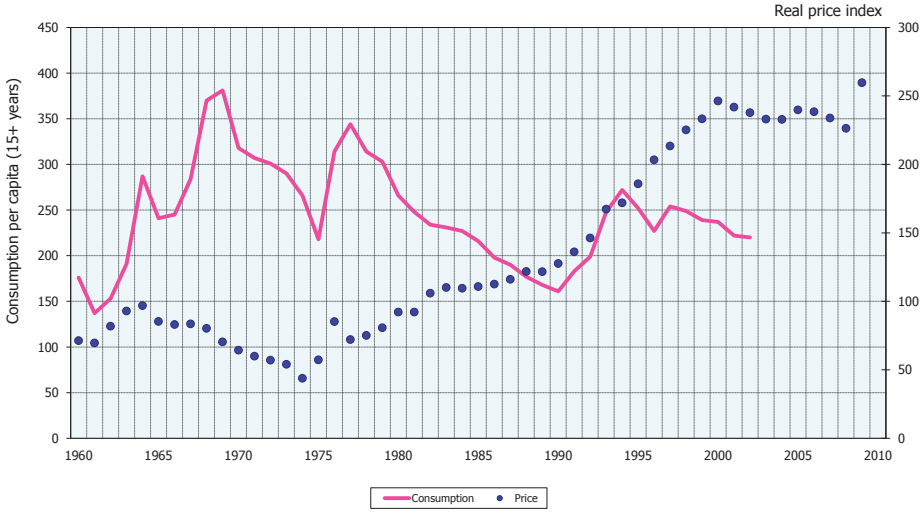

Figure 2.12. Consumption (g) and real price of pipe and hand-rolling tobacco, Finland, 1960–2002

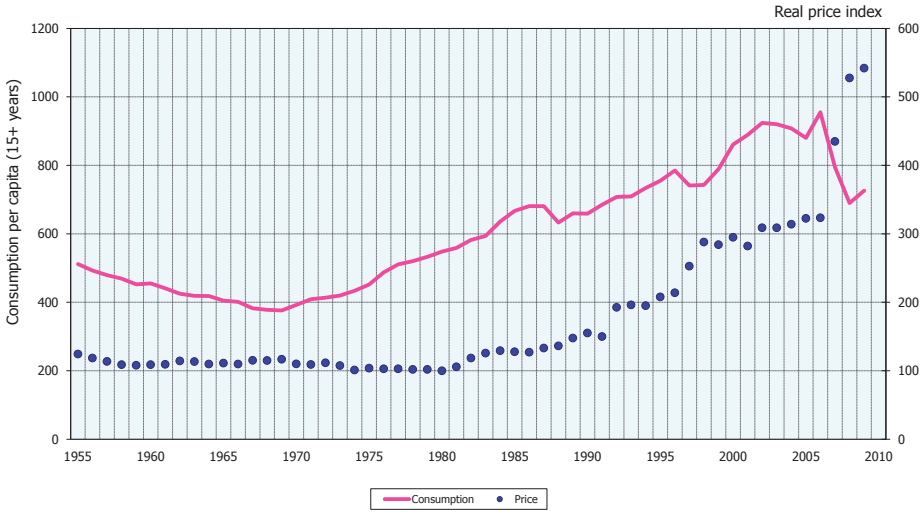

Figure 2.13. Consumption (g) and real price of snus, Sweden, 1955–2009

Predicting the impact of raising tobacco taxes on smoking prevalence and smoking-attributable deaths in the SimSmoke model of tobacco control policy (WP4)

While the econometric analyses described above are empirical evaluations of the impact of price, income and tobacco control policies on the consumption of tobacco products, the SimSmoke simulation model of tobacco control policy draws together data from various sources to distinguish the effect of tobacco control policies implemented by European countries from long-term trends, to evaluate the effects of tobacco control policies on smoking prevalence and related mortality, and to consider the potential impact of stronger policy alternatives in these countries.

SimSmoke contains a population model, a smoking model, a smoking-attributable death model and policy modules. It considers the effect of cigarette taxation, smoke-free legislation, advertising bans, health warnings, media and educational campaigns, cessation treatment and restrictions on sales to and by young people both independently and as part of a comprehensive tobacco control strategy *(171–173)*. The model begins with a baseline year, before major policy changes, for which a large-scale survey of smoking rates is available. To validate the model, predictions of smoking rates are compared with actual rates from surveys, from the baseline year through 2010 or the most recent date of a national survey.

SimSmoke then predicts the effect on smoking prevalence rates and smoking-attributable deaths of stronger policies fully consistent with the WHO FCTC and MPOWER recommendations and compares the effect to the status quo, in which policies are held constant at 2010 levels. For WP4, country-specific models were developed for Albania, the Czech Republic, Finland, France, Germany, Great Britain, Ireland, Italy, the Netherlands, Poland, the Russian Federation, Spain, Sweden, Turkey and the Ukraine. (Country reports containing model assumptions, methods and findings are available at www.ppacte.eu)

In the SimSmoke model, when taxes change, an equation translates changes in the tax rate (as a percentage of price) into changes in price, assuming that tax increases are passed on to consumers and not under- or over-shifted. Changes in price are then translated into changes in smoking prevalence by an equation dependent on price elasticity estimates, as described by Levy, Cummings and Hyland *(172)*. In the models for Germany, Great Britain, Ireland, the Netherlands and Sweden, a price elasticity of -0.3 was applied to people aged 15–17 years, -0.2 to those aged 18–24 years, -0.15 to those aged 25–34 and -0.1 to those aged 35 and over. In the models for Finland, France, Italy, Poland, the Russian Federation, Spain, Turkey and the Ukraine, a price elasticity of -0.3 was applied to people aged 15–24, -0.2 to those aged 25–34 and -0.1 to those aged 35 and over.

Country-specific data on excise duty rates were used for 2010, as the baseline from which future tax changes were measured. Rates of excise (specific and *ad valorem*, exclusive of VAT) were obtained from the WHO MPOWER report *(174)* or the European Commission excise duty tables for 2010. For all years before 2010, a cigarette price index of actual

Country	Excise as percentage of retail price in 2010	Absolute change in annual smoking-attributable deaths (deaths averted) due to a tax increase			
		2020	2030	2040	Cumulative
Poland	68	502	1302	1572	27 094
Czech Republic	64	383	907	1042	19 008
Spain	64	807	2241	2881	46 737
Turkey	63.6	1900	5878	8729	124 915
France	63.6	1277	3470	4511	73 568
Great Britain	63	1234	2957	3493	62 753
Ireland	63	128	357	467	7474
Germany	60	3121	7596	8582	158 468
Finland	60	210	513	585	10 702
Italy	58.5	2138	5021	5519	105 204
Netherlands	57	830	1960	2149	40 839
Sweden	52	445	953	938	19 873
Ukraine	43.3	7804	17 193	18 258	362 542
Russian Federation	21.5	31 111	75 654	96 273	1 619 165

Not valid for direct comparison among countries, given differences in model assumptions and data inputs

Table 2.1. Absolute change in annual smoking-attributable deaths (deaths averted) if tax is increased to 70% of price relative to the status quo

prices deflated by the consumer price index was used.

The SimSmoke models consider the impact of increasing tobacco taxes (specific and *ad valorem*, exclusive of VAT) to 70% of the price. Table 2.1 shows the absolute change in smoking-attributable deaths (deaths averted) as a result of increasing tobacco taxes to 70% of tobacco price, relative to the status quo scenario in which all policies are held constant at 2010 levels. The estimate for a particular year represents deaths in that year alone, whereas the cumulative estimate is for the years 2011–2040. Tables 2.2 and 2.3 show the percentage change in smoking prevalence (measured relative to the status quo in a particular year) if the tax were increased to 70% of the price, with all other policies held constant at 2010 levels, for males and females. The variation in the percentage effects on prevalence is due mainly to the difference between the 2010-specific tax rate and the 70% tax rate.

In general, this model showed how the prevalence of smoking among young people declines more than among adults as a result of tax increases. This is the main reason that taxes continue to reduce adult smoking rates over time. The projected number of deaths reflects the effectiveness of a tax policy in reducing smoking. The effects of tobacco taxes on the number of deaths are delayed not only because the effects of cessation on death rates are relatively slow but also because the greatest effects are on the prevalence among young people. Changes in the prevalence among the young do not avert deaths for at least 20 years.

Country	Excise as percentage of retail price in 2010	Smoking prevalence at status quo 2010 (%)	2011	2020	2030	2040
Poland	68	35.5	-2.0	-2.7	-3.4	-4.2
Czech Republic	64	34.6	-5.1	-6.6	-8.3	-9.9
Spain	64	31.7	-4.5	-6.1	-8.4	-10.3
Turkey	63.6	43.4	-5.6	-6.9	-8.2	-9.3
France	63.6	27.1	-5.7	-7.5	-9.3	-10.6
Great Britain	63	22.8	-5.6	-7.5	-9.4	-11.1
Ireland	63	26.1	-6.7	-8.6	-10.8	-12.9
Germany	60	31.3	-6.0	-7.5	-9.0	-10.4
Finland	60	25.2	-9.1	-12.4	-15.7	-18.5
Italy	58.5	26.8	-7.3	-9.0	-10.9	-12.6
Netherlands	57	29.6	-8.3	-10.3	-12.5	-14.5
Sweden	52	12.6	-11.5	-13.7	-16.7	-20.0
Ukraine	43.3	49.6	-18.3	-20.3	-23.0	-25.7
Russian Federation	21.5	61.1	-17.7	-22.7	-28.2	-32.5

Not valid for direct comparison among countries, given differences in model assumptions and data inputs

Prevalence estimates for ages ≥ 15 in Czech Republic, Finland and Turkey; 16–85 in Sweden; ≥ 16 in Spain; ≥ 18 in France, Ireland, the Netherlands, Poland, the Russian Federation and the Ukraine; and 18–85 in Germany, Italy and the Great Britain

Table 2.2. Percentage change in male smoking prevalence if tax is increased to 70% of price with all other policies held constant at 2010 levels

Country	Excise as percentage of retail price in 2010	Smoking prevalence at status quo (2010)	2011	2020	2030	2040
Poland	68	24.1	-1.9	-2.5	-3.1	-3.6
Czech Republic	64	23.1	-4.8	-6.0	-7.4	-8.7
Spain	64	21.7	-4.8	-6.4	-8.4	-10.1
Turkey	63.6	16.1	-5.8	-7.0	-8.2	-9.2
France	63.6	22.9	-5.5	-6.8	-8.2	-9.6
Great Britain	63	20.5	-5.6	-7.5	-9.4	-10.9
Ireland	63	25.1	-6.9	-8.6	-10.5	-12.4
Finland	60	18.6	-9.3	-12.0	-14.8	-17.6
Germany	60	21.4	-6.0	-7.4	-8.8	-10.1
Italy	58.5	15.0	-7.1	-8.4	-10.0	-11.6
Netherlands	57	24.9	-8.2	-10.1	-12.0	-13.7
Sweden	52	20.9	-12.4	-15.0	-17.9	-20.9
Ukraine	43.3	16.1	-18.4	-20.0	-22.1	-24.6
Russian Federation	21.5	16.6	-18.1	-22.0	-26.3	-29.9

Not valid for direct comparison among countries, given differences in model assumptions and data inputs

Prevalence estimates for ages ≥ 15 in Czech Republic, Finland and Turkey; 16–85 in Sweden; ≥ 16 in Spain; ≥ 18 in France, Ireland, the Netherlands, Poland, the Russian Federation and the Ukraine; and 18–85 in Germany, Italy and the Great Britain

Table 2.3. Percentage change in female smoking prevalence if tax is increased to 70% of price, with all other policies held constant at 2010 levels

The predictions shown above are based on the assumption that all other policies are held constant at 2010 levels. The model predictions suggest that, in each country, substantial reductions in smoking prevalence and lives lost due to smoking can be realized by increasing tobacco taxes alone. Moreover, when tobacco tax increases form part of a comprehensive tobacco control strategy in which stronger laws on smoke-free air and restrictions on sales to and by young people are implemented, strict tobacco advertising and marketing bans are promulgated, strong tobacco health-warning labels are required, high-publicity media campaigns are coordinated with other policies, strong comprehensive smoking cessation treatment services are provided and all policies are enforced, considerable reductions in smoking prevalence and smoking-attributable mortality can be achieved. Because of the natural progression of tobacco-related illnesses, early reductions in smoking prevalence have a relatively small short-term impact on the number of smoking-attributable deaths but a much larger long-term impact.

In some of the countries considered, such as the Czech Republic and Poland, tobacco product prices are lower than in other countries and in relation to the standard of living. In these countries, excise duties, as a proportion of the tax-inclusive retail selling price, are relatively high. In other countries, such as Ireland and the United Kingdom, tobacco product prices are relatively high and the excise duties as a proportion of the tax-inclusive retail selling price are somewhat lower. The divergence among European Union Member States in the rates of tobacco

excise as a proportion of price and the absolute value of excise duties highlights the need for a specified monetary minimum specific tax floor to achieve appreciable increases in the tax-inclusive retail selling price and corresponding improvements in health outcomes.

European survey on economic aspects of smoking: perceptions and attitudes to increasing tobacco taxes (WP2)

When insufficient data are available for time series analyses of cigarette demand and there is insufficient variation in price within a country to conduct a meaningful cross-sectional analysis of price elasticity, an alternative approach to assessing responses to price and tax increases is to ask individuals about their hypothetical responses to tax increases of different magnitudes.

The two work packages described above involved secondary analyses of routinely collected data and relied on the provenance and availability of such data. In WP2, an extensive survey was conducted in 18 European Union Member States to fill gaps in the available data on smoking prevalence and consumption, allowing comparisons among countries *(170)*.

European data on the willingness of smokers to quit in response to an increase in cigarette price are scarce. In a study in Italy, 21% of smokers stated that they would reduce and 10% said they would stop smoking after a €1.00 increase in price *(175)*. In the Eurobarometer survey in 2009, 50% of smokers claimed that price influenced their choice of cigarettes *(176)*; however, this degree of influence varied considerably: in Bulgaria, Lithuania, Romania, Turkey and The former Yugoslav Republic of Macedonia, price was as or more important than taste. The International Tobacco Control Policy Evaluation Project showed that the proportion of smokers who often or very often thought about the money they spent on cigarettes in the past month was less than 25% in the Netherlands, almost 50% in Germany and almost 60% in France *(177, 178)*. To add to this evidence base, the PPACTE survey collected recent, comparable, individual-level survey data on smokers' anticipated responses to a hypothetical price increase. In the WP2 survey, people were also asked whether they would support tobacco tax increases if part of the additional revenue were allocated to public health interventions.

Data were collected during face-to-face interviews between January 2010 and July 2010 in 18 European countries by standardized methods. Details are given in the full report *(170)*. The 18 056 participants (8653 men and 9403 women) aged 15 years and older[1] were representative of the national general population in terms of age, sex, rural and urban location and socioeconomic characteristics in each country. Surveys were conducted in Albania, Austria, Bulgaria, Croatia, the Czech Republic, England, Finland, France, Greece, Hungary, Ireland, Italy, Latvia, Poland, Portugal, Romania, Spain and Sweden. Survey respondents were asked if they would quit smoking, smoke less tobacco or change their tobacco use to compensate for the price increase (e.g. substitute cheaper products for cigarettes) in response to a 20% increase in the price of manufactured or hand-rolled cigarettes.

Figure 2.14 shows the distribution of current smokers according to their main response to a hypothetical 20% increase in the price of a pack of cigarettes. Overall, 14.2% of current smokers said they would quit smoking, 30.6% would consume fewer cigarettes, 21.5% would engage in compensatory behaviour (13.7% would switch to cheaper brands and 3.8% to hand-rolling tobacco, 3.5% would switch at least part of their smoking consumption to illegal or smuggled cigarettes, 0.5% would switch to or also use smokeless tobacco including snuff, *snus* or chewing tobacco, and 33.6% would not change their smoking habit). Participants in Romania and Spain indicated that they would be most responsive to hypothetical price increases, with 80.3% and 75.9% of current smokers reporting that they would change their smoking habit in some way in response to the price increase, respectively, while participants in Finland and France would be least responsive, with 45.8% and 49.3% of respondents claiming they would not change their smoking behaviour in response to a 20% price increase, respectively. The proportion of current smokers

1 *In Croatia, England, Finland, Greece, Hungary and Poland, participants aged 18 years and older were recruited.*

who would switch to smokeless tobacco was lower in Portugal (0.0%) and Hungary (0.3%) and was higher in Bulgaria (11.2%) and Latvia (18.6%), while the proportion of current smokers who would switch to smokeless tobacco was higher in Poland (1.4%) and Sweden (2.0%).

Current smokers were asked if they intended to quit smoking within the next 6 months (Figure 2.15). Overall, 36.0% of current smokers said they intended to quit smoking (34.1% of men and 38.3% of women). Among male current smokers, the proportions of men who said they intended to quit smoking were lowest in Hungary (7.7%) and the Czech Republic (10.9%) and highest in Spain (56.7%) and Romania (61.0%). Among female current smokers, the proportions of women who said they intended to quit smoking were lowest in Hungary (10.0%) and Austria (14.7%) and highest in Poland (54.3%) and Spain (57.6%).

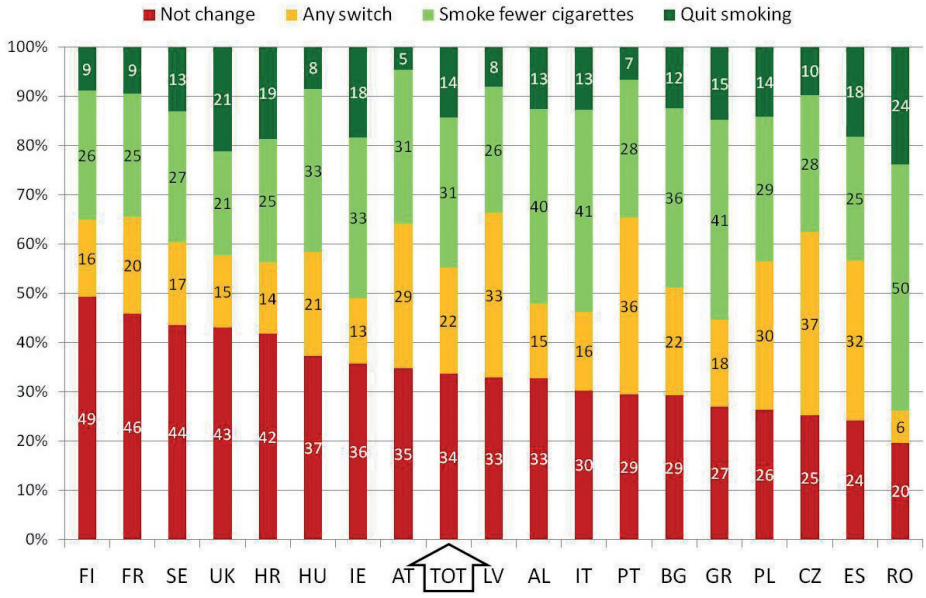

Figure 2.14. Percentage distribution of current smokers according to their main response to a 20% increase in the price of a pack of cigarettes, overall* and by country, sorted by the prevalence of participants answering "I would not change my smoking habit" (descending order)

Data from PPACTE WP2 Survey, 2010 - UK refers specifically to England

**Computed with weighting for each country in proportion to the population aged ≥ 15 years*

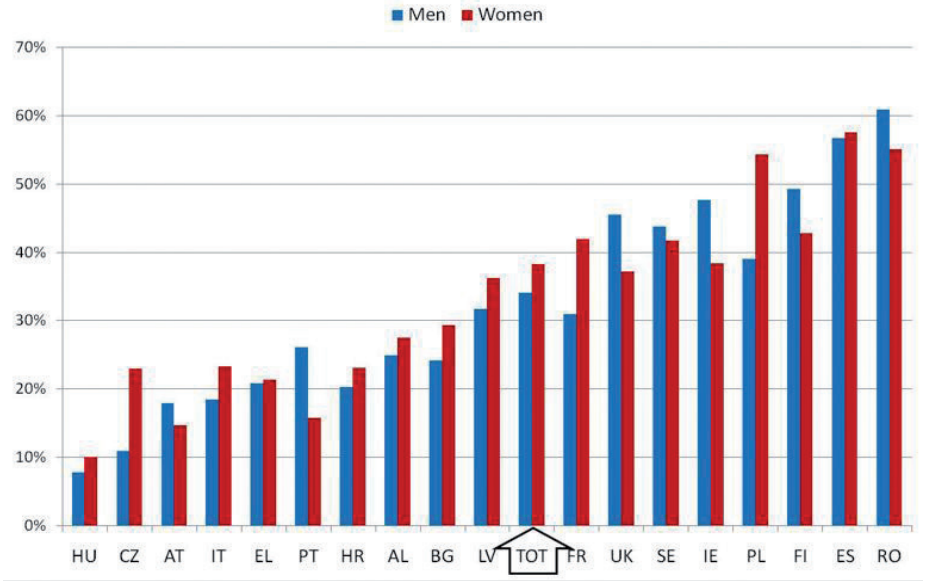

Figure 2.15. Percentage distribution of current smokers who reported that they intended to quit smoking within the next 6 months, separately for men and women, overall* and by country, sorted by the prevalence of participants answering "Yes, I want to quit" among men and women combined (ascending order)

Data from PPACTE WP2 Survey, 2010 - UK refers specifically to England

**Computed with weighting for each country in proportion to the population aged ≥ 15 years*

Respondents were then asked what percentage increase in the current cigarette price would encourage them to quit completely. Figure 2.16 shows the percentage distribution of current smokers according to the percentage increase in the price of cigarettes that would encourage them to quit smoking completely. Overall, 20.5% of current smokers reported that they would quit in response to a 20% increase in price, 19.1% reported they would quit in response to a 21–40% increase, 18.2% would quit with an increase of 41–60%, 6.3% would quit with an increase of 61–80%, and 35.7% said that it would take a price increase of more than 80% for them to quit. The proportions of current smokers who reported that they would quit smoking completely in response to an increment of 20% or less were lower in Hungary (6.8%) and Latvia (6.9%) and higher in Ireland (30.0%) and Romania (31.3%). The proportions of current smokers who reported that they would quit smoking completely in response to an increment of five

or more times the current price were lower in Hungary (0.5%) and Portugal (4.0%) and higher in Albania (16.3%) and Latvia (16.5%).

In the literature review carried out for the Handbook, only four studies on the attitudes and perceptions of adults to increasing cigarette prices were identified in Europe: three in Italy *(175, 179, 180)* and one in Germany *(181)*. These studies suggest that a substantial proportion (generally 30–50%) of the population would support tax increases, with appreciably more support (60–80%) if revenues from tax increases were allocated to tobacco control. Current, ex- and 'never' smokers were asked about their attitudes to an increase in the price of a pack of cigarettes and were asked to assume that the revenue from the increase would be allocated to support smoking cessation, such as free access to anti-smoking centres and free smoking cessation products. Figures 2.17 and 2.18 show the distribution of participants by smoking status according to their attitude to a 5% and a 20% increase in cigarette price. Overall, 78.7% of nonsmokers and 49.2% of current smokers were in favour of a 5% increase in prices if the revenues were used for tobacco control. Moreover, 73.6% of nonsmokers and 39.6% of current smokers were in favour of a 20% increase in price.

Respondents were asked how useful they perceived various tobacco control measures to be in reducing tobacco use (Figure 2.19). Overall, 55.0% of respondents (61.8% of nonsmokers and 36.9% of current smokers) perceived tobacco taxation to be a useful means for reducing tobacco use. There were substantial differences among countries in perceptions of the effectiveness of pricing policies to control tobacco: only 19% of respondents in Hungary perceived price to be a useful tobacco control measure, while over 65% of respondents in Albania, Finland and Italy considered tobacco price and tax increases as useful tobacco control measures.

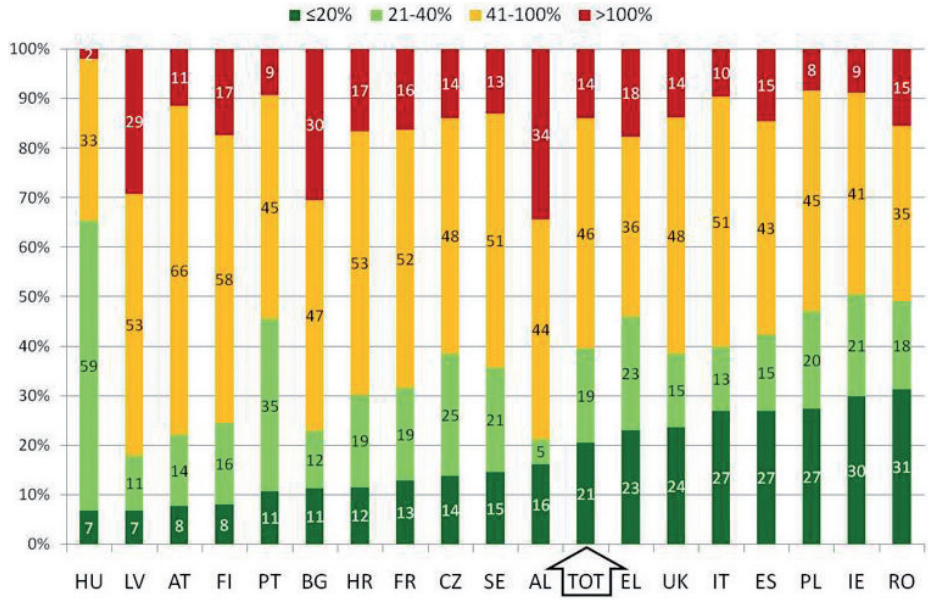

Figure 2.16. Percentage distribution of current smokers according to the amount of increase in price of cigarettes that would persuade them to quit smoking completely, overall* and by country, sorted by prevalence of participants quitting for a 20% increase or less (ascending order)
Data from PPACTE WP2 Survey, 2010 - UK refers specifically to England
**Computed with weighting for each country in proportion to the population aged ≥ 15 years*

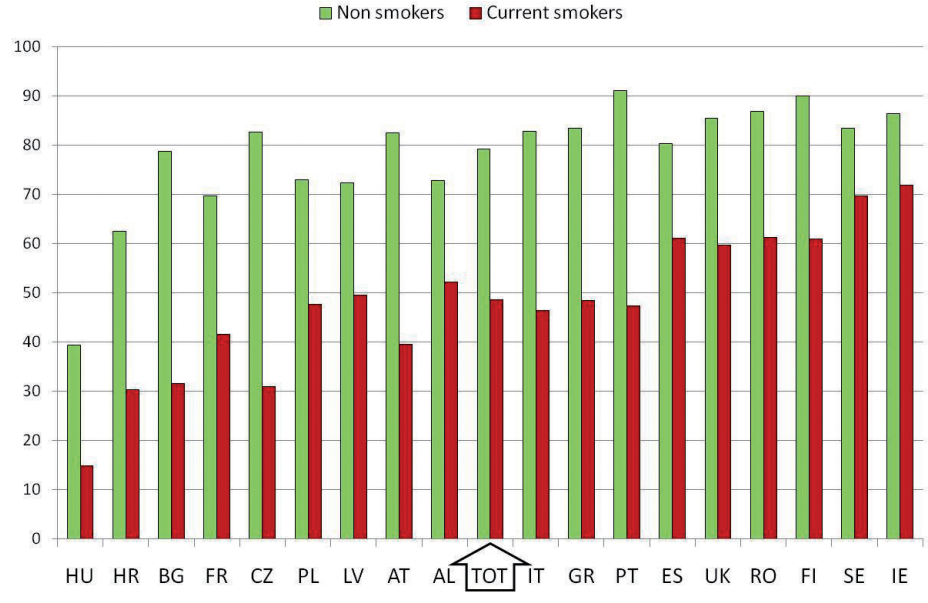

Figure 2.17. Percentage distribution of the European population by smoking status according to their attitude to a 5% increase in cigarette prices, overall* and by country, sorted by prevalence of participants reporting strong or moderate support (ascending order)
Data from PPACTE WP2 Survey, 2010 - UK refers specifically to England
**Computed with weighting for each country in proportion to the population aged ≥ 15 years*

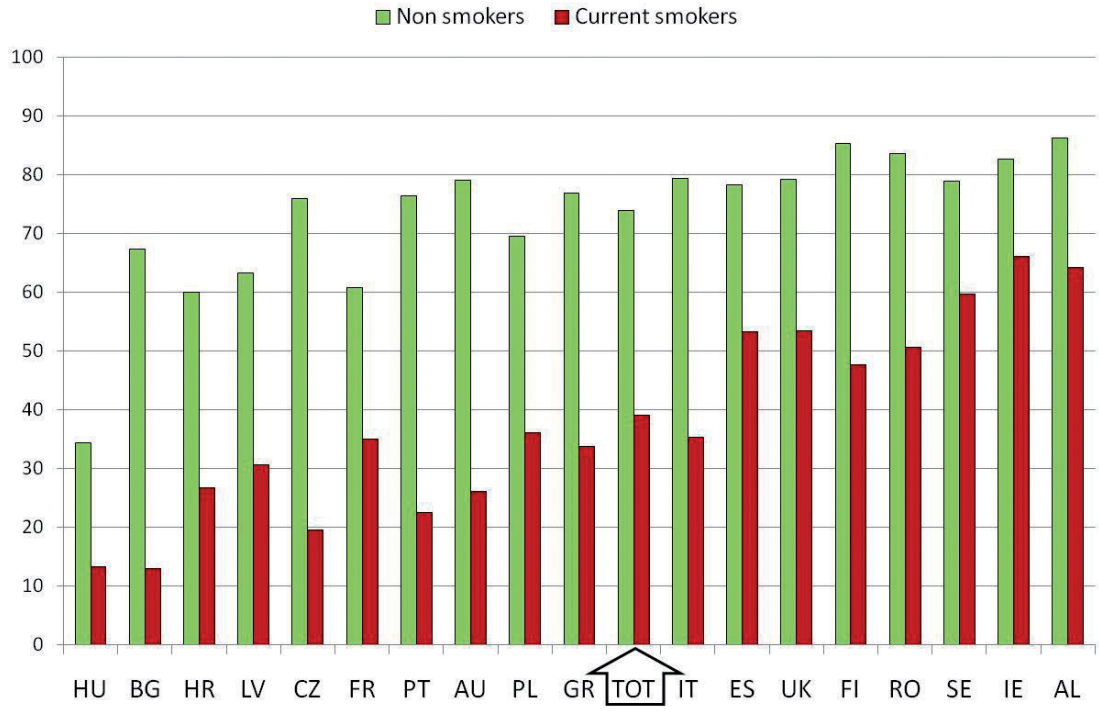

Figure 2.18. Percentage distribution of the European population by smoking status according to their attitude to a 20% increase in cigarette prices, overall* and by country, sorted by prevalence of participants reporting strong or moderate support (ascending order)

Data from PPACTE WP2 Survey, 2010 - UK refers specifically to England

**Computed with weighting for each country in proportion to the population aged ≥ 15 years*

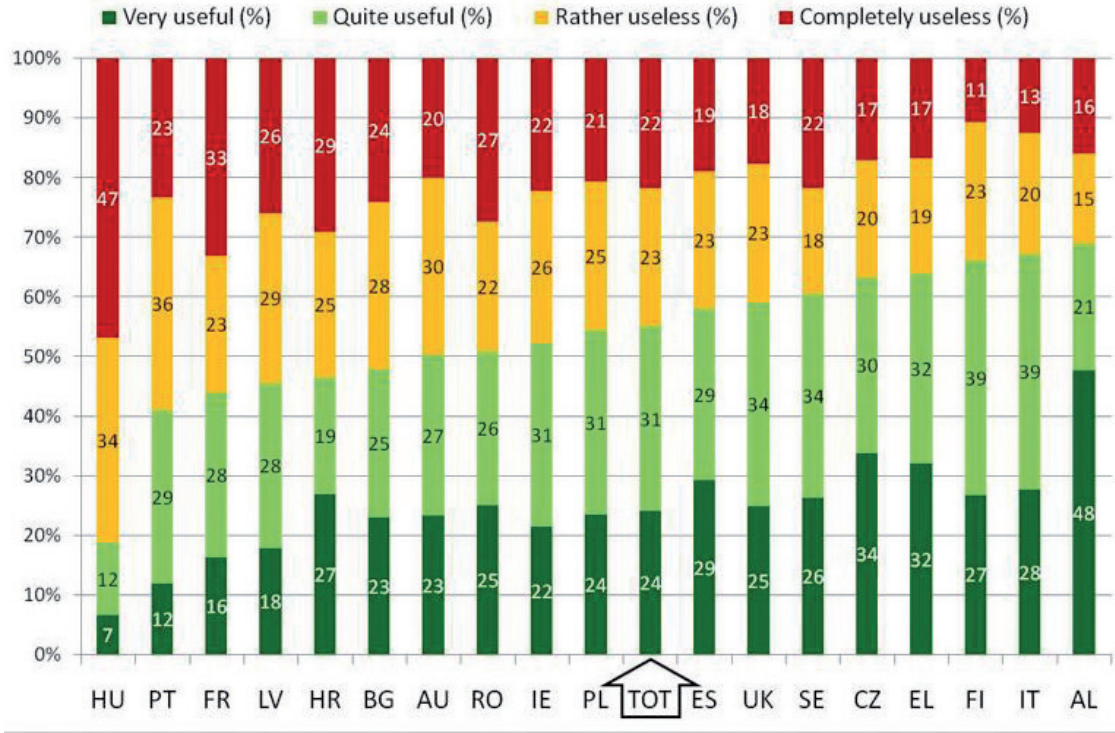

Figure 2.19. Percentage distribution of the European population according to their perception of the effectiveness of raising the price of cigarettes for controlling and limiting tobacco use, overall* and by country, sorted by the prevalence of people who consider the tobacco control strategy to be useful *- UK refers specifically to England*

**Computed with weighting for each country in proportion to the population aged ≥ 15 years*

Summary

The vast body of international literature provides substantial evidence that tobacco taxation improves public health by preventing initiation of smoking, promoting cessation among current smokers and reducing consumption among continuing smokers. The effectiveness of tobacco taxes for tobacco control is further substantiated by econometric analyses covering periods of 30–60 years for 11 European countries. The SimSmoke simulation model suggests that increasing taxes has immediate effects on smoking prevalence and smoking-attributable mortality, with the effects growing over time. Moreover, the European survey indicates that most smokers would attempt to quit in response to a 60% increase in price and that approximately two thirds of nonsmokers and over one third of smokers perceive price to be an effective measure for limiting tobacco use. Not only are tobacco tax increases effective in reducing tobacco use and its associated burden of disease, but they are also acceptable to European citizens, with support from smokers and nonsmokers alike.

The extent to which public health benefits from tobacco taxation is influenced not only by the structures and rates of excise taxes but also by the extent to which these structures and rates are harmonized across regions, thereby decreasing the incentives for illicit trade. In addition, the effectiveness of tobacco taxation for public health depends on the extent to which the tobacco industry passes on tax increases to the consumer, rather than under-shifting the tax by decreasing their profit margins, and the success of tobacco companies' efforts to lobby governments for weaker tax policies. Tobacco tax structures and rates, illicit tobacco trade and tobacco industry influence on tobacco tax policy are discussed in turn in the following sections.

2.4 Policy implications of PPATCE findings on the effectiveness of tobacco taxation for public health

Use of tobacco taxes as a public health measure

There is substantial evidence that increases in tobacco taxes improve public health by preventing initiation, promoting cessation among current smokers and reducing consumption among continuing smokers. These changes can be expected to have substantial health benefits. Governments should continue to increase tobacco taxes so that the real price of cigarettes and other tobacco products is raised above the general rise in the prices of other goods and incomes, making tobacco increasingly less affordable to smokers and potential smokers, while increasing tobacco tax revenues.

Taxation of types of tobacco product

Evidence from demand analyses suggests that other tobacco products may be substituted for cigarettes as the price of cigarettes increases (or as income decreases), with tobacco users consuming more substitute products (e.g. hand-rolling tobacco or *snus*). This suggests that tobacco tax rates should be comparable for all tobacco products and that increases in rates should apply to all tobacco products simultaneously to prevent product substitution.

Consideration of income growth

To better counteract the impact of increasing real disposable income on tobacco consumption, tobacco taxation policy must take into account the development of real disposable income. Other factors being constant, the real prices of tobacco products would have to increase at or above the rate of real disposable income growth to prevent tobacco products from becoming more affordable.

Data availability

Evaluation of the effectiveness of tobacco taxation in Europe is constrained by the availability of and access to comparable, adequate data sets. At a minimum, data on the following variables should be reported by the relevant government departments of Member States to the European Commission and made publicly available through Eurostat:

- Annual weighted average price by tobacco product type (e.g. cigarettes, pipe and hand-rolling tobacco, smokeless tobacco, including *snus*, snuff and chewing tobacco);
- Annual tax-paid sales or releases for consumption of tobacco by tobacco product; and
- Annual household disposable income.

To allow more detailed monitoring and sophisticated analysis of the effectiveness of tobacco taxation in Europe, data on the following variables should be reported to the European Commission and made publicly available through Eurostat:

- Annual (or more frequent) weighted average price by tobacco product and price category and
- Annual (or more frequent) tax-paid sales or releases for consumption of tobacco by tobacco product type and price category.

Furthermore, Eurobarometer and/or national population-based surveys should regularly collect and make publicly available data on the:

- Prevalence of tobacco use by age, gender, socioeconomic status and tobacco product, with agreed definitions and measures; (In particular, smoking rates at ages such as 15–17, 18–21, 21–24 and 25–29 are needed).
- Prevalence of former smokers, by number of years since quitting, so that cessation rates can be estimated and tracked.

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CHAPTER 3

TOBACCO TAX STRUCTURES AND RATES

The structure and rates of excise duties influence the prices of different products, government tax revenues, the quality and variety of products on the market, the administrative burden, the profits and competitive positions of tobacco producers and the distribution of income *(1)*. This section gives an overview of available tax structures and their implications for public health, government revenues, administration and the tobacco industry and then presents the current tobacco tax directive and its implementation, and the implications of PPACTE findings for tobacco tax structures and rates.

3.1 Tobacco tax structures and their implications

Excise duties can be specific or *ad valorem*. A specific excise is levied as a fixed monetary amount of tax per quantity, volume or weight of tobacco, while an *ad valorem* excise is levied as a percentage of some measure of product value (currently the weighted average price of tobacco). In a purely specific excise structure, the same fixed monetary amount is applied to all tobacco products of a given quantity, volume or weight, irrespective of their pre-tax price. This structure tends to discourage consumption of tobacco products, irrespective of their price. A specific excise structure has the advantage of being easy to administer and narrows the gap between low- and high-priced tobacco brands. The fixed monetary amount does not, however, automatically keep pace with inflation and must be adjusted regularly. A purely *ad valorem* structure tends to lead to lower prices, with a wider gap between low- and high-price brands. While a purely *ad valorem* structure keeps pace with inflation, it is more complex to administer. To combine the best elements of both the specific and the *ad valorem* structure, the two can be combined into a mixed structure that can give preference to the *ad valorem* or the specific element, depending on the objectives.

An *ad valorem* system can also be combined with a minimum tax floor. Minimum excise duties are effectively specific excise duties and represent a fixed monetary amount per quantity, volume or weight that applies if the *ad valorem* excise falls below a minimum floor. In this system, lower-priced products are taxed at the specific minimum rate, while higher-priced products are taxed at the *ad valorem* rate. The most complex structure is a mixed specific and *ad valorem* excise with a minimum tax floor. The advantages and disadvantages of each tax structure and their effects on prices, consumers, revenue and manufacturers are summarized in Table 3.1.

Element affected	Tax and price structure	
	Specific excise	*Ad valorem*
Prices	Tends to lead to relatively higher prices. Tax increases may lead to over-shifting or upwards product substitution.	Lower prices than with specific excise Tax increases may lead to down-trading or price reductions (under-shifting).
Inflation	Real value will be eroded by inflation, unless adjusted in line with inflation	Real value will be preserved as prices increase, to the extent that tobacco prices follow inflation.
Inflation		
Product quality and variety	Upgrading effects tend to reduce the relative tax on high-quality products, which provide an incentive for better quality and greater variety of products.	The multiplier effect provides a disincentive to costly quality improvements.
Budgetary stability and forecasting	More stable than *ad valorem*; easy to forecast	Vulnerable to changes in consumers' and producers' behaviour; difficult to forecast
Real value of taxes and prices	Should be adjusted periodically for inflation	May have to be adjusted periodically for down-trading or price reductions
Cross-border operations (private imports and illicit trade)	With the same tax level at the weighted average price, purely specific taxation in one country or jurisdiction and purely *ad valorem* taxation in a neighbouring country could result in cross-border flow of premium brands from one country to the second, with cheap brands flowing in the opposite direction.	
		Lower than for other
Administrative requirements	No price monitoring required for tax purposes; only the volume or weight must be ascertained.	Requires price monitoring
Profits of tobacco producers	Higher tax-to-price ratio for cheaper market segments and higher profits for the manufacturer	A higher absolute amount of tax for premium market segments, because any increase in the producer price will be taxed
Market shares; protection of domestic producers	Tends to favour premium brands	May protect cheaper domestic brands against more expensive international brands

VAT, value-added tax

Table 3.1. Effects of idfferent tax and price structures of excise duties

of excise duty		
Mixed	***Ad valorem* with a specific minimum floor**	**Mixed with a specific minimum floor**
Effect depends on which element (*ad valorem* or specific) prevails.	Minimum tax functions as a specific duty and ensures a relatively higher price for low- (and medium-) priced products	
Real value of the specific element will be eroded by inflation.	Real value of the minimum floor will be eroded by inflation.	Real value of the specific tax and the minimum floor will be eroded by inflation.
	The minimum floor may be (partly) adjusted for inflation if it is a percentage of the excise due on the weighted average price or of a premium price category subject to *ad valorem* taxation (e.g. the 'most popular price category' in most European Union Member States).	
The effect depends on which element (*ad valorem* or specific) prevails.	The multiplier effect of the *ad valorem* element provides a disincentive to costly quality improvements.	The multiplier effect of the *ad valorem* element provides a disincentive to costly quality improvements.
More specific, or a minimum tax floor will entail more budgetary stability.		
May have to be adjusted periodically for inflation, down-trading or price reductions	May have to be adjusted periodically for inflation, down-trading or price reductions	May have to be adjusted periodically for inflation, down-trading or price reductions
The greater the reliance of the structure on specific or minimum duties, the less vulnerable it becomes to down-trading or price reductions but the more it can be eroded by inflation.		
Mixed tax structures and tax structures that include a minimum floor are less vulnerable to the induction of cross-border flow.		
indirect taxes (e.g. VAT, sales tax)		
Requires price monitoring	Requires price monitoring	Requires price monitoring
Smaller gap between the tax-to-price ratio for the cheaper and for the premium market segments than with a purely specific system.	The minimum floor may ensure a high absolute amount of tax and consequently a high tax-to-price ratio for cheaper market segments. The *ad valorem* ensures the desired tax-to-price ratio for premium market segments (equal to the *ad valorem* rate).	The minimum floor ensures a high tax to price ratio for cheaper market segments. The *ad valorem* element will apply to premium market segments.
A more specific or a minimum tax floor tend to favour more expensive brands.		

Country	Measure						Crude price of Marlboro (EUR)	Price of Marlboro standardized (EUR) by			
	GDP per capita (2010)		GDP based on PPP (2010)		GDP in PPS index (2010)	CPL index (2010)		GDP per capita	GDP based on PPP	GDP in PPS	CPL
	Value	Index	Value								
Albania	*3 677*	11.3	*7 453*	24.5	29	NA	1.45	12.86	5.91	5.00	
Andorra	*NA*	NA	*NA*	NA	NA	NA	2.40	NA	NA	NA	NA
Austria	*44 987*	137.9	*39 634*	130.4	126	107.1	4.20	3.04	3.22	3.33	3.92
Belarus	*5 800*	17.8	*13 909*	45.8	NA	NA	1.05	5.90	2.29	NA	NA
Belgium	*42 630*	130.7	*36 100*	118.8	119	111.6	4.95	3.79	4.17	4.16	4.44
Bosnia and Herzegovina	*4 319*	13.2	*7 782*	25.6	NA	NA	2.05	15.48	8.00	NA	NA
Bulgaria	*6 334*	19.4	*12 851*	42.3	44	50.5	2.55	13.13	6.03	5.80	5.05
Croatia	*13 720*	42.1	*17 684*	58.2	62	74.1	3.02	7.18	5.19	4.87	4.08
Cyprus	*28 237*	86.6	*28 256*	93.0	97	89.3	3.85	4.45	4.14	3.97	4.31
Czech Republic	*18 288*	56.1	*24 869*	81.8	82	72.0	3.18	5.67	3.89	3.88	4.42
Denmark	*56 147*	172.2	*36 450*	119.9	125	142.5	4.96	2.88	4.14	3.97	3.48
Estonia	*14 836*	45.5	*18 519*	60.9	64	75.1	2.55	5.61	4.18	3.98	3.40
Finland	*44 489*	136.4	*34 585*	113.8	116	122.9	5.00	3.67	4.39	4.31	4.07
France	*41 019*	125.8	*34 077*	112.1	107	111.8	5.60	4.45	4.99	5.23	5.01
Germany	*40 631*	124.6	*36 033*	118.6	117	104.2	4.95	3.97	4.17	4.23	4.75
Greece	*27 302*	83.7	*28 434*	93.6	88	95.5	3.80	4.54	4.06	4.32	3.98
Hungary	*12 879*	39.5	*18 738*	61.7	63	65.5	2.60	6.58	4.22	4.13	3.97
Iceland	*39 026*	119.7	*36 621*	120.5	110	111	5.80	4.85	4.81	5.27	5.23
Ireland	*45 689*	140.1	*38 550*	126.9	127	118.2	8.55	6.10	6.74	6.73	7.23
Italy	*34 059*	104.4	*29 392*	96.7	100	103.6	4.50	4.31	4.65	4.50	4.34
Latvia	*10 695*	32.8	*14 460*	47.6	52	69.3	2.60	7.93	5.46	5.00	3.75
Lithuania	*11 044*	33.9	*17 185*	56.6	58	63.5	2.54	7.50	4.49	4.38	4.00

Luxembourg	*108 832*	333.7	*81 383*	267.8	274	119.9	4.20	1.26	1.57	1.53	3.50
Malta	*19 746*	60.5	*24 792*	81.6	83	78.9	3.80	6.28	4.66	4.58	4.82
Montenegro	*NA*	NA	*10 742*	35.3	NA	58.7	1.70	NA	4.81	NA	2.90
Netherlands	*47 172*	144.6	*40 765*	134.1	133	106.1	5.05	3.49	3.76	3.80	4.76
Norway	*84 444*	258.9	*52 013*	171.2	179	147	11.24	4.34	6.57	6.28	7.63
Poland	*12 300*	37.7	*18 936*	62.3	62	62.6	2.56	6.79	4.11	4.13	4.09
Portugal	*21 559*	66.1	*23 223*	76.4	81	87.6	3.70	5.60	4.84	4.57	4.22
Republic of Moldova	*1 630*	5.0	*3 083*	10.1	NA	NA	1.05	21.00	10.35	NA	NA
Romania	*7 542*	23.1	*11 860*	39.0	45	58.6	2.51	10.85	6.43	5.58	4.28
Russian Federation	*10 437*	32.0	*15 837*	52.1	NA	NA	1.25	3.91	2.40	NA	NA
Serbia	*5 233*	16.0	*10 830*	35.6	NA	NA	1.47	9.16	4.12	NA	NA
Slovakia	*16 104*	49.4	*22 129*	72.8	74	71.2	3.16	6.40	4.34	4.27	4.44
Slovenia	*23 706*	72.7	*28 030*	92.2	86	84	3.00	4.13	3.25	3.49	3.57
Spain	*30 639*	93.9	*29 742*	97.9	101	96.7	3.80	4.05	3.88	3.76	3.93
Sweden	*48 875*	149.9	*38 031*	125.2	123	119.8	5.26	3.51	4.20	4.28	4.39
Switzerland	*67 246*	206.2	*41 663*	137.1	148	148	5.30	2.57	3.87	3.58	3.58
The former Yugoslav Republic of Macedonia	*4 431*	13.6	*9 728*	32.0	35	44.3	1.94	14.28	6.06	5.54	4.38
Turkey	*10 399*	31.9	*13 464*	44.3	48	73.00	3.57	11.20	8.06	7.44	4.89
Ukraine	*3 000*	9.2	*6 712*	22.1	NA	NA	1.08	11.74	4.89	NA	NA
United Kingdom	*36 120*	110.7	*34 920*	114.9	114	100.3	7.46	6.74	6.49	6.54	7.44
European Union	*32 615*	100.0	*30 388*	100.0	100	100.0					

CPL, commodity price level; GDP, gross domestic product; NA, not available; PPP, purchasing power parity; PPS, purchasing power standard

Table 3.2. Indexes in 42 European countries : comparaison of price of a 20 cigarette pack of Malboro, crude (€) and standardized according to various indexes

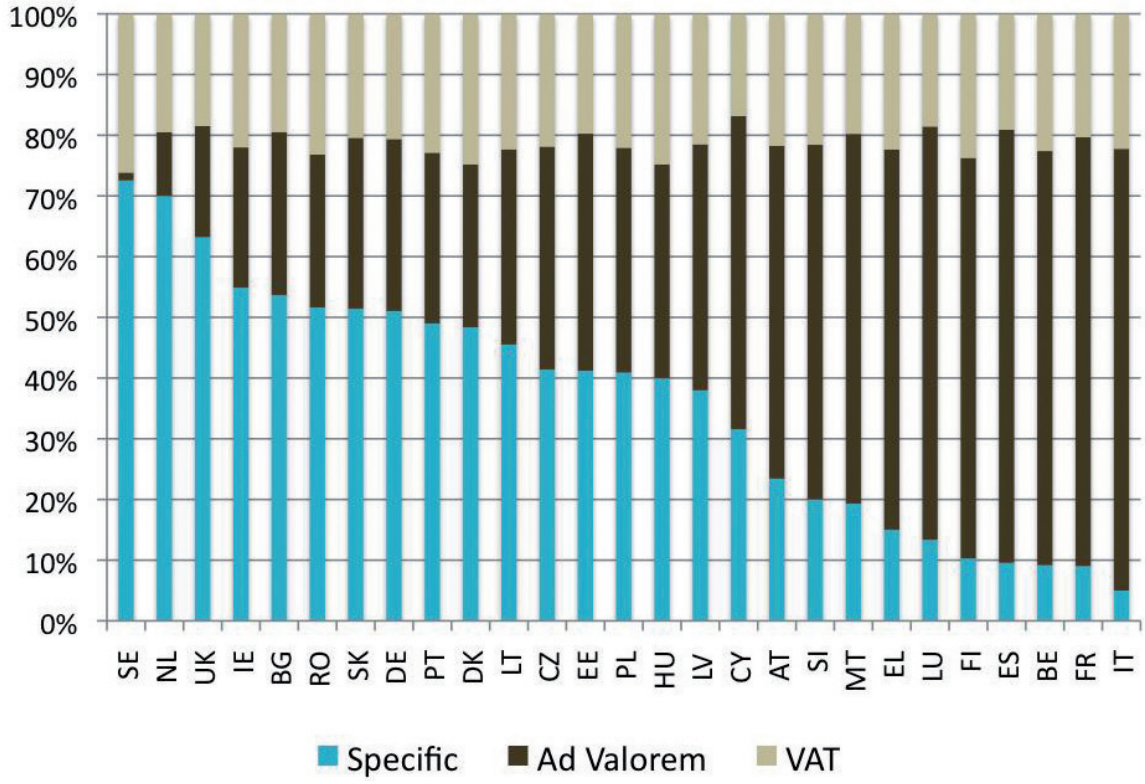

Figure 3.1. Specific and** ad valorem **excise and VAT as a percentage of the total tax burden in European Union Member States, 2011

3.2 Structures and rates of taxes as set out in excise directives

Member States of the European Union must apply a mixed structure with a minimum tax floor. Effective 1 January 2011 to 31 December 2013, the specific component applicable to cigarettes may not be less than 5% or more than 76.5% of the total tax burden, including the specific excise, and the *ad valorem* excise and VAT levied on the weighted average retail selling price. From 1 January 2014, the specific component must fall within the range 7.5–76.5% of the total tax burden. While the upper limit has been increased to enable those Member States that rely on a specific component to continue to apply increases in the interest of public health, the lower limit was not raised accordingly. Although such a measure is necessary to maintain a minimum level of harmonization, it was strongly opposed by some Member States. Consequently, the proportion of specific versus *ad valorem* excise and VAT as a percentage of the total tax burden varies widely across the European Union (Figure 3.1).

3.3 Adjustment of the overall minimum tax

As incomes and costs of living vary among Member States, the minimum monetary tax is currently set at only €64 per 1000 cigarettes. This minimum tax must be raised to €90 per 1000 cigarettes over the 5 years following the 2010 Directive. Even at this low level, some Member States, under pressure from tobacco companies, have negotiated for derogation for several years, to allow their taxes to remain even lower. This has the effect of causing governments to lose valuable tax revenue and increasing cigarette use and the prevalence of disease related to smoking (mainly in Member States with the highest smoking rates). This also aggravates problems of cross-border shopping by neighbours with higher taxes.

As incomes and costs of living vary among Member States and proposals for Directives require unanimous agreement among Member States, the minimum monetary tax required by the current Directive (2010/12/EC) is set at a low level (€64 per 1000 cigarettes). The overall minimum tax could be adjusted by the comparative price level or purchasing power parity, which are available for all European Union Member

States. The basic minimum tax could be set for the States with the lowest income and adjusted upwards for each other State. In countries with higher prices, the minimum would be set as above and adjusted upwards annually above inflation and income changes. The basic minimum tax would then be adjusted annually in line with inflation and income levels and the relative cost of living by comparative price level or purchasing power parity. For example, the minimum tax could be set at €125 per 1000 cigarettes for one low-price country and adjusted by comparative price level for all other countries.

To illustrate this adjustment, Gallus and colleagues *(2)* compared several indexes that could be used to adjust the monetary minimum tax to standardize the price of a pack of Marlboro cigarettes in 42 European countries. The indexes were GDP per capita, GDP based on purchasing power parity, GDP in purchasing power standard and comparative price level, all equal to 100 for the 27 Member States in 2010. Table 3.2 shows the comparison between the price of a pack of 20 Marlboro cigarettes after adjustment with these indexes for 42 countries. GDP per capita was available for 40 countries, GDP based on purchasing power parity for 41 countries, GDP in purchasing power standard for 34 and comparative price level for 34 countries. Table 3.3 shows the correlation coefficients between the various indexes. Table 3.4 shows discrepancies between the different measures of prices according to quintiles and shows that the choice of index has significant consequences for the price of a pack of cigarettes by country. For example, the Netherlands has a relatively low price (first quintile) when standardization by GDP on purchasing power parity or GDP in purchasing power standard is used but a relatively high price (fourth quintile) when adjusted for comparative price level. On the contrary, Latvia has a relatively low price (fourth quintile) when adjusted by comparative price level but a relatively high price (fourth quintile) when adjusted by GDP on purchasing power parity or in in purchasing power standard *(2)*.

The index considered for adjusting the overall monetary minimum tax should be: available for most countries (both Member States and candidate countries), provided by an institutional authority (Eurostat), stable, updated annually and published by a single source *(2)*.

Index	Price of one pack of Marlboro after standardization			
GDP per capita	1.00			
GDP based on PPP	0.70	1.00		
GDP in PPS	0.61	0.98	1.00	
CPL 2010	0.14	0.60	0.71	1.00
	GDP per capita	**GDP based on PPP**	**GDP in PPS**	**CPL 2010**

CPL, commodity price level; GDP, gross domestic product; PPP, purchasing power parity; PPS, purchasing power standard

Table 3.3. Correlation coefficients (r) among prices of 20-cigarette packs of Marlboro, after standardization for four indexes

Country	Vertical bars: index for price standardization							
	GDP per capita	GDP on PPP	GDP in PPS	CPL 2010	GDP per capita	GDP based on PPP	GDP in PPS	CPL 2010
Luxembourg*	1.26	1.57	1.53	3.50	I	I	I	IIII
Belarus	5.90	2.29	NA	NA	IIIIIIIIIIIIIIIIIIIII	II	NA	NA
Russian Federation	3.91	2.40	NA	NA	IIIIIIIII	III	NA	NA
Austria*	3.04	3.22	3.33	3.92	IIII	IIII	II	IIIIIIII
Slovenia*	4.13	3.25	3.49	3.57	IIIIIIIIIIII	IIIII	III	IIIII
Netherlands*	3.49	3.76	3.80	4.76	IIIII	IIIIII	IIIIII	IIIIIIIIIIIIIIIIIIIIIIII
Switzerland	2.57	3.87	3.58	3.58	II	IIIIIII	IIII	IIIIII
Spain*	4.05	3.88	3.76	3.93	IIIIIIIIIII	IIIIIIII	IIIII	IIIIIIII
Czech Republic*	5.67	3.89	3.88	4.42	IIIIIIIIIIIIIIIIIII	IIIIIIII	IIIIIII	IIIIIIIIIIIIIIIIIIII
Greece*	4.54	4.06	4.32	3.98	IIIIIIIIIIIIIII	IIIIIIIII	IIIIIIIIIIIIIIII	IIIIIIIIII
Poland*	6.79	4.11	4.13	4.09	IIIIIIIIIIIIIIIIIIIIIIII III	IIIIIIIIII	IIIIIIIIIII	IIIIIIIIIIIII
Serbia	9.16	4.12	NA	NA	IIIIIIIIIIIIIIIIIIIIIIII IIIIIII	IIIIIIIIIII	NA	NA
Denmark*	2.88	4.14	3.97	3.48	III	IIIIIIIIIIII	IIIIIII	III
Cyprus*	4.45	4.14	3.97	4.31	IIIIIIIIIIIII	IIIIIIIIIIIII	IIIIIIII	IIIIIIIIIIIIIII
Belgium*	3.79	4.17	4.16	4.44	IIIIIIII	IIIIIIIIIIIII	IIIIIIIIIII	IIIIIIIIIIIIIIIIIII
Germany*	3.97	4.17	4.23	4.75	IIIIIIIII	IIIIIIIIIIIII	IIIIIIIIIII	IIIIIIIIIIIIIIIIIIIII
Estonia*	5.61	4.18	3.98	3.40	IIIIIIIIIIIIIIIII	IIIIIIIIIIIII	IIIIIIIII	II
Sweden*	3.51	4.20	4.28	4.39	IIIIII	IIIIIIIIIIIIIII	IIIIIIIIIIIII	IIIIIIIIIIIIIIII
Hungary*	6.58	4.22	4.13	3.97	IIIIIIIIIIIIIIIIIIIII	IIIIIIIIIIIIIII	IIIIIIIIII	IIIIIIIII
Slovakia*	6.40	4.34	4.27	4.44	IIIIIIIIIIIIIIIIIIII	IIIIIIIIIIIIIII	IIIIIIIIIII	IIIIIIIIIIIIIIIII
Finland*	3.67	4.39	4.31	4.07	IIIIIII	IIIIIIIIIIIIIII	IIIIIIIIIIIII	IIIIIIIIIII
Lithuania*	7.50	4.49	4.38	4.00	IIIIIIIIIIIIIIIIIIII IIIII	IIIIIIIIIIIIIII	IIIIIIIIIIIII	IIIIIIIIII
Italy*	4.31	4.65	4.50	4.34	IIIIIIIIIII	IIIIIIIIIIIIIIII	IIIIIIIIIIIIII	IIIIIIIIIIIII
Malta*	6.28	4.66	4.58	4.82	IIIIIIIIIIIIIIIIIII	IIIIIIIIIIIIIIIIIII	IIIIIIIIIIIIIIIII	IIIIIIIIIIIIIIIIIII

Montenegro	NA	4.81	NA	2.90	NA	IIIIIIIIIIIIIIIIIIIIIIIII	NA	I
Iceland	4.85	4.81	5.27	5.23	IIIIIIIIIIIIIIIII	IIIIIIIIIIIIIIIIIIIIIIIII	IIIIIIIIIIIIIIIIIIIIIIIIII	IIIIIIIIIIIIIIIIIIIIIIIIII IIIIII
Portugal*	5.60	4.84	4.57	4.22	IIIIIIIIIIIIIIIII	IIIIIIIIIIIIIIIIIIIIIIIII	IIIIIIIIIIIIIIIIIII	IIIIIIIIIIIIIII
Ukraine	11.74	4.89	NA	NA	IIIIIIIIIIIIIIIIIIIIIIIII IIIIIIII	IIIIIIIIIIIIIIIIIIIIIIIII	NA	NA
France*	4.45	4.99	5.23	5.01	IIIIIIIIIIIIIII	IIIIIIIIIIIIIIIIIIIIIIIIII	IIIIIIIIIIIIIIIIIIIIIII	IIIIIIIIIIIIIIIIIIIIIIIIIIIII
Croatia	7.18	5.19	4.87	4.08	IIIIIIIIIIIIIIIIIIIIIIIIII	IIIIIIIIIIIIIIIIIIIIII IIIIII	IIIIIIIIIIIIIIIIIII	IIIIIIIIIIIII
Latvia*	7.93	5.46	5.00	3.75	IIIIIIIIIIIIIIIIIIIIIII IIIIII	IIIIIIIIIIIIIIIIIIIIIII IIIIII	IIIIIIIIIIIIIIIIIIIII	IIIIIII
Albania	12.86	5.91	5.00	NA	IIIIIIIIIIIIIIIIIIIIIIIII IIIIIIII	IIIIIIIIIIIIIIIIIIIIIII IIIIIII	IIIIIIIIIIIIIIIIIIIIII	NA
Bulgaria*	13.13	6.03	5.80	5.05	IIIIIIIIIIIIIIIIIIIIIIIII IIIIIIIII	IIIIIIIIIIIIIIIIIIIIIII IIIIII	IIIIIIIIIIIIIIIIIIIII IIIIII	IIIIIIIIIIIIIIIIIIIIII IIIII
The former Yugoslav Republic of Macedonia	14.28	6.06	5.54	4.38	IIIIIIIIIIIIIIIIIIIIIIIII IIIIIIIII	IIIIIIIIIIIIIIIIIIIIIII IIIIIII	IIIIIIIIIIIIIIIIIIIIIIII	IIIIIIIIIIIIIIIII
Romania*	10.85	6.43	5.58	4.28	IIIIIIIIIIIIIIIIIIIIIII IIIIIII	IIIIIIIIIIIIIIIIIIIIIII IIIIIIII	IIIIIIIIIIIIIIIIIIIIIIIII	IIIIIIIIIIIIIII
United Kingdom*	6.74	6.49	6.54	7.44	IIIIIIIIIIIIIIIIIIIIIIII	IIIIIIIIIIIIIIIIIIIIIII IIIIIIII	IIIIIIIIIIIIIIIIIIIII IIIIII	IIIIIIIIIIIIIIIIIIIIII IIIIII
Norway	4.34	6.57	6.28	7.63	IIIIIIIIIIII	IIIIIIIIIIIIIIIIIIIIII IIIIIIII	IIIIIIIIIIIIIIIIIIIII IIIII	IIIIIIIIIIIIIIIIIIIIII IIIIIII
Ireland*	6.10	6.74	6.73	7.23	IIIIIIIIIIIIIIIIIIIII	IIIIIIIIIIIIIIIIIIIIII IIIIIIII	IIIIIIIIIIIIIIIIIIIIII IIIIII	IIIIIIIIIIIIIIIIIIIIII IIIIII
Bosnia and Herzogovina	15.48	8.00	NA	NA	IIIIIIIIIIIIIIIIIIIIIIIII IIIIIIIII	IIIIIIIIIIIIIIIIIIIIIII IIIIIIII	NA	NA
Turkey	11.20	8.06	7.44	4.89	IIIIIIIIIIIIIIIIIIIIIII IIIIIII	IIIIIIIIIIIIIIIIIIIIIII IIIIIIII	IIIIIIIIIIIIIIIIIIIII IIIIIII	IIIIIIIIIIIIIIIIIIIIIIII
Republic of Moldova	21.00	10.35	NA	NA	IIIIIIIIIIIIIIIIIIIIIIIII IIIIIIIII	IIIIIIIIIIIIIIIIIIIIIII IIIIIIIII	NA	NA

Coloured cells represent quintiles, light-grey representing the first quintile and dark-grey the last quintile of price. The number of vertical bars represents the ordinal position of each country according to price of one Marlboro pack, standardized for each index.

CPL, commodity price level; GDP, gross domestic product; NA, not available; PPP, purchasing power parity; PPS, purchasing power standard

Member State of the European Union

Table 3.4. Visual comparaison of the price of a pack of Malboro (2010) after standardization for four indexes (ordered by price adjusted by GDP on PPP in 42 European countries

Year	Cigarettes (EUR per 1000 cigarettes)	Fine-cut smoking tobacco (EUR per kilogram)	Cigars & cigarillos (EUR per 1000 items or kilogram)	Other smoking tobacco (EUR per kilogram)
2011	64	40	12	22
2013		47		
2014	90*			
2015		54		
2018		60		
2020		60		

Derogation until 2017 for Bulgaria, Estonia, Greece, Latvia, Lithuania, Hungary, Poland and Romania

Table 3.5. Overall excise duty minima by tobacco product type as established in Directive 2010/12/EU

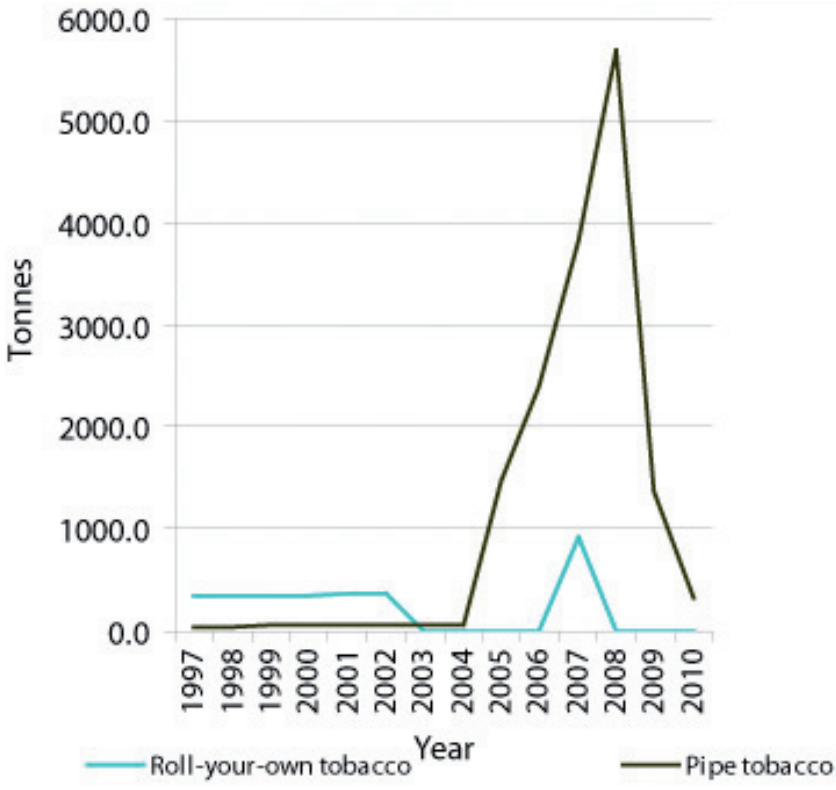

Figure 3.2. Retail volumes of pipe and hand-rolling tobacco in Poland, 1997–2010
From reference (5)

3.4 Differential taxation of tobacco products

Directive 2010/12/EU applies different overall minimum rates to different tobacco products (Table 3.5). Price differences among products provide an incentive for tobacco companies to innovate and exploit preferential excise rates and an incentive for consumers to substitute cheaper products for more expensive ones when faced with tax increases. When tax structures allow price differences among brands within a product type, tax increases create an incentive for consumers to switch to cheaper brands within a product type. The effects of differences in tobacco tax rates and prices and the associated policy implications are discussed below.

In the interests of 'uniform and fair taxation', Directive 2010/12/EU clarified the definitions of cigarettes, cigars, cigarillos and fine-cut and other smoking tobacco to address product innovations designed to exploit preferential excise rates.

A case study of industry influence in Poland, conducted by Clifford and colleagues for WP5 *(3)*, shows how the industry exploited the lack of a legal distinction between pipe and hand-rolling tobacco. In Poland, there was a dramatic increase in the sales of hand-rolling tobacco between 2002 and 2004 (Figure 3.2). The Government responded by increasing the excise on hand-rolling tobacco, making it as expensive as the cheapest cigarettes. After this excise increase in 2004, sales of pipe tobacco rose dramatically, and, shortly thereafter, there was a fall in the market share of hand-rolling tobacco, from 8% to 1.5%. A similar pattern was seen elsewhere recently *(4)*. This suggests that hand-rolling tobacco was being inappropriately sold as pipe tobacco to capitalize on the lower excise levels on pipe tobacco.

The tighter definitions of tobacco products introduced in Directive 2010/12/EU do not adequately address this problem: the lack of a legal distinction between smoking tobacco that is and is not intended for rolling makes it possible to sell fine-cut tobacco at the lower tax rate, by claiming that it is

'not intended' for rolling. While the excise on fine-cut tobacco intended for rolling into cigarettes is to increase substantially in steps until 2020, there is no stipulated requirement for a similar increase in excise on other smoking tobacco, widening the difference between the excise rates on the two product categories. Unless tobacco excise rates are harmonized for all tobacco product types, the transnational tobacco companies can be expected to continue product innovation in order to exploit loopholes in product definitions and benefit from preferential rates *(3)*.

3.5 Substitution of hand-rolling tobacco for cigarettes

As early as 2002, Commission reviews of directives related to tobacco excise acknowledged that excise rates on fine-cut tobacco should be aligned with those applied to cigarettes in order to discourage substitution. Reviews before the 2010 Directive also recommended better alignment of rates for fine-cut tobacco and cigarettes and a gradual upwards adjustment of rates on fine-cut tobacco. Specifically, a report commissioned from KPMG concluded that price differences between cigarettes and fine-cut rolling tobacco encouraged substitution and recommended a gradual increase in the excise duty on fine-cut tobacco, so that it would reach two thirds of the overall minimum excise for tobacco.

Between 2002 and 2010, per capita (≥ 15 years) releases for consumption of fine-cut tobacco for hand-rolled cigarettes increased in many European Union countries

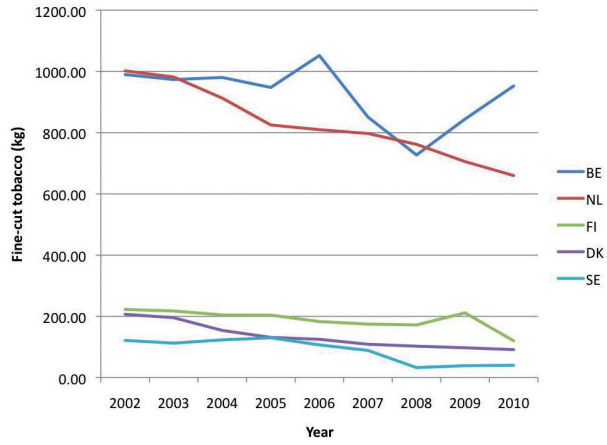

Figure 3.3. Releases for consumption per capita (≥ 15 years) of fine-cut tobacco in Belgium, Denmark, Finland, the Netherlands and Sweden, 2002–2010

From http://ec.europa.eu/taxation_customs/resources/documents/taxation/excise_duties/tobacco_products/rates/tobacco_releases_consumption.pdf.

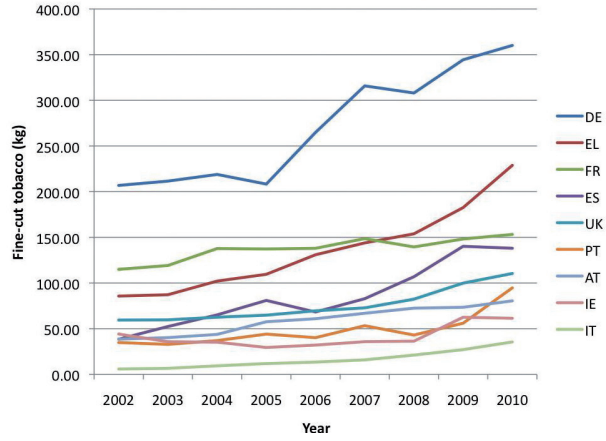

Figure 3.4. Releases for consumption per capita (≥ 15 years) of fine-cut tobacco in Austria, France, Germany, Greece, Ireland, Italy, Portugal, Spain and the United Kingdom, 2002–2010

From http://ec.europa.eu/taxation_customs/resources/documents/taxation/excise_duties/tobacco_products/rates/tobacco_releases_consumption.pdf.

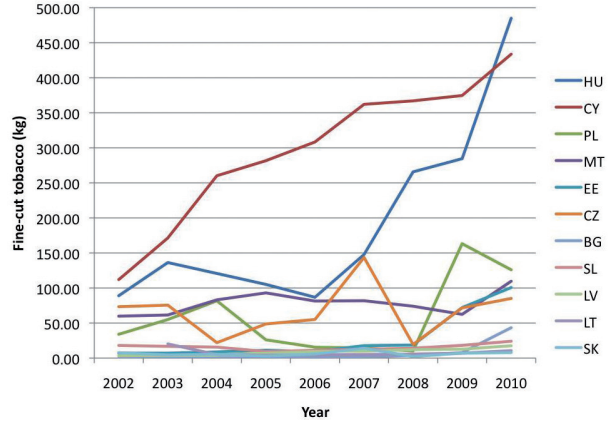

Figure 3.5. Releases for consumption per capita (≥ 15 years) of fine-cut tobacco in 11 other European countries, 2002–2010

http://ec.europa.eu/taxation_customs/resources/documents/taxation/excise_duties/tobacco_products/rates/tobacco_releases_consumption.pdf.

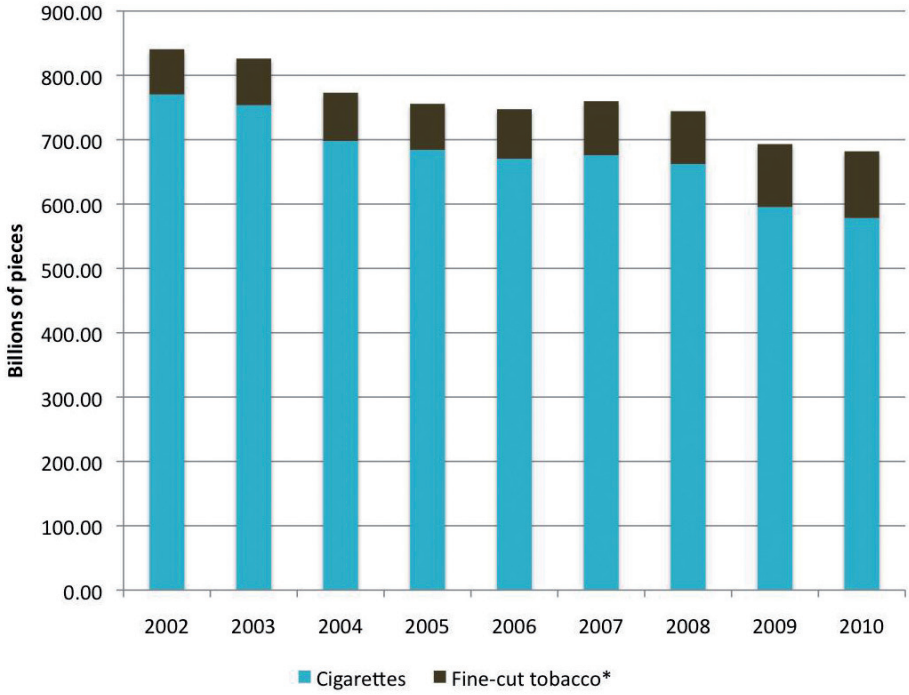

Figure 3.6. Releases for consumption of cigarettes and fine-cut tobacco in the 27 European Union Member States (except Romania), 2002–2010

From http://ec.europa.eu/taxation_customs/resources/documents/taxation/excise_duties/tobacco_products/rates/tobacco_releases_consumption.pdf.

Fine-cut tobacco converted to billions of pieces on the basis that 0.8 g of fine-cut tobacco is equivalent to one cigarette per piece

(Figures 3.3–3.5). Notable exceptions to this trend were Belgium and the Netherlands, where per capita consumption of hand-rolling tobacco had been consistently higher than in other European Union countries since 2002 but had decreased slightly by 2010. Other exceptions were Denmark, Finland and Sweden, where marked reductions in per capita releases of hand-rolling tobacco for consumption were observed (Figure 3.3). According to these data, marked increases in releases of fine-cut tobacco were seen in Cyprus, Germany, Greece, Hungary, Poland and Spain.

Overall, the releases for consumption of tobacco within the European Union (excluding Romania) decreased between 2002 and 2010; however, the share of fine-cut tobacco increased (Figure 3.6).

Figures 3.7 and 3.8 show the shares of fine-cut tobacco and cigarettes as a percentage of total releases for consumption in 2002 and 2010, respectively. In most countries, the share of fine-cut tobacco increased between 2002 and 2010, but it remained at less than 10% in over half of European Union Member States.

At present all countries tax fine-cut tobacco for hand-rolled cigarettes at a lower rate than manufactured cigarettes. As a result, in many European Union countries, smokers have been switching from manufactured cigarettes to hand-rolled cigarettes. An estimate of the cross-price elasticity of demand for hand-rolling tobacco with respect to cigarette price, based on an econometric analysis of over 40 years of aggregate time-series data from Finland (WP3), suggests that hand-rolling tobacco use is a substitute for cigarettes in Finland, with a cross-price elasticity estimate of 1.7. This implies that a 10% increase in cigarette price increases consumption of hand-rolling tobacco by 17% *(6)*. Cross-sectional, self-reported data from 19 European Union Member States, however, show no correlation between the price of a pack of cigarettes, standardized by purchasing power standards, and the proportion of hand-rolled cigarettes on total cigarette consumption. While the former analysis is more robust, it is limited to one country. The latter analysis suggests that, at least in some European countries, price differences between brands of manufactured cigarettes do not explain the high prevalence of hand-rolling tobacco use.

Furthermore, the proportion of smokers of hand-rolling tobacco was highest in England (32%), France (17%) and Finland (14%) (WP2) *(7)*. European Commission data on releases for consumption suggest that per capita consumption among people aged 15 years and over has risen in the European Union overall and markedly in Cyprus, Germany, Greece, Hungary, Poland and Spain. Furthermore, the share of fine-cut tobacco as a proportion of total releases for consumption (cigarettes and fine-cut) has risen in the European Union, with a corresponding reduction in the share of cigarettes. Some tobacco companies are exploiting this tax difference further by selling kits to convert hand-rolling tobacco into cigarettes at a much lower rate. The preferential excise rate on fine-cut tobacco gives cigarette smokers a cheaper alternative, and they may

switch to hand-rolled cigarettes when the tax on manufactured cigarettes increases, allowing them to maintain their consumption. As a result, the efficacy of cigarette tax increases for controlling tobacco use is drastically reduced.

Directive 2010/12/EU provides for substantial increases in excise rates on fine-cut tobacco between 2010 and 2020. Specifically, the Directive states that "Member States shall apply an excise duty which may be: a) either an *ad valorem* duty calculated on the basis of the maximum retail selling price of each product, freely determined by manufacturers established in the Union and by importers from third countries…; or b) a specific duty expressed as an amount per kilogram…; or c) a mixture of both, combining an *ad valorem* element and a specific element" (176/29). The Directive also establishes that, effective 1 January 2011, rates applying to fine-cut tobacco must be at least 40% of the weighted average retail selling price, or €40 per kilogram, increasing to 50% of the weighted average price or €60 per kilogram by 2020, with established milestones that must be achieved by 2013, 2015 and 2018.

While the current Directive is a step in the right direction, PPACTE findings suggest that the increases it established do not go far enough to reduce the incentive for consumers to substitute preferentially taxed and thus cheaper fine-cut tobacco for cigarettes.

To levy comparable rates of excise on fine-cut tobacco for rolling cigarettes and on manufactured cigarettes, the weight of tobacco

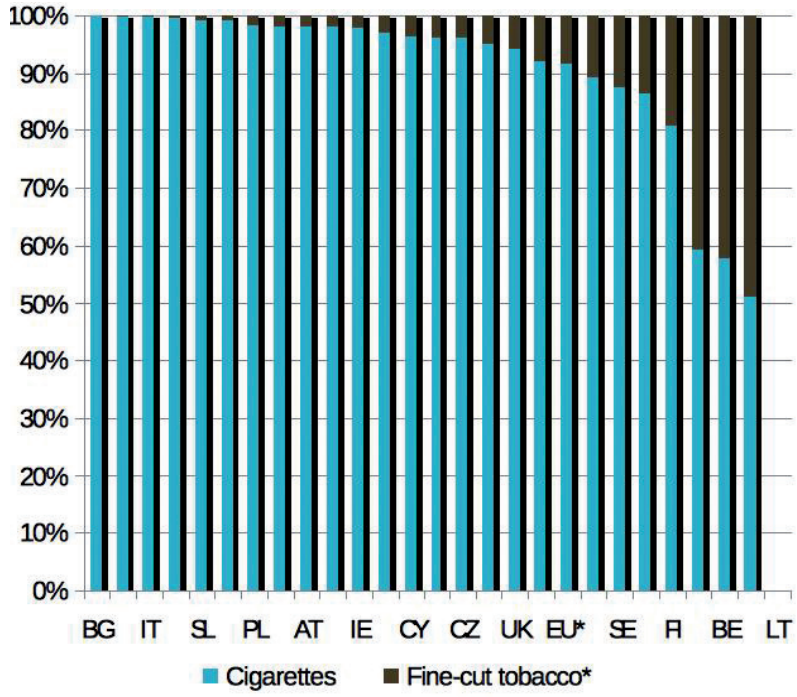

Figure 3.7. Manufactured cigarettes and fine-cut tobacco as a percentage of releases for consumption, 2002

From http://ec.europa.eu/taxation_customs/resources/documents/taxation/excise_duties/tobacco_products/rates/tobacco_releases_consumption.pdf.

Fine-cut tobacco converted to billions of pieces on the basis that 0.8 g of fine-cut tobacco is equivalent to one cigarette per piece

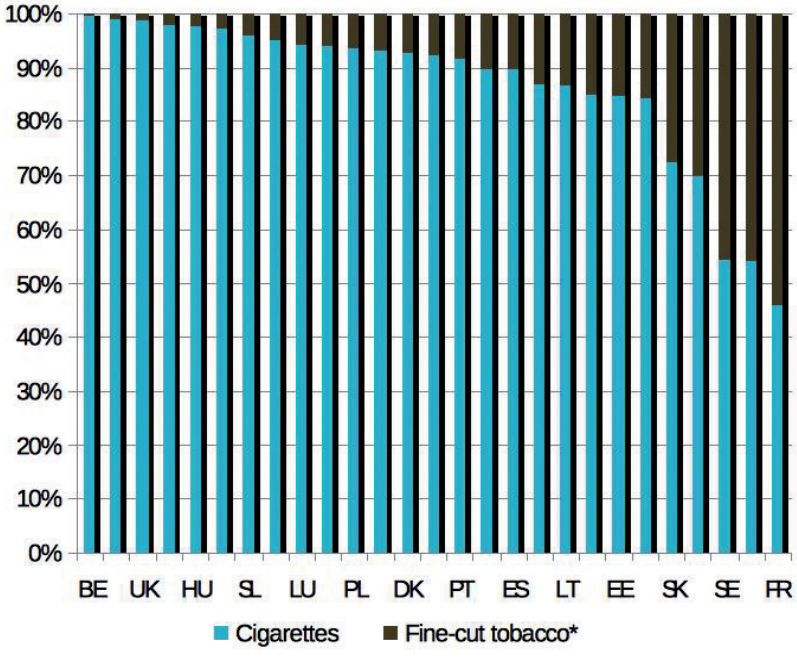

Figure 3.8. Manufactured cigarettes and fine-cut tobacco as a percentage of releases for consumption, 2010

From http://ec.europa.eu/taxation_customs/resources/documents/taxation/excise_duties/tobacco_products/rates/tobacco_releases_consumption.pdf.

Fine-cut tobacco converted to billions of pieces on the basis that 0.8 g of fine-cut tobacco is equivalent to one cigarette per piece

used to prepare hand-rolled cigarettes and manufactured cigarettes must be established. The current conversion rate suggests that 1 kg of fine-cut tobacco is equivalent to 1000 cigarettes (1 g = 1 cigarette); however, this is considered to be inaccurate, particularly with the increasing use of dry ice-expanded tobacco manufacturing processes, which reduces the mass of tobacco in a manufactured cigarette. According to the ISO norm on measuring tar and nicotine in hand-rolled cigarettes (ISO 15592–3), there are 0.4–0.75 g of tobacco per hand-rolled cigarette. This suggests that 1333–2500 hand-rolled cigarettes can be made from 1 kg of fine-cut tobacco, rather than 1000.

An estimate of the average weight in grams of a hand-rolled cigarette was obtained from data in the PPACTE WP2 survey on daily consumption of and weekly expenditure on manufactured and hand-rolled cigarettes. Respondents were asked to show or recall the weight in grams of the last pack of hand-rolling tobacco they had purchased and how much they paid for it. The weight in grams per cigarette was calculated on the basis of data for 185 smokers of hand-rolled cigarettes:

Grams per cigarette = weekly expenditure / cost of latest pack x grams per pack / days per week / cigarettes per day

Table 3.6 shows the mean (± standard deviation), median and interquartile range of the weight of one hand-rolled cigarette,

	N	Mean (± SD)	Median (IQ range)
Total	**185**	**0.94 (± 0.54)**	**0.79 (0.56–1.22)**
Country			
England	37	0.70 (± 0.51)	0.50 (0.38–0.71)
Finland	28	1.11 (± 0.42)	1.11 (0.76–1.38)
France	32	1.13 (± 0.58)	0.89 (0.80–1.39)
Greece	37	0.69 (± 0.28)	0.59 (0.48–0.89)
Ireland	12	0.74 (± 0.41)	0.54 (0.47–0.85)
Spain	13	1.26 (± 0.58)	1.15 (0.75–1.63)
Others	26	1.18 (± 0.63)	1.04 (0.71–1.70)
Sex			
Male	130	0.94 (± 0.51)	0.75 (0.56–1.29)
Female	55	0.97 (± 0.60)	0.86 (0.48–1.19)
Age group (years)			
< 25	32	0.76 (± 0.30)	0.70 (0.55–0.93)
25–44	79	1.02 (± 0.60)	0.86 (0.56–1.38)
45–64	67	0.95 (± 0.54)	0.76 (0.58–1.29)
≥ 65	7	0.84 (± 0.50)	0.57 (0.36–1.19)
Education			
Low	49	0.99 (± 0.57)	0.86 (0.58–1.30)
Medium	77	0.92 (± 0.58)	0.72 (0.48–1.19)
High	59	0.93 (± 0.44)	0.88 (0.56–1.22)
Cigarette consumption (per day)			
< 20	111	0.99 (± 0.55)	0.86 (0.56–1.29)
≥ 20	74	0.88 (± 0.51)	0.71 (0.56–1.14)

From PPACTE WP2 Survey, 2010
IQ, interquartile

Table 3.6. Weight of one hand-rolled cigarette overall and by country, sex, age, education and smoking intensity

overall and stratified by country, sex, age, education and number of cigarettes per day. As estimates for 'heavy smokers' (those smoking > 20 cigarettes per day) and the median rather than the mean are likely to be more accurate, 0.7–0.8 g per hand-rolled cigarette appears to be a reasonable estimate of the weight. This implies that 1 kg of fine-cut tobacco yields 1250.0–1482.6 cigarettes, a narrower and lower range than that indicated by the ISO standards.

3.6 Down-trading from more expensive to cheaper brands

When faced with tobacco tax increases, price-sensitive consumers may continue smoking manufactured cigarettes but 'trade down' to a cheaper brand rather than switching to a cheaper product (e.g. hand-rolled cigarettes). Industry pricing can undermine the effectiveness of tobacco tax increases by creating price differentials between brands, so that consumers can trade down to cheaper brands when taxes increase. Industry activities to undermine tobacco excise policy are described in detail in Chapter 5 and elsewhere *(4, 8–10)*; a brief summary of the findings and implications for tax structures and rates are given here.

Detailed analysis of data from the British market suggests that a multifaceted strategy is being used to keep prices low on the ultra-low price segment of the cigarette market. Between 2006 and 2009, the gap between the most and least expensive brands widened, with a broader range of prices available within each segment; the weighted average price of ultra-low price brands did not increase in real terms, while the average prices of the other brand segments did. An examination of trends in the prices of the best-selling brands during the same period showed that the price of ultra-low-price brands increased by less than 1%, with real price (i.e. inflation-adjusted) decreases in some cases. Meanwhile, the price of premium brands increased by 3–5% and the price of mid-price and economy brands by 5–6%. Furthermore, examination of patterns of price changes (net of tax) over the same 3-year period suggests that, while tax increases are generally being over-shifted, tax increases are under-shifted on the ultra-low-price brands.

Taken together, these findings suggest that the industry is cross-subsidizing cheaper brands with profits from more expensive brands *(8)*. As a result of this pricing strategy and the growth in the number of ultra-low-price brands, consumers have greater opportunities to down-trade from more expensive to cheaper cigarettes—and the market share of ultra-low-price brands has increased in response. These findings, combined with an analysis of British survey data showing who is smoking these cheap cigarettes (see Chapter 6) *(8)*, industry documents on the role of cheap cigarettes *(11)*, industry's willingness to under-shift taxes *(9)* plus interviewee responses in the WP5 country case studies *(9)*, suggest that the availability of cheap cigarettes undermines tobacco tax policy, allowing price-sensitive smokers—particularly the young and poor—to continue to initiate and maintain their smoking habits. While this analysis is based on British data, Euromonitor data suggest that the market share of cheap cigarettes is growing in other countries, including Austria, the Czech Republic, Denmark, Hungary, Lithuania, Portugal, Slovakia and Sweden *(12)*.

Under-shifting of tobacco taxes can be discouraged by substantially increasing tobacco excise taxes with a predominantly specific excise. Furthermore, an excise structure that is predominantly specific or has a high minimum floor and a low *ad valorem* component helps to reduce the price differential between the highest- and lowest-priced brands.

While over-shifting of excise increases is not a public health issue, it reflects a missed opportunity for governments to increase excise rates and thus increase revenues *(9)*. It is clear that the transnational tobacco companies prefer small, gradual tax increases *(4, 9, 10)*, and evidence is beginning to appear that gradual tax increases are more easily absorbed by consumers and therefore facilitate tax over-shifting, leading to greater industry profit margins *(9)*. Large excise increases are likely to benefit public health to a greater extent than incremental increases *(9)*, the difference accruing as government revenue rather than industry profit *(13)*. Further empirical work is needed to explore this issue.

3.7 Reference value for calculating tax incidence

Before implementation of Directive 2010/12/EU, the reference value for calculating tax incidence was the most popular price category, which is the category of cigarettes sold most during the previous

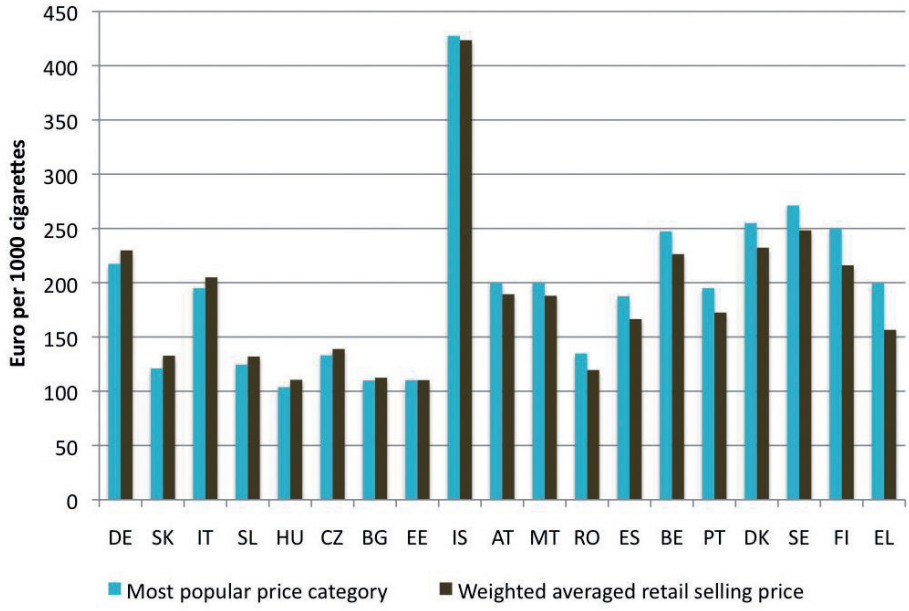

Figure 3.9. Comparison of most popular price category per 1000 cigarettes and weighted average retail selling price per 1000 cigarettes in the European Union, in euros

From European Commission excise duty tables, 2011

year. The report commissioned by the European Commission from KPMG included several criticisms of the most popular price category concept. First, it was differentially interpreted and applied in different Member States. Further, the most popular price category can be the cheapest category in some Member States and the highest in others, not necessarily reflecting their purchasing power. Secondly, the impact of the most popular price category on the total market was hard to measure. Thirdly, the most popular price category in the current year is based on data for the previous year. Fourthly, it is open to manipulation by the tobacco industry.

In response to these criticisms, Directive 2010/12/EU established use of the weighted average price as the reference value. The weighted average selling price is calculated in reference to the total value of all cigarettes released for consumption, based on the retail selling price including all taxes, divided by the total quantity of cigarettes released for consumption in the preceding calendar year. A comparison of the overall weighted average price, the retail price index for cigarettes (United Kingdom Government measure for cigarettes) and the most popular price category in the United Kingdom between 2001 and 2010 indicated that the last two give an inflated picture of cigarette price increases over time (Figure 3.9) *(8)*. Use of the most popular price category to assess the impact of increases in tobacco taxation on the retail price of and demand for cigarettes is flawed, in that it can under- or overstate the increase in cigarette taxes depending on whether the most popular price category is in the high price category, as in the United Kingdom, or in a lower price category. Figure 3.9 shows a comparison of the most popular price category and weighted average price as of January 2011 in the European Union. While the weighted average price is a more stable, transparent measure than the most popular price category for monitoring price trends, price trends must also be monitored by price segment.

3.8 Tobacco tax structures and rates in eastern border countries: the Russian Federation and the Ukraine

As mentioned in Chapter 1, tobacco taxation in the European Union is complicated and is undermined by the presence of an extensive eastern land border with Belarus, the Russian Federation and the Ukraine, countries with high prevalences of smoking, very low real prices of tobacco products and relatively weak tobacco control policies. This border compromises the policing of illicit trade and exaggerates grey-market activity, particularly in the new European Union Member States, with implications for government revenues and public health. Given the effect of tobacco tax policy in these neighbouring countries for policy in the European Union, PPACTE commissioned reports on the Ukraine (conducted by H Ross, M Stoklosa and K Krasovsky) *(14)* and the Russian Federation (conducted by H Ross, M Stoklosa and P Kuznetsova) *(15)*, which are summarized below.

Cigarette excise tax policy in the Ukraine

Shortly after gaining independence from the Soviet Union, the Ukraine passed a law setting the excise tax on cigarettes to 70% of the ex-factory price in January 1993. This tax was gradually reduced in 1994 to 40% and 10% of the ex-factory

price for filtered and unfiltered cigarettes, respectively, as a result of tobacco industry lobbying *(16)*. This tax cut resulted in lower-than-expected tax revenues, prompting the Government to improve tax collection by introducing excise tax stamps in 1996 *(17)* and to increase cigarette excise taxes each year between 1996 and 1999. In 1996, the *ad valorem* excise tax was replaced by a specific excise tax (16), and by 1999 it reached UAH10 (€2.2) per 1000 filtered and UAH7 (€R1.5) per 1000 unfiltered cigarettes, representing on average 8.6% of the retail price for filtered cigarettes. Starting in July 1999, an *ad valorem* excise tax of 5% of the wholesale price of both filtered and unfiltered cigarettes was introduced, in addition to the specific tax. This tax increase was earmarked entirely for the country's pension fund. In May 2001, the 5% earmarked tax was replaced by an earmarked specific tax of UAH2.5 per 1000 cigarettes. The tax earmarking ended in January 2004 with a complete overhaul of the tobacco excise system, and the specific excise system was replaced by a mixed system with both *ad valorem* and specific components. This time, the *ad valorem* excise tax rate was based on the retail rather than the ex-factory cigarette price in order to avoid tobacco industry tax circumvention[1]. The tax base plays an important role, as it is directly related to the tax burden[2]. This change in the tax system resulted in at least a 9% increase in the cigarette excise tax *(14, 17)*.

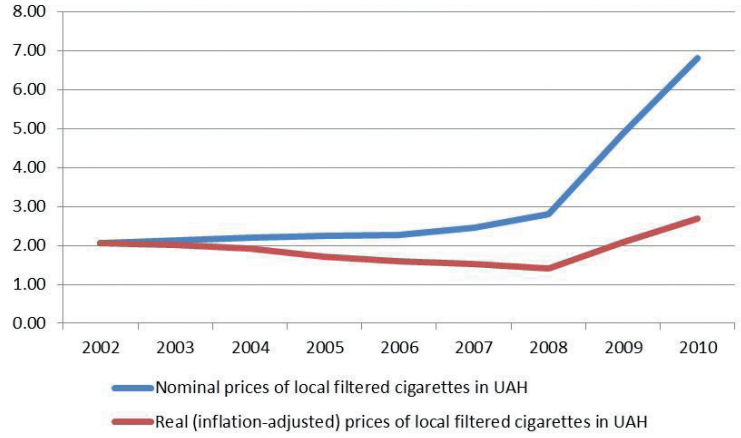

Figure 3.10. Nominal and real prices of cigarettes in the Ukraine, 2002–2010
2002 is the base year for inflation adjustment.
Cigarette prices from reference (18) and inflation from reference (19)

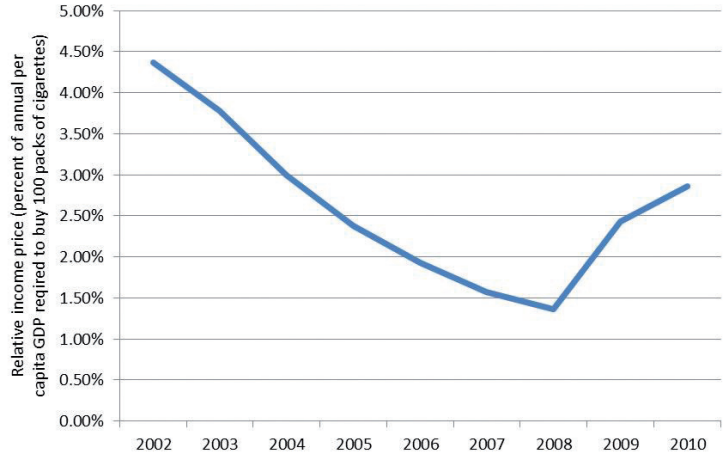

Figure 3.11. Relative income price (affordability) of cigarettes in the Ukraine, 2002–2010
The relative income price is the percentage of annual per capita income (measured as gross domestic product) required to purchase 100 packs of cigarettes; the lower the price, the more affordable cigarettes are. Cigarette prices from reference (18), gross domestic product from reference (19) and method from reference (20)

The Government of the Ukraine began to formulate comprehensive tobacco control policies in late 2005, adopting a tobacco control law that included annual increases in tobacco excise taxes *(14)*. Additionally, in 2006, the Ukraine ratified the WHO FCTC. Article 6 of the Convention calls for implementation of tax and price policies on tobacco products by each Party in order to reach health objectives, including reducing tobacco consumption. There were, however, only modest increases in cigarette taxes between 1999 and 2008. In 2008, the Ukrainian Parliament approved multiple,

1 *This tax circumvention consisted of the industry selling cigarettes to distributors at a reduced price in order to reduce its ad valorem tax liability while recovering a large share of the retail margin from the distributors in a separate transaction (4).*

2 *A change in the tax base changes the tax burden (the amount of tax collected per pack) even if the tax rate stays constant. In the Ukraine, the base for the ad valorem excise tax was the ex-factory price in the 1990s, the maximum retail price minus VAT minus total excise between 2004 and 2009 and the maximum retail price minus VAT from 2009 to the present. These changes facilitated an increase in the cigarette tax burden.*

sizeable tax increases, in part as a response to the Government's budgetary crisis.

Until the sizeable tax increase in September 2008, cigarette prices grew very little and did not keep pace with inflation. Between 2002 and 2008, the real (inflation-adjusted) price of filtered cigarettes in the Ukraine fell by nearly one third, and rising disposable income made cigarettes even more affordable. In addition, owing to the relatively small share of tax in retail prices, the tobacco industry was able to absorb part of the tax increase, thus contributing to the decline in real cigarette prices *(14)*.

The large increases in tobacco taxes in 2009 and 2010 could no longer be absorbed by the industry, and cigarette prices began to rise. The industry increased the cigarette prices more than the tax increase in order to increase its profit margins *(14)*. As a result of both the tax policy and the industry price strategy, the real price of filtered cigarettes increased by 126% between August 2008 and December 2010, rising faster than real income. The affordability of cigarettes, measured as the relative income price[3], declined during this period (Figures 3.10 and 3.11).

The substantial increases in cigarette excise taxes resulted in higher cigarette prices and contributed to a decline in cigarette sales (Figure 3.12). Per capita cigarette sales fell by 13% between 2008 and 2009 and by an additional 15% between 2009 and 2010. It should be noted that about 30% of cigarettes legally sold in the Ukraine are illegally exported out

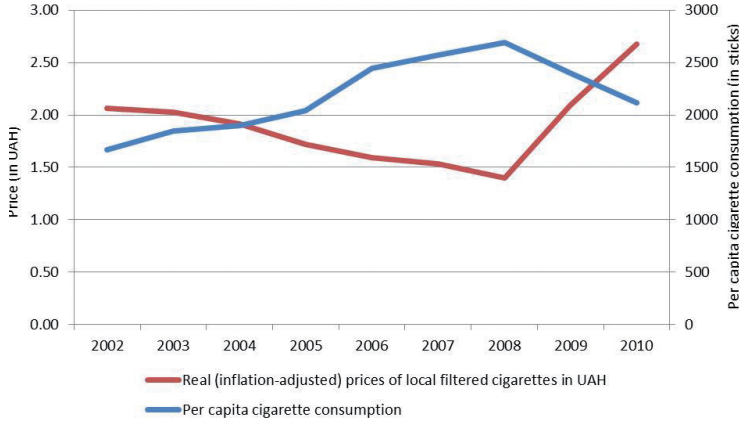

Figure 3.12. Cigarette sales and consumption in the Ukraine are negatively related to cigarette prices: inflation-adjusted retail price for filtered cigarettes and per capita cigarette sales
2002 is the base year for inflation adjustment.

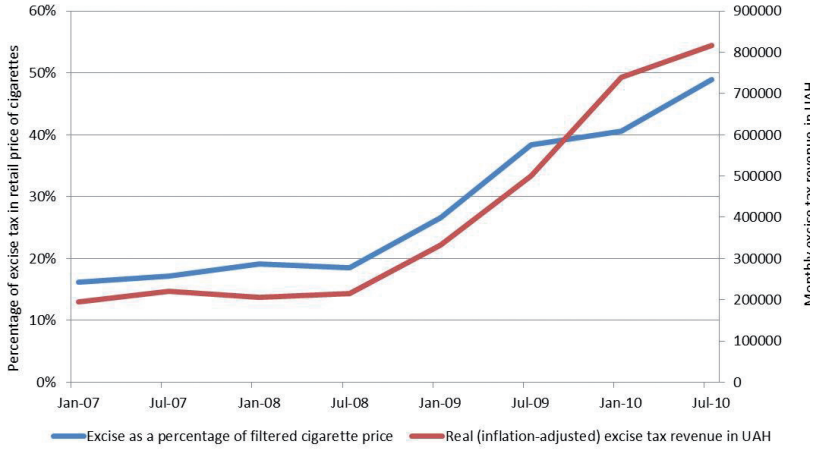

Figure 3.13. Tax revenue increases when tobacco tax increases: total excise tax as a percentage of retail price for filtered cigarettes and inflation-adjusted monthly tobacco tax revenues in the Ukraine
January 2007 is the base for inflation adjustment.
From reference (23)

of the country *(14)*. According to a report by the World Customs Organization, the number of cigarettes exported illegally from the Ukraine decreased in 2009 from that in previous years, although the number of large cigarette seizures is still highest *(21)*. It is likely that the tax and price increases contributed to the decline in illegal exports; illegal cigarette import to the Ukraine is minimal. According to the Global Adult Tobacco Survey conducted in 2010, about 1.5% smokers had a pack without Ukrainian health warnings *(22)*, a possible sign that these cigarettes had been imported illegally, although some could have been obtained legally in duty-free shops.

Therefore, the decline in cigarette sales in the Ukraine in 2008–2010 was due partly to lower

3 *Relative income price is the percentage of annual per capita income (measured as GDP) required to purchase 100 packs of cigarettes. The lower the price, the more affordable cigarettes are.*

Country	Tobacco excise tax revenue per smoker (EUR)
Russian Federation	38
Ukraine	64
Lithuania	183
Latvia	215
Romania	229
Estonia	331
Poland	334
Bulgaria	351
Hungary	367
Slovakia	399
Slovenia	469
Czech Republic	497
Germany	520
United Kingdom	614
Spain	632
France	742
Greece	770
Italy	820

Tax revenues from references (23–25); numbers of adult smokers from reference (26)

Table 3.7. Tobacco excise tax revenue per smoker in selected countries in Europe in 2009

consumption and partly to a decline in illicit cigarette exports. According to the State statistics committee, the prevalence of daily smoking among people aged ≥ 18 years in 2010 was 24.0%, a decrease from 25.5% in 2009 and 27.5% in 2008. Thus, between 2008 and 2010, the daily smoking prevalence decreased by 3.5 percentage points or 13%. The household survey data showed a decrease in the average number of cigarettes smoked daily during the same period.

The changes in tobacco tax rates and industry price have led to higher tobacco tax revenues since 2008, in spite of falling consumption: an additional UAH1.1 billion (€0.14 billion) were collected in 2008, UAH5.5 billion (€0.49 billion) more in 2009 and UAH4 billion (€0.38 billion) more in 2010 in comparison with previous years. Total excise tax revenue on filtered cigarettes amounted to more than UAH13 billion (€1.23 billion) in 2010, equal to nearly 2% of Ukrainian GDP (Figure 3.13) (14). Total cigarette excise tax in 2009 was still, however, lower than the tobacco excise tax revenues in other former Soviet republics that are now part of the European Union (Table 3.7).

Cigarette excise tax policy in the Russian Federation

In the Russian Federation, cigarette taxes and prices are among the lowest in the world. Cigarettes were subjected to a turnover tax in the Soviet era *(27)*, but the cigarette tax regime underwent major changes after the country began its transition from a centrally planned to a market economy in 1991. The current system is characterized by differential treatment of filtered and unfiltered cigarettes and, since 1997, by the use of excise stamps *(28)*. Tobacco excise tax is collected at Federal level.

In the 1990s, cigarette excise taxes were extremely low. By 1998, these taxes amounted to RUB6 (€0.24) per 1000 unfiltered and RUB12 (€0.48) per 1000 filtered cigarettes, and the price of filtered cigarettes was RUB8.92 (€0.36) per pack, according to the Russian Federal State statistics service (Rosstat)[4]. From 1999, nominal excise tax rates increased incrementally, but these increases did not exceed the level of inflation. As a result, cigarettes became cheaper in real terms each year until 2007 (Figures 3.14 and 3.15).

The 2003 excise tax reform introduced an *ad valorem* excise tax of 5% of the wholesale price and increased the cigarette-specific excise tax to RUB50 and RUB19 per 1000 filtered and unfiltered

4 *Based on average prices of local filtered and foreign filtered cigarettes, weighted by the sales volume*

cigarettes, respectively. The excise tax system was again redesigned in 2007 *(29)* to tackle a tax evasion scheme by the tobacco industry, which involved the industry selling cigarettes to distributors at a reduced price in order to reduce its *ad valorem* tax liability and to recover a large share of the retail margin from the distributors in a separate transaction *(30)*. The new excise tax system is based on the maximum retail (rather than wholesale) price indicated on the cigarette pack and published by the Ministry of Finance (from the industry price list) as the basis for calculating tax liability. Manufacturers are allowed to change their maximum retail price once a month *(31)*. The tax base plays an important role, as it is directly related to the tax burden[5]. Since 2007, the Ministry of Finance has specified a minimum excise tax rate per 1000 cigarettes *(30)*. The 2007 excise tax was increased to RUB100 (€2.86) per 1000 filtered cigarettes plus 5% of the maximum retail price, and the total excise tax was prohibited from falling below RUB115 (€3.28) per 1000 cigarettes. The 2007 rate for unfiltered cigarettes was raised to RUB45 (€1.28) per 1000 cigarettes plus 5% of the maximum retail price, with the total excise tax not allowed to fall below RUB60 (€1.71) per 1000 cigarettes. The sale of filtered and unfiltered cigarettes without the maximum retail price printed on the pack was forbidden as of 1 January and 1 July 2008, respectively.

The Russian Federation acceded to the WHO FCTC on 3 June 2008, and ratified the treaty

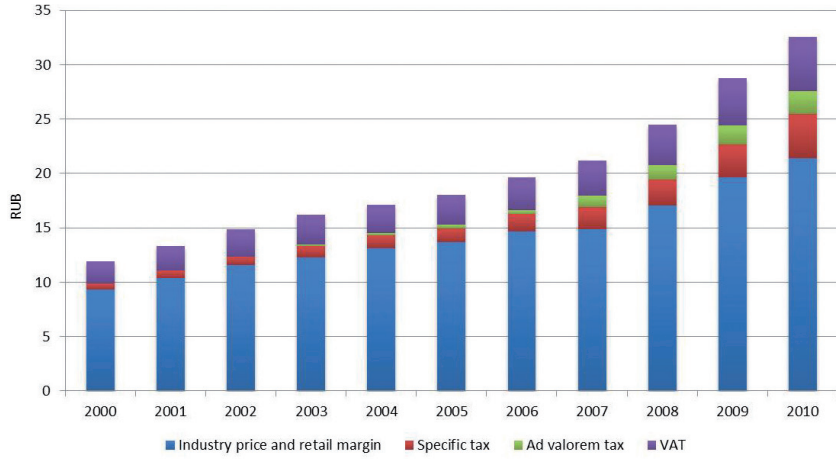

Figure 3.14. Share of taxes in nominal filtered cigarette prices in the Russian Federation, 2000–2010
From reference (33)

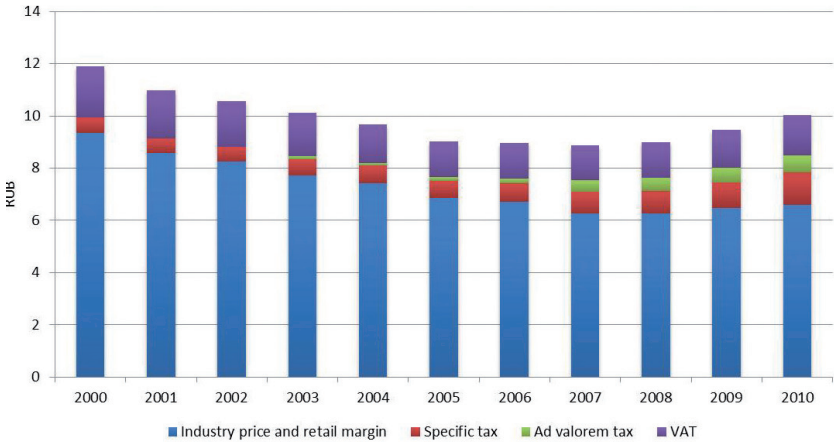

Figure 3.15. Share of taxes in real (inflation-adjusted) filtered cigarette prices in the Russian Federation, 2000–2010
2000 is the base year for inflation adjustment.
Cigarette prices from reference (33) and inflation from reference (19)

in April 2010. The country is therefore obliged to take measures to prevent the spread of tobacco use, including implementation of effective tax and price policies.

The first steps towards meeting this obligation were taken slowly. The specific excise tax increased yearly at an average of 27% for filtered and 42% for unfiltered cigarettes between 2007 and 2010. At the same time, the *ad valorem* excise tax rate went up by 0.5 percentage points each year for both filtered and unfiltered cigarettes. As a result, the retail volume of unfiltered cigarettes decreased from 15.5% of the total cigarette market in 2005 to 4% in 2010 *(32)*, and the real (inflation-adjusted) price of cigarettes went up in 2008. In the same year, the tobacco industry changed its strategy: it stopped shielding its customers from inflation, passed new taxes on to consumers and even raised

5 *A change in the tax base changes the tax burden (the amount of tax collected per pack), even if the tax rate stays constant. In the Russian Federation, the base for the ad valorem excise tax was the wholesale price between 2003 and 2006 and the maximum retail price between 2007 and the present. These changes facilitated an increase in the cigarette tax burden.*

its own prices to increase its profit margin (Figure 3.15). The total tax rate (excise plus VAT) reached 34% of the average retail price in January 2010 *(33)*.

Despite the tax increase in 2010, real cigarette prices fell by 16% between 2000 and 2010 (Figure 3.15). In addition, rising disposable income during this period increased the affordability of cigarettes (Figure 3.16).

The decrease in real cigarette prices and the increase in their affordability led to increased consumption, per capita, cigarette consumption doubling between 1990 and 2010 *(17)*. The average Russian citizen smoked 2726 cigarettes in 2010, the second highest per capita consumption rate in the world (outranked only by Greece) *(17)*. Figure 3.17 shows the inverse relation between cigarette consumption and real cigarette prices between 2000 and 2010.

Changes in tobacco taxes and industry prices between 2000 and 2010 led to rising tobacco excise tax revenues. The revenue increased rapidly with every increase in tobacco taxes, regardless of the recent fall in per capita cigarette consumption. Tax collection in the Russian Federation is facilitated by a high market concentration, whereby 98% of the cigarette volume in 2010 was sold by only five tobacco companies (Japan Tobacco International, Philip Morris International, British American Tobacco, Imperial Tobacco Group and Donskoy Tabak OAO) *(32)*. In 2010, total excise tax revenue on cigarettes reached RUB106.3 billion (€2.64 billion), a sixfold increase over 2000 after adjustment for inflation

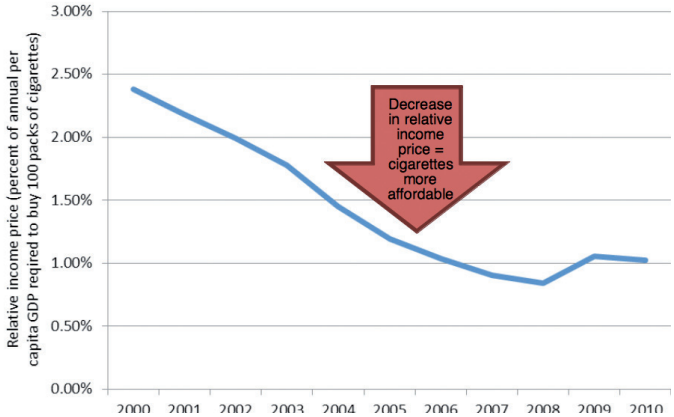

Figure 3.16. Relative income price (affordability) of filtered cigarettes in the Russian Federation, 2000–2010

The relative income price is a percentage of annual per capita income (measured as gross domestic product) required to purchase 100 packs of cigarettes; the lower the price, the more affordable cigarettes are. Cigarette prices from reference (33), gross domestic product from reference (19) and method from reference (20)

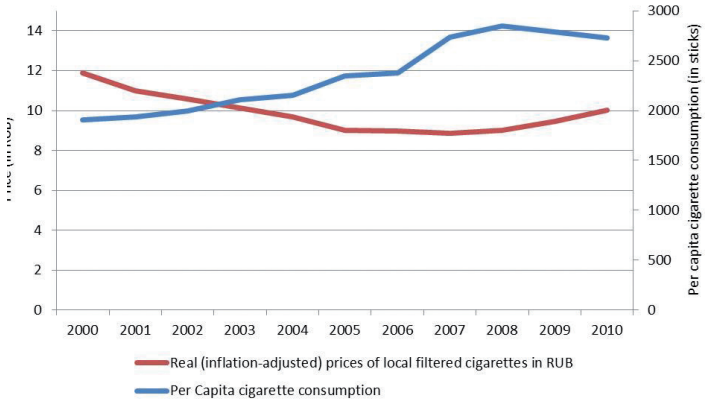

Figure 3.17. Cigarette consumption increases as real cigarette prices go down: inflation-adjusted retail price for filtered cigarettes and per capita cigarette consumption in the Russian Federation

2000 is the base year for inflation adjustment. Cigarette prices from reference (33), inflation from reference (19) and cigarette consumption measured from sales from reference (17)

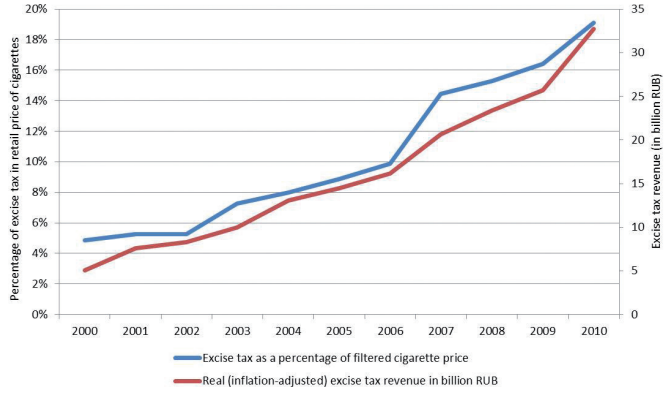

Figure 3.18. Tobacco excise tax and excise tax revenue: total excise tax as a percentage of retail price for filtered cigarettes and inflation-adjusted annual tobacco tax revenues in the Russian Federation

2000 is the base year for inflation adjustment.
Cigarette prices from reference (33) and tax revenues from reference (24)

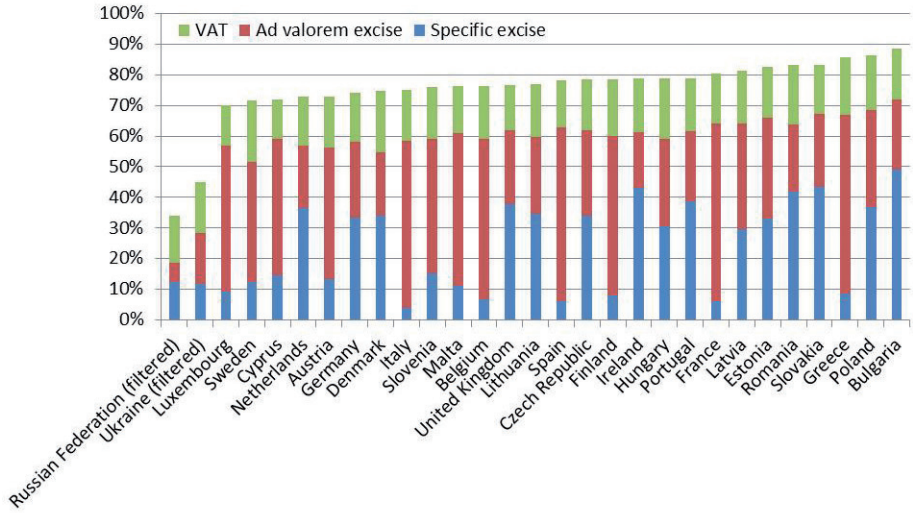

Figure 3.19. Tax as a percentage of retail selling price in selected European countries, 2010

Data for Europe from reference (25); calculations for the Russian Federation based on data from reference (33) and for the Ukraine from reference (35)

(Figure 3.18). This amount is, however, tiny in comparison with the tobacco excise tax revenue collected per smoker in other European countries (Table 3.7).

While the tax structures of the Russian Federation and the Ukraine have moved towards that of the European Union, and these countries have substantially increased tobacco taxes in recent years, the rates of excise are still far below those applied in the European Union (Figure 3.19).

In the Ukraine in December 2010, the average share of excise tax was 43.3% in filtered and 38.3% in unfiltered cigarette retail prices, while the average excise tax collected per pack was only UAH3.47 (€0.33) and UAH1.42 (€0.13), respectively. This is substantially less than the European Union requirement that the excise tax represent not less than 57% of the retail price and amount to at least €1.28 per pack. The excise tax is also well below the WHO recommendation that it constitute at least 70% of the retail price of tobacco products (34). Additionally, the total tax (including VAT) on unfiltered cigarettes (UAH2.05 as of December 2010) is about a half the tax on filtered cigarettes (UAH4.08 as of December 2010), allowing consumers to avoid the taxes by switching brands (down-trading).

Likewise, the Russian excise tax rate is well below the WHO recommended 70% share of excise tax in tobacco retail prices *(34)*. In 2010, the average price of cigarettes reached RUB32.57 (€0.81), the excise tax representing about 19% of the retail price of filtered cigarettes *(9)*. Prime Minister Putin signed a 'national anti-tobacco concept' in October 2010, one goal of which is to increase tobacco excise taxes gradually, keeping both the *ad valorem* and the specific components. The current law, which came into effect in January 2011, requires that cigarette excise tax rates be the same for filtered and unfiltered cigarettes by 2012 and that by 2013 the increase in the specific portion of the excise tax be 64% for filtered and 84% for unfiltered cigarettes, while the *ad valorem* tax will go up by 1 percentage point *(12)*. The concept calls, however, for much larger tax increases. It envisions that by 2015 the Russian Federation will reach the the WHO Regional Office for Europe average excise tax level of 2010, which was 63% of the retail price. If the concept is implemented, the excise tax per pack of cigarettes will reach about RUB73 by 2015, far above the rate of RUB7 in 2011. The most recent announcement by the Russian Government, however, appears to favour a conservative approach to tobacco taxation, limiting the annual increase in excise duty on tobacco to an average of 40–42% annually *(13)*.

Despite planned increases in tobacco tax rates over the next few years, the Russian Federation and the Ukraine will continue to be behind the rest of Europe when the tax increases outlined in European Union tax Directive 2010/12/EU take effect in 2014.

3.9 Policy implications of PPACTE findings on tobacco tax structures and rates in Europe

Tax structure

To discourage consumers from substituting hand-rolled cigarettes for manufactured cigarettes, excise taxes applicable to fine-cut tobacco for hand-rolled cigarettes should be fully aligned with those on manufactured cigarettes on the basis of a more realistic conversion rate. Furthermore, excise rates on all tobacco product types should

be aligned to prevent the industry from exploiting preferential tax rates on fine-cut or other tobacco.

Adjustment of the overall minimum tax

The overall minimum tax should be adjusted so that it is comparable in affordability among countries, thereby allowing higher levels to be set automatically for higher-income countries. The adjustment could be made by the comparative price level or by purchasing power parity, which are available for all European Union Member States. The basic minimum tax could be set for the lowest-income Member States and adjusted upwards for wealthier States. In countries with higher prices, the minimum would be set as above and adjusted upwards annually above inflation and income changes. The basic minimum tax would then be adjusted annually in line with inflation and income levels and the relative cost of living by comparative price level or purchasing power parity; the minimum could be set, for example, at €125 per 1000 cigarettes for a specific low-price country and adjusted by comparative price level for other countries.

The index considered for adjustment of the overall monetary minimum tax should be available for most countries (both European Union Member States and candidate countries), provided by an institutional authority (Eurostat), stable, updated annually and published by a single source *(2)*.

Data availability

Monitoring of cigarette prices is inadequate. The 'most popular price category', which was previously used as the reference value for calculating tax rates, was interpreted variably in different Member States. For example, on the British cigarette market, the most popular price category was interpreted as the recommended retail price at which the greatest number of cigarettes were sold, regardless of the number of brands that were sold at this price *(8)*. As a result, the most popular price category in the United Kingdom reflected the price of premium brands and, by failing to account for the growth in volume of ultra-low-priced brands, has exaggerated price increases. Directive 2010/12/EU introduced the weighted average price as the new reference value for determining tax rates. While this value will give a better overall picture of price trends, price trends should also be monitored by price segment. Obtaining data on price trends by price segment, which are currently available only from commercial sources, is, however, prohibitively expensive. Therefore, governments should require industry to provide brand- and category-specific prices routinely and should make the data available to researchers for detailed monitoring of price trends and the effectiveness of tax policy *(8)*.

Eastern border countries: the Russian Federation and the Ukraine

The European Commission should continue its partnerships with eastern border countries and encourage further upwards harmonization of tax rates in those countries with that of the European Union. The Russian Federation and the Ukraine should continue to increase taxes substantially, allowing the specific component to drive these increases and ensuring annual adjustment for inflation to prevent cigarettes from becoming increasingly affordable as incomes grow.

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CHAPTER 4

ILLICIT TOBACCO TRADE IN EUROPE

The implications of illicit tobacco trade for tobacco control policy in Europe were introduced in Chapter 1 of this report. Beginning with brief definitions of the terms used, this section is a summary of PPACTE findings on the illicit tobacco trade in Europe, drawing on the literature reviewed in the Handbook (WP7), evidence from the European survey on the economic aspects of smoking (WP2) and a report by Joossens commissioned for PPACTE on the causes of illicit trade and the policy options for addressing it (WP5).

4.1 Definitions

Tax avoidance refers to legal methods of paying less or no tobacco tax, while tax evasion refers to illegal methods of circumventing tobacco taxes (*1*). Tax avoidance involves, for example, purchasing tobacco products in lower-tax jurisdictions for personal consumption within customs constraints (e.g. cross-border shopping, tourist shopping, duty-free shopping, internet purchases) (*2*). Tax evasion involves the purchase of small or large quantities of smuggled and illicitly manufactured tobacco products and may involve criminal networks, tobacco companies or other large-scale operators (*1*).

Smuggling is one type of illicit trade and refers to illegal trading of products across borders. Small-scale smuggling, or bootlegging, involves the purchase by individuals of quantities of lower-taxed tobacco products in quantities exceeding customs regulations, for smuggling across borders for resale in higher-tax jurisdictions. Large-scale smuggling involves the illegal transport, distribution and sale of large quantities of tobacco products, generally avoiding all taxes (*1*). This typically involves large organized crime networks, which transport recognized international brands over long distances using 'in-transit' regimes and tax-free zones and sophisticated distribution systems in the destination countries (*3*).

Illicit trade is a much broader concept than smuggling and is defined in Article 1 of the WHO FCTC as "any practice or conduct prohibited by law and which relates to production, shipment, receipt, possession, distribution, sale or purchase including any practice or conduct intended to facilitate such activity" (*4*). Illicit trade includes both smuggled and illicitly manufactured tobacco. Illicit manufacture refers to the production of tobacco products contrary to law—taxation law, licensing or monopoly law—that restricts the manufacture of tobacco products. This type of tax evasion includes underreporting of actual production quantities and diverting the difference through illegal channels or complete lack of reporting and diversion of all manufactured product to black markets (*3*). One form of illicit

manufacture is counterfeit tobacco production, which involves the production and distribution of products bearing a trademark without the approval of the trademark owner. These products are illegally produced, often bear counterfeit tax stamps and are distributed through established networks of large-scale smuggling operations (*2*).

4.2 Public health implications of tobacco tax avoidance and evasion

Tobacco tax avoidance and evasion undermine the effectiveness of tobacco taxation by providing access to cheaper tobacco products, and they weaken the impact of other tobacco control policies and increase health disparities, while reducing government revenues (*2, 5*).

The price of illicit tobacco products relative to legal products varies by country, the location of the selling point, the brand name and the perception of the quality of the illicit cigarettes; however, illicit tobacco is generally substantially cheaper than comparable legal tobacco. Several studies have addressed the price gap between legal and illegal products and estimated the impact of this difference on tobacco use and on public health. Joossens *et al.* (*6*) analysed data from 84 countries and estimated that the global average cigarette price in 2007 was about 3.75% lower because of illicit trade in cigarettes. If the global illicit cigarette market had been eliminated in 2002, 164 000 premature deaths would be averted each year from 2030 onwards, preventing almost 1 million tobacco-related premature deaths by 2036 (*6*). Similarly, West *et al.* (*5*) found that eliminating the illicit cigarette trade in the United Kingdom would reduce cigarette consumption by 5.0–8.2% and lower the tobacco-attributable death toll by 4000–6560 premature deaths per year.

Experience in several European countries suggests that an increase in cigarette taxes can result in increased smuggling but a decline in total cigarette consumption. Two sizeable tobacco tax increases in Sweden (in December 1996 and August 1997) led to a 43% increase in average cigarette prices but also to an increase in the estimated amount of cigarette smuggling (from 200 million cigarettes in 1996 to 500 million in 1998). Smoking prevalence declined, particularly among children and young adults. In addition, tobacco tax revenue rose by 9% in 1997 from that in 1996 (*7, 8*). After the Swedish Government responded to pressure to reduce cigarette smuggling and reduce the cigarette tax in August 1998, per capita tax-paid cigarette sales increased but the tax revenue went down (*3*).

France nearly doubled its nominal cigarette retail price between September 1991 and December 1996 (a 74% increase in real terms) by increasing tobacco taxes. Over the same period, cigarette sales fell from 97 billion cigarettes in 1991 to 83 billion in 1997, adult smoking prevalence decreased from 40% in 1991 to 34% in 1997 (*9*), and the smoking prevalence among young people (12–18 years) fell from 30% in 1991 to 25% in 1997 (*10*). Tobacco tax revenue rose from 32 billion French francs in 1991 to 57 billion French francs in 1996, while illicit cigarettes maintained a relatively unimportant share of the market (about 2%) (*9*). France's efficiently controlled retail environment, in which all tobacco retailers have to hold a license, partly explains its relatively low level of illicit cigarette trade.

A study in the United Kingdom showed that higher taxes increased the prices of both legal and illegal tobacco products and led to an overall decline in tobacco consumption (*11*). The price elasticity of duty-paid tobacco also increased after 1995, however, when cigarette smuggling began to increase, so that some of the decrease in legal consumption was replaced by an increase in illegal consumption.

Merriman, Yurekli and Chaloupka (*12*) analysed data for 23 European countries in 1989-1995 and predicted that a tax increase in one country would increase cigarette bootlegging, but that coordinating these increases with those in neighbouring countries would reduce the incentive for this type of tax avoidance. For example, a unilateral 10% price increase in Germany would reduce the total consumption by three cigarette packs per capita per year but would reduce the sales by six packs, as three packs would be bootlegged to Germany from other countries. With a multilateral price increase, the consumption in Germany would still fall by three packs per capita, but domestic sales would fall by only four packs (one pack still being supplied from other countries). The health impact of a tax increase is therefore independent of the coordination of tax increases, but the impact on revenue depends on such coordination. If incentives for bootlegging in Europe

disappeared, legal cigarette sales would increase by 3%. If foreigners had no incentive to buy cheaper cigarettes in a country, that country's domestic sales would fall by 1%. For example, a unilateral 10% cigarette price increase in Germany would reduce the annual cigarette sales by six packs per capita but would increase annual cigarette purchases abroad by three packs per capita, resulting in a reduction of three packs per capita in consumption.

Studies in Europe and North America have consistently shown that increasing cigarette taxes reduces consumption and increases revenues, even in the presence of illicit cigarette trade. Furthermore, eliminating the supply of illicit tobacco results in larger-than-average reductions in smoking among young people and the poor, who are disproportionately affected because of their higher price sensitivity (*13, 14*) and greater likelihood of accessing cheaper sources of tobacco (*15*).

The illicit tobacco trade undermines the effectiveness not only of tobacco taxation but also of other tobacco control policies. For example, there is some evidence that vendors of smuggled cigarettes are less likely to comply with restrictions on sales to and by young people, and smuggled products are less likely to bear health warning labels in local languages (*3, 16, 17*).

4.3 Determinants of illicit tobacco trade: a summary of the literature

A comprehensive review of the international literature on tobacco tax avoidance and evasion conducted for the Handbook (WP7) identified the main determinants of tax avoidance and tax evasion.

Determinants of tax avoidance and small-scale smuggling

The extent of tax avoidance and small-scale smuggling is determined primarily by differentials in price between neighbouring jurisdictions (*2*). In general, the larger the price differential, the greater the incentive to engage in tax avoidance, as the difference in price minus any transaction costs (such as time and travel) represents the net gain from tax avoidance (*18*). Several studies have addressed the impact of price and tax differentials on tax avoidance and small-scale smuggling in Europe (*12, 19–21*) and the United States (*22–24*).

Taal *et al.* (*19*) analysed sales and survey data for 1993–2000 in Estonia, a country with a high incentive for bootlegging and cross-border shopping. During this period, cigarette prices were up to four times lower than in neighbouring Finland and Sweden (but considerably higher than in the neighbouring Russian Federation). They found that illegal purchases of cigarettes by Estonians represented a fairly small proportion of the total cigarette market; however, legal cigarette purchases by tourists and foreign visitors (not part of local consumption) were significant, representing up to 50% of legal sales. Finnish authorities confirmed that legal cross-border cigarette shopping by Finnish travellers amounted to 12% of total national sales in Finland in 1996 (*25*).

Buck *et al.* (*20*) showed that in the early to mid-1990s there was little incentive for cross-border shopping for cigarettes between France and Britain, and the savings on 800 cigarettes bought in France and taken back to Britain would be outweighed by the cost of the trip. Cross-border shopping existed at that time, but only when smokers were already across the border for other reasons. Estimates by the United Kingdom Department of Customs and Excise confirmed that legitimate cross-border shopping was a minor problem in 1997, when legitimate personal imports of tobacco products represented less than 0.5% of total cigarette sales (*26*). The situation changed at the end of the 1990s, when cigarette prices in the United Kingdom increased by about 25% between 1997 and 2000. The United Kingdom Treasury estimated that the market share of illicit cigarettes rose from about 3% in 1996–1997 to about 18% by 1999–2000 (*27*).

Similarly, in France, the substantial increases in tobacco tax in 2003 and 2004 that led to higher cigarette prices were blamed for an increase in cross-border purchases of tobacco products (both legal and illegal), from a negligible amount to 14–17% of total sales in 2005 and 2006 (*21*).

In general, studies in the United States showed that cigarette demand was sensitive to differences in price between the state of residence and neighbouring states, such that an increase in the price of tobacco in a neighbouring state increased tobacco consumption in the state of residence (*22*). Inversely, an increase in price in the state of residence increased the likelihood of purchasing cigarettes in a neighbouring state (*24*). Evidence suggests that, while tax avoidance increases immediately after a tax increase, this tends to decrease with time (*24, 28*).

Determinants of tax evasion

The determinants of tax evasion are far more complex than those of tax avoidance and small-scale smuggling. The tobacco industry has claimed that high tobacco taxes drive large-scale smuggling (*29*) and use this argument to lobby governments to keep tax rates low (*30*). The literature suggests, however, that large-scale smuggling tends to be more frequent in countries with lower cigarette prices (and usually lower cigarette taxes) than in countries with higher prices (and usually higher taxes) (*6, 31*). While a high tax margin may provide an initial incentive to smuggle, smuggling appears to be driven by several factors, including the level of corruption (*7, 12, 32*), the presence of informal distribution networks (*3, 12, 31, 33*), the extent of organized crime, the degree of cross-border trade and the strength of border controls (*3, 34*), the severity of penalties, the capacity to administer and enforce tax systems (*33*), the extent to which foreign and domestically produced products are differentially taxed (*35–37*) and the strategies of tobacco companies (*38–41*).

4.4 Extent of illicit tobacco trade in Europe

Measuring illicit tobacco trade is methodologically challenging, for many reasons. First, it is an illegal activity, and illegal traders are unlikely to document their activities. Secondly, data on illicit trade are difficult to collect, as law enforcement agencies often do not publish information about all their activities, in the interests of security and confidentiality. Thirdly, all the available methods of measuring illicit trade are limited, and the data sources used may bias the estimates.

Few studies of the extent of the illicit tobacco trade in Europe were identified in the literature review conducted for the Handbook. The limited empirical evidence indicates that tax evasion is much more widespread than tax avoidance, that cigarette tax evasion is more prevalent in countries that have lower cigarette prices and lower cigarette taxes and that the size of the illicit market is inversely related to a country's income *(2)*.

Merriman, Yurekli and Chaloupka *(12)* analysed cigarette sales data for 1989–1995 from 18 European countries and estimated that the share of cigarettes acquired by bootlegging and/or cross-border shopping accounted for about 3% of domestic consumption in a typical European country.

According to a Eurobarometer survey of 26 500 people in European Union Member States, Bulgaria, Romania and Norway in December 2008, just over one tenth of European Union citizens (12%) had seen tobacco products being sold in the past 6 months which they thought might have been smuggled into the country. The proportion of respondents who reported having seen potentially smuggled tobacco products being sold in the previous 6 months was highest in Lithuania (36%), followed by Greece (25%), Poland, Hungary and Latvia (22–24%). In Belgium, Denmark, Italy, Luxembourg, the Netherlands and Portugal, only 5% of respondents reported having seen potentially smuggled tobacco products in the previous 6 months. In Norway, the country with the highest cigarette prices in the world, where in January 2008 a packet of Marlboros cost €8.15, only 6% of survey respondents reported that they had seen tobacco products during the past 12 months that they believed had been smuggled. In Lithuania, the country with the lowest cigarette prices in the European Union, where in January 2008 a packet of Marlboro cost €1.36, the percentage of respondents giving this answer was 36% *(42)*.

On the basis of an analysis of data collected by the professional services company KPMG, the European Commission estimated that, in 2004, total market penetration of the illicit cigarette trade represented approximately 8–9% of cigarette sales within the European Union (which had 25 Member States at the time) *(43)*. It also noted that the illicit market share in the new European Union Member States (Estonia, Hungary, Lithuania, Poland and Slovakia) was far higher than the previous average. This report is limited because it is based on cigarette seizures in the European Union and on studies provided by the tobacco trade and governments; however, the overall figure of 8–9% appears to be a reasonable estimate, as it falls between the higher estimates from the United Kingdom and eastern and central European countries and the lower estimates from southern European countries like Italy and Spain.

KPMG continued its research on illicit trade as part of its obligations under the 2004 agreement between Philip Morris International and the European Union. According to the KPMG report, total cigarette consumption in the European Union in 2009 was 685 billion units, and contraband trade accounted

Box 4.1. Tobacco industry complicity in smuggling: findings from the PPACTE WP5 Bulgarian case study *(46)*

The analysis by WP5 suggests that, before Bulgaria acceded to the European Union, the transnational tobacco companies benefited from and actively participated in illegal importation of their cigarettes into Bulgaria and that Bulgaria in turn served as a point of transit to other closed markets, including Italy, Turkey and the former Soviet Union. This provides further evidence of the widespread use by transnational tobacco companies of smuggling as a market access strategy *(47–52)*. Furthermore, the duty-free business was used to disguise illicit trade. As duty-free zones have been shown to serve as portals for smuggling elsewhere *(53–56)*, this confirms that duty free zones should be ended. A document from British American Tobacco makes this explicit, stating that "most importers use the duty free facade to import goods and get around paying full duties" *(57)*.

Despite the apparent change in the nature of cigarette smuggling in most of Europe after the legal proceedings in 2000 *(58)* and subsequent settlements with the European Commission *(59–63)*, there is some evidence that the involvement of transnational tobacco companies in cigarette smuggling continued after 2000 and up until 2010. For example, Gallaher International (part of Japan Tobacco International from 1999) was found to be complicit in smuggling up to 2003 *(46, 64)*, and work by the Center for the Study of Democracy and trends in official import figures implied ongoing involvement of tobacco companies (including Philip Morris) *(65)*. Their continued involvement would be consistent with the fact that import duties in Bulgaria remained high until 2007, making legal imports less profitable. Recently exposed complicity of Japan Tobacco International in smuggling in 2009–2010 shows that the company continued to be involved in smuggling into and through the European Union, despite agreeing with the European Commission in 2007 to "proactively investigate all claims of smuggling" *(66)*.

The marked change in the rhetoric of the transnational tobacco companies on tobacco smuggling after accession of Bulgaria to the European Union is notable. From public silence on the issue during the time that the companies relied on smuggling to stimulate demand before market entry, the tobacco companies and other industry representatives now regularly discuss cigarette smuggling, propounding the idea that stability of cigarette excise rates is key to preventing smuggling *(46)*. This argument has been made in personal meetings with Bulgarian ministers (in 2009), and interviews suggest that it is widely accepted, even in the public health community in Bulgaria *(46)*. Press coverage of the cigarette smuggling issue also gives this one-sided view. Furthermore, we obtained data to suggest that, as in Poland *(67)*, the industry may exaggerate the extent of illicit trade in Bulgaria. Overall, this suggests that education on cigarette smuggling is needed, including the role of transnational tobacco companies, and also on the use of independent data on the extent of the problem, rather than relying on industry-commissioned research, such as that of KPMG *(46, 68)*.

Corruption and possible political involvement in the illicit trade are underlying concerns, and Bulgartabac is probably also involved *(65, 69, 70)*. This is consistent with evidence from Montenegro of high-level political involvement in cigarette smuggling *(71, 72)* and of the complex links between cigarette smuggling, corruption and organized crime *(73, 74)*.

for 8.9% of total consumption (44). The content of the KPMG report was made public only in August 2011, after a formal request based on European Union legislation regarding public access to documents (Regulation No. 1049/2001 of May 2001).

British American Tobacco commissioned similar studies, with no transparency in reporting the methods or definitions used, and found that the percentage of untaxed cigarettes in 2010 was highest in Lithuania (49%), Latvia (41%) and Norway (33%) (M. Ross, personal communication). It is unclear what British American Tobacco measured in this study. There is known to be significant legal cross-border shopping in Norway but negligible illicit trade. For example, consistent with the data for Norway from the Eurobarometer survey, Lund *(45)*

calculated that one fourth of the sales in 1997–2001 in Norway were untaxed, with 24% attributed to cross-border shopping and only 1% to smuggling.

As shown in Box 4.1, case study findings by WP5 from Bulgaria and Poland suggest that the tobacco industry might exaggerate the extent of illicit trade as part of their argument against increases in excise duty. For example, Phillip Morris reported in 2010 that the prevalence of illicit trade in Bulgaria represented 34% of total market sales *(75)*, while independent data from the PPACTE WP2 survey suggest a 14.5% prevalence in that year *(76)*.

European survey on the economic aspects of smoking: purchasing patterns and latest pack (WP2)

To obtain updated, comparable estimates of the extent of tax avoidance in 18 strategically selected European Union Member States, respondents to the European survey on the economic aspects of smoking (WP2) were asked about their purchasing patterns and to show their latest purchased pack of cigarettes or hand-rolling tobacco. Among current smokers, an average of 88.1% bought cigarettes from legal tobacco shops (including vending machines), 4.9% from other countries or duty-free shops and 3.6% from smuggled sources. On average, 3.4% smoked cigarettes offered by their peers and 0.1% bought cigarettes over the Internet (*76*) (Figure 4.1). The proportion of current smokers who reported that they smoked cigarettes from other countries or duty-free shops was higher in Austria (12.3%), Finland (13.2%) and France (13.2%). More current smokers reported smoking smuggled cigarettes in eastern European countries, particularly in Bulgaria (12.2%) and Latvia (25.9%). Overall, 8.4% of current smokers had bought smuggled cigarettes in the past 30 days, representing at least 1% of their total cigarette purchases (*76*).

Overall, 73.9% of current smokers agreed to show the interviewer their latest purchased pack of cigarettes or hand-rolling tobacco. Figure 4.2 shows the percentage

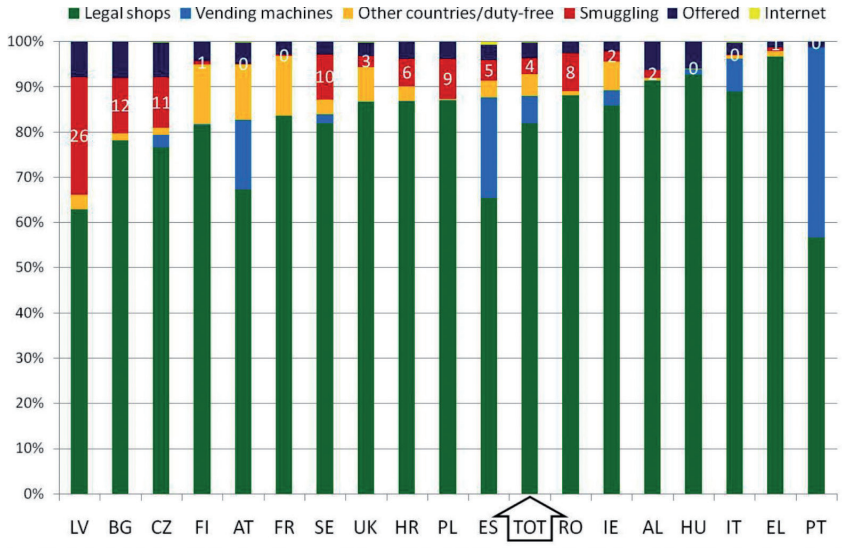

Figure 4.1. Percentage distribution of current smokers according to where they bought their packs of cigarettes during the past 30 days, overall* and by country, sorted by percentage buying from legal shops and from vending machines (ascending order).

Data from PPACTE WP2 Survey, 2010 - UK refers specifically to England

** Computed by weighting each country in proportion to the population aged ≥ 15 years*

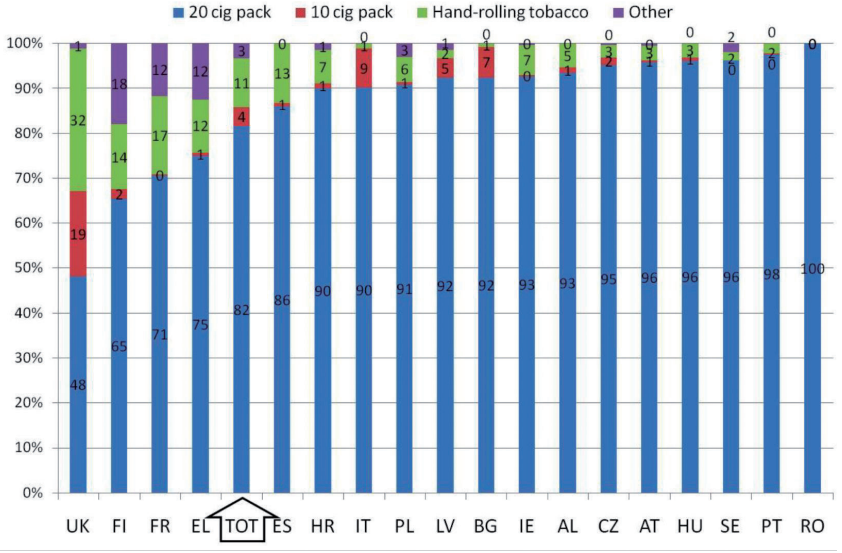

Figure 4.2. Percentage distribution of current smokers according to the type of their latest pack of cigarettes, overall* and by country, sorted by '20-cigarette pack' (ascending order).

Data from PPACTE WP2 Survey, 2010 - UK refers specifically to England

** Computed by weighting each country in proportion to the population aged ≥ 15 years*

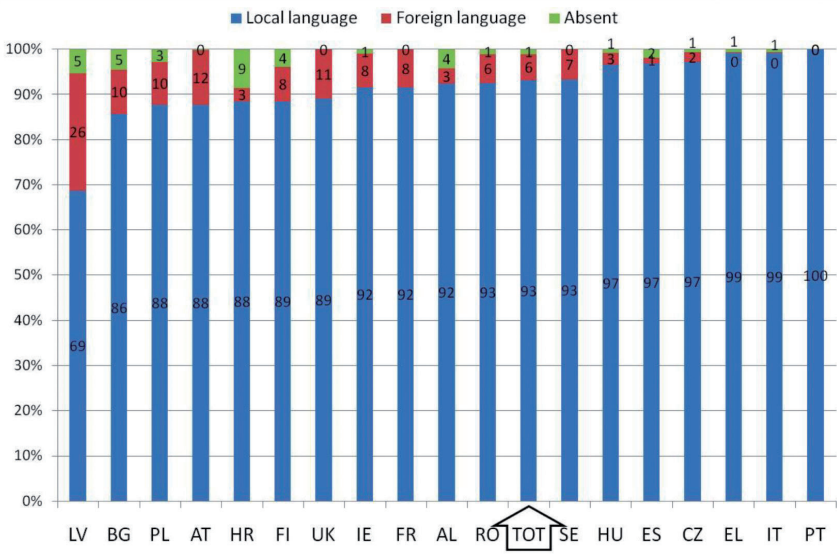

Figure 4.3.Percentage distribution of current smokers according to the type of health warning on their latest pack of cigarettes, overall* and by country, sorted by 'local language' (ascending order).

Data from PPACTE WP2 Survey, 2010 - UK refers specifically to England

**Computed by weighting each country in proportion to the population aged ≥ 15 years*

Figure 4.4. Percentage distribution of current smokers according to the type of tax stamp on their latest pack of cigarettes, overall* and by country, sorted by 'local stamp' (ascending order)

Data from PPACTE WP2 Survey, 2010 - UK refers specifically to England

** Computed by weighting each country in proportion to the population aged ≥ 15 years*

distribution of current smokers by the type of their latest purchased tobacco product and by country. Overall, 81.6% of current smokers had bought a pack of 20 cigarettes, 4.3% a pack of 10 cigarettes, 10.9% hand-rolling tobacco and 3.3% another type of tobacco product. The highest proportion of smokers showing hand-rolling tobacco was observed in England (31.8% overall, 38.2% of men and 24.9% of women), followed by France (17.0% overall) and Finland (14.0% overall) (*76*).

Figure 4.3 shows the percentage distribution of current smokers by type of health warning on their latest pack of cigarettes. Overall, 93.1% of current smokers showed a tobacco product with a health warning in the local language and 1.1% a pack with no health warning. The prevalence of current smokers showing a pack with a health warning in a foreign language was lowest in Portugal (0%) and Greece (0.3%) and highest in Austria (12.2%) and Latvia (26.1%). The prevalence of current smokers showing a pack with no health warning was lowest in England, France, Portugal and Sweden (0%) and higher in Latvia (5.2%) and Croatia (8.6%) (*76*).

Figure 4.4 shows the distribution of current smokers by the type of tax stamp (banderole) on their latest pack of cigarettes. Overall, 89.5% of current smokers showed a product with a tax stamp in the local language and 4.5% in a foreign language, 1.7% showed a pack with a tax stamp removed or destroyed and 4.4% had either a duty-free pack or a pack with no tax stamp. Current smokers showed a tobacco product with a foreign stamp most often in Latvia (26.3%), followed by France (11.0%) and Austria (9.6%). The largest proportion of smokers showing a duty-free pack or one with no tax stamp was in England (15.2%), followed by Bulgaria (8.3%) and France (7.7%) (*76*).

4.5 Policy options to tackle illicit tobacco trade in Europe

Sweeting, Johnson and Schwartz (*77*) extensively reviewed the effectiveness of measures to address the illicit trade of cigarettes, including a systematic literature review, key informant interviews and expert

focus panels. They presented several case studies from the European Union, which experienced significant cigarette smuggling in the 1990s.

Case studies of illicit trade in Europe

In the United Kingdom, large quantities of genuine, domestically produced cigarettes were exported to dubious export markets and then imported back into the United Kingdom illegally through smuggling networks (*29*). Thus, many of the cigarettes exported to Europe by American tobacco companies under the transit regime were lost in transit and siphoned off into the illegal markets of Germany, Italy, Spain and other European Union countries.

Illicit trade has declined during the past decade, from 21% to 13% in the United Kingdom and from about 15% to 1–2% in Italy and Spain, largely as a result of anti-smuggling measures (*77*). The United Kingdom introduced scanners to detect containers and placed prominent fiscal marks on packs. They also increased their punitive measures, hired more customs officers and held Parliamentary hearings to expose tobacco industry export practices. The United Kingdom's strategy for tackling illicit trade involved strong cooperation among different agencies and was continuously updated to improve intelligence, risk profiling and detection and disruption of the supply of illicit tobacco products (*78*).

Similarly, Spain reduced the smuggling of cigarettes by a multifaceted approach including better intelligence, more customs activity in border areas and international cooperation, both within Europe and with United States authorities. In Italy, a dramatic fall in customs seizures and a rise in legal sales was attributed to legal action against the tobacco industry and legally binding agreements with Phillip Morris International resulting from Italian and European investigations.

These examples have several common factors. Smuggling was reduced in these countries by: (i) interrupting the supply chain from manufacturers to the illicit market, (ii) improving international cooperation in sharing intelligence, (iii) investigating industry activities and (iv) prosecuting the industry (*77*). From these and other case studies, Sweeting, Johnson and Schwartz (*77*) identified four distinct types of illicit tobacco trade: legal products illegally distributed at national level, legal products illegally distributed across borders, illegal products destined for the domestic market and illegal products destined for a cross-border market. The authors conclude that both the type of illicit trade and the means of distribution influence the effectiveness of policies and the unintended consequences for action. Therefore, measures considered to be effective must keep pace with changes in the type and means of illicit tobacco distribution.

4.6 The WHO Framework Convention for Tobacco Control and the protocol on illicit trade

The global scope and multifaceted nature of the illicit tobacco trade require a coordinated international response. This is the aim of the WHO FCTC protocol on illicit trade, which is currently being negotiated. The protocol should emphasize international cooperation in sharing intelligence and in investigating and prosecuting offenders. In addition, the protocol should promote enforceable measures to control the supply chain including:

- Licensing and regulating all participants in the tobacco business;
- Controlling 'free zones';
- Using systems to track and trace
- Tobacco products from the manufacturer to the point of sale, to identify points of diversion to the illicit market;
- Introducing traceable methods of payment at all stages of the supply and distribution chain; and
- Strict scrutiny of procedures in the selection of contractors during the supply process.

A regime for tracking and tracing tobacco products is a fundamental component of the WHO FCTC protocol on illicit trade. Tracking and tracing tobacco products allows detailed analysis of individual seizures of genuine tobacco products, enables identification of points of diversion of tobacco products to the illicit market and provides important data on smuggling trends on a larger scale. Provisional agreement was reached on a system for tracking and tracing as part of the protocol, which will become meaningful only if all the articles of the protocol are agreed and the protocol is adopted and ratified. Under the tentative tracking and tracing regime, all Parties shall require that unique, secure, unremovable markings form part of all cigarette packs within 5 years. The available techniques for tracking and tracing, their current

applications and their advantages and disadvantages are summarized in Table 4.1.

Tracking and tracing consist of more than the markings on packages. They imply reading or scanning codes, linking the codes between packs, cartons, master cases and pallets, uploading the information onto a database, recording any shipment and receiving events along the supply chain and interconnecting the different databases. As concluded by Joossens *(1)*, a global tracking and tracing system should be combined with better regulation of the legal tobacco trade and should comply with the following minimum requirements:

- All tobacco product packaging (packs, cartons, master cases) should have a unique code.
- A link should exist among different packaging units, such that master cases can be traced without having to scan all enclosed packs and cartons.
- A secure system, which cannot be fully decrypted by external stakeholders, should be introduced.
- A system, administered independently and protected from industry interference, should be created. At a minimum, regular independent audits should be required to guarantee the validity of the system.
- All shipment and receiving events throughout the supply chain should be recorded.
- Databases of supply partners and national and international authorities should be linked and accessible to authorized enforcement officials globally.

4.7 Access to data on the extent of illicit trade

Given the illicit nature of tax avoidance and tax evasion, it is difficult to design measures and adequately assess the extent of such activities. Data on seizures by manufacturer, country of seizure, brand name and method for detecting authenticity should be made publicly available. Furthermore, officially commissioned studies of the extent of tax avoidance and evasion should be conducted independently, with application of clear definitions of the type of circumvention being addressed and transparency in the reporting of the methods employed and sources of funding and be publicly available and open to scrutiny in a timely manner. The European Commission has had to rely on and collaborate with the industry to obtain data on illicit trade, but this is insufficient.

4.8 Education about illicit trade

Efforts are required to educate public health professionals, politicians, civil servants and the general public about the true nature and causes of the illicit tobacco trade and transnational tobacco companies' complicity in cigarette smuggling. Furthermore, public health groups must engage with the media to ensure accurate coverage of the smuggling issue and to make sure that industry versions of events, including any exaggeration of the extent of the problem, are counterbalanced by more accurate information.

Technique	Description	Examples	Advantages	Disadvantages
Bar codes or matrix codes	Machine-readable series of bars, circles, dots and images that store information about brand category, product variant, production date and place of production	*United Parcel Service and Federal Express use these codes to scan packages at each stage of transport (79).* *Bar codes used on master cases (containing 10 000 cigarettes) by PMI, BAT, JTI, and ITL* *Two-dimensional matrix codes used on tear tapes of cigarette cartons (containing 200 cigarettes) by PMI to link cartons to master cases*	• Inexpensive • Internationally standardized • Do not require a specific computer programme to read and transmit data	• Labour intensive as each bar or matrix code must be scanned manually • Bar codes are visible and easily counterfeited.
Radio-frequency identification systems	'Smart tags' or microchips are attached to antennas and detected by readers. When the tag approaches a reader, the tag broadcasts data stored in the chip.	*Widely used in areas including: passport verification, transport, ticketing, preventing counterfeits, baggage tracking in airports and livestock tagging*	• Less labour intensive than bar or matrix codes as data are automatically transferred and do not require manual scanning • Advances in technology may increase the cost-effectiveness.	• Expensive • Security and privacy concerns *(80)*. If the microchip smart tags remain on the product after purchase, locations (and sometimes identity) of consumers could be determined.
Invisible ink	Digital tax stamps printed in invisible ink feature a unique, covert code with data for each pack (containing 20 cigarettes).	*Used on tobacco products in Brazil, Canada, Turkey and the USA, mostly to verify the authenticity of a product (81)*	• Inexpensive. • Secure: the ink is invisible and difficult to counterfeit. • Stamps can be encrypted with extensive information uploaded to a central data system in order to monitor and control manufacture and distribution at national level.	

Physical fingerprints	The fingerprint area of a product's packaging is scanned with a laser *(82)*, and the randomly formed crenulations of the products' packaging create a unique speckle pattern that is read by the scanner. This unique laser fingerprint is recorded on the production line and entered into a database, which could link each pack to a carton and each carton to a master case.	*Currently used by Stora Enso, one of the world's largest paper merchants, Bayer, the chemical and pharmaceutical company, and the International Atomic Energy Agency (82)*	• Each physical fingerprint is unique: the probability of two naturally occurring matches is 1 in 10150; they are therefore currently impossible to counterfeit *(82)*. • More secure than radio-frequency identification, as only the retailer and manufacturer can read the fingerprint
Code verification system 'Codentify'	A unique encrypted 12-character number is used to identify and authenticate a pack of cigarettes. By entering the number into a database or scanning the code, authenticity can be verified.	*Used by PMI in some markets. Used to check the authenticity of cigars. The number is printed on the cigar box and cigar, allowing consumers to verify authenticity.*	• Very low cost and easy to administer

BAT, British–American Tobacco; ITL, Imperial Tobacco Ltd; JTI, Japan Tobacco International; PMI, Philip Morris International

Table 4.1 Tecniques for tracking and tracing tobacco products, with their advantages and disavantages

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CHAPTER 5

INDUSTRY INFLUENCE ON TOBACCOTAXATION POLICY

The taxation of tobacco is of particular concern to the tobacco industry. As one of the most effective measures for reducing tobacco consumption, the taxation of tobacco threatens the long-term profitability of the industry. The potential of tobacco taxation to generate revenue and public health gains ensures that it will continue to be an intervention used as a priority by governments. Furthermore, the excise structure—whether predominately specific or *ad valorem*—and the levels of each excise component will affect the competitiveness of tobacco companies by favouring different pricing strategies and thus different brand portfolios. Understanding tobacco industry influence on tobacco taxation policy and the pricing strategies they use to protect their profits is essential to designing and promoting effective taxation policy.

The Handbook and WP5 examined the published evidence of tobacco industry activities, including how tobacco product prices change in response to changes in tobacco taxes, price-related marketing strategies used by tobacco companies and the industry's lobbying to shape policy decisions on the structure, rates and earmarking of tobacco excise taxes (*1*). This section begins with a summary of industry activities related to tobacco taxation from the Handbook (WP7). An examination of the industry pricing strategy on the British cigarette market is then presented (WP5), followed by a summary of the findings from a series of case studies of industry influence on policy and structures of excise duties (WP5).

5.1 The impact of tobacco tax increases on price

The impact of tobacco taxes on prices depends on how the industry reacts to a tax increase. Early empirical evidence on the extent to which taxes were passed through in prices, almost entirely from high-income countries, was conflicting. Older studies in the United States indicated that cigarette taxes led to less-than-comparable price increases (*2–4*); others showed that taxes were fully passed on (*5*), and still others showed that prices rose more than the tax (*6–8*).

More recent studies in Jamaica, South Africa and the United States indicate that tax increases have led to price increases larger than the tax increase (over-shifting). An analysis in the United States indicated that cigarette taxes were over-shifted, leading to increases in retail cigarette prices greater than the tax (*9–12*). van Walbeek (*13*) observed similar over-shifting of tax increases in South Africa (since 1994) and Jamaica (in 2005), while Delipalla and O'Donnell (*14*) found undershifting of cigarette taxes in 12 European Union countries in the early 1990s, particularly in markets that were less concentrated.

Although there are no recent, relevant studies on this issue in the European Union, the market has seen considerable consolidation in recent years (*15*), and other evidence suggests that the under-shifting observed in the 1990s (*14*) has reversed (*16, 17*). Although the countries in eastern Europe have, until recently, been at different stages of the tobacco epidemic, with smoking prevalence and tobacco sales still increasing, profits are also increasing as a result of industry price increases and consumers trading-up to more expensive brands (*18*).

The Handbook concluded that most tobacco product markets are highly concentrated (*19*), indicating that a few large firms have large market shares. Recent empirical evidence indicates that, in these markets, tobacco taxes are generally over-shifted.

5.2 Tobacco industry price-related marketing activities

Tobacco companies use a variety of marketing techniques, which involve reducing prices on some tobacco products or brands targeted at specific sections of the population, including young people and others with low incomes. They use these techniques to soften or counteract the impact of tobacco tax increases and other tobacco control interventions.

Tobacco companies have also used other marketing activities to lower the price or add value to their products, including price discounts to cigarette retailers or wholesalers to reduce the price for smokers of specific brands, free samples of cigarettes, distribution of special branded and unbranded goods other than cigarettes to advertise or promote cigarettes, retail-value-added expenditure for promotions involving free cigarettes (e.g. buy two packs, get one free), retail-value-added expenditure for promotions involving a noncigarette bonus (e.g. buy two packs, get a cigarette lighter) and coupons for reducing the retail cost of cigarettes, redeemed at the point-of-sale or by post (*20, 21*). Similar marketing activities have been reported for other tobacco products in the United States, such as smokeless tobacco. Reporting of such marketing expenditure is required by Federal legislation in the United States, although the content is not made publicly available.

These and other marketing practices are prohibited in other countries. The WHO report on the global tobacco epidemic 2009 (*22*) indicated that 79 countries, including many with low and middle incomes, have some form of restriction on price-based marketing. For example, a European Council Recommendation (2003/54/EC) proposed that Member States adopt tobacco control measures that include prohibiting "the use and communication of sales promotion, such as a discount, a free gift, a premium or an opportunity to participate in a promotional contest or game." A subsequent evaluation (SEC(2009)1621) suggested that most Member States had taken the recommended measures but did not specify the proportion that were implemented. Few countries have bans that are comprehensive enough to cover all forms of price-based promotions (an issue explored below). Some marketing techniques may therefore be used worldwide.

5.3 Tobacco industry pricing strategies

Tobacco companies have lobbied aggressively against tobacco tax increases and earmarking of tobacco tax revenues. They try to influence the structure of tobacco taxes so that it favours their own brands over theirs of their competitors.

Tobacco industry arguments to keep tobacco taxes low

The four main arguments used by the industry to counteract increases in tobacco taxes or to request reductions of existing levels of taxation have been to: emphasize the regressive nature of tobacco taxation (*23–32*), link higher taxes to illicit trade and organized crime (*23–25, 33–39*), claim that tobacco taxes are unfair to smokers (*23, 36, 40–42*) and deny links between price and consumption (*31, 36, 43*).

Tobacco industry arguments to prevent earmarking

The three main arguments raised by the industry in opposing earmarking are diversion or misuse of the extra funds (*23–25, 40, 44–46*), the unfairness of policies that require smokers to subsidize policies that benefit others (*46*) and that earmarking will result in spending cuts for other programmes (*46*). The industry has adopted a number of tactics to deter implementation of tax increases and earmarking of tobacco-tax revenues, including schemes previously used in their opposition to other tobacco control policies:

- Use of 'front groups' to promote arguments (*23–25, 27, 32, 41, 44–48*) or to recruit credible allies (*24, 27–30*);

- Working with credible allies not usually associated with tobacco (*24, 26–29, 31, 32, 36, 40, 41, 44, 47–49*);
- Traditional lobbying of decision-makers (*24, 27, 28, 33, 41, 42, 45, 47, 49, 50*);
- Media campaigns and other publicity to raise public awareness of policy proposals and increase public support for industry positions (*23–25, 29, 30, 32, 36, 42, 46*);
- Mounting legal and other official challenges to proposed and existing excise legislation (*23–25, 40, 42, 45, 46*);
- Commissioning research to support and inform industry positions on tobacco excise (*26, 28, 32, 36, 40, 44*);
- Employing consultants and public relations staff and firms to give advice on and assistance in lobbying (*23, 24, 32, 41, 42, 45, 49*);
- Working to divert earmarked funds from control measures to other causes, such as health care subsidies for uninsured people (*23–25, 45–47, 49*);
- Paying or giving gifts to policy-makers (*26, 41, 47, 49*);
- Mixing debates about tobacco tax increases with broader debates about general tax increases in order to confuse the issue and garner opposition to proposals for tobacco tax increases (*28, 32, 40, 44*);
- Proposing alternative weaker or irrelevant legislation (*23–25, 46*);
- Using friendly 'experts' to present industry positions and boost the credibility of industry arguments (*24, 35, 46*);
- Trying to undermine tobacco control experts (*42*); and
- Stimulating smuggling in the event of tax increases (*39*).

Tobacco industry lobbying

In North America, tobacco industry lobbying has been successful, particularly at the federal level. At subnational level, adequately funded tobacco control has been more successful in overcoming industry opposition; however, the industry has been more successful in combating the earmarking of tax revenues at subnational level, arguing that the revenues will be diverted or misused.

Quantitative and qualitative studies on tobacco industry lobbying on tax issues were identified, and the 31 that met the inclusion criteria were summarized and assessed with critical appraisal criteria adapted from Rees *et al.* (*51*) and the United Kingdom Public Health Resource Unit (*52*). Most of the studies (*24*) were conducted in North America and mainly in the United States. Tobacco industry activities to oppose proposed increases in excise taxes (*23–32, 34, 35, 37, 38, 40–42, 44–50*) or to lower existing taxes (*33, 36, 39*) were discussed in 27 studies. Only four studies covered policy influence outside North America (*33, 34, 37, 38*). Most of the studies in the United States addressed policy proposals to increase taxes substantially and earmark all or most of the revenue raised for tobacco control programmes. Therefore, it is difficult to determine the extent to which the industry was concerned about the tax increases per se rather than the use of revenues from the increases to fund tobacco control.

Seven studies addressed tobacco industry activity to influence excise structures (*34, 37, 38, 53–56*). Studies in China (*53*), Hungary (34), Lebanon (*38*), the former Soviet Union (*37*) and the United States show that different companies support different tax structures, favouring those that will benefit their brands at the expense of their competitors.

Governments influence tobacco product prices by imposing tobacco taxes, price regulations and limits on price-related marketing. Some countries (none in the European Union) have imposed minimum pricing policies, where such policies are allowed under competition law; higher specific taxes can have similar effects where minimum pricing policies are not allowed. Others have included bans on price-reducing marketing as part of a comprehensive ban on industry marketing. WHO FCTC Article 5.3, which aims to limit tobacco industry influence in tobacco control policy-making, may help governments to limit lobbying by tobacco companies on tax policy and other tobacco control policies.

5.4 New findings from PPACTE on tobacco industry influence on tobacco excise policy

Most of the empirical studies identified in the review were conducted in the United States and a few other high- or middle-income countries, despite the importance of the influence of tobacco companies on tax policy, and most address the influence of transnational tobacco companies on tax levels rather than structures. PPACTE WP5 addressed this research gap in order to add to understanding of tobacco industry influence on taxation policy and industry pricing strategy in the European Union.

Understanding tobacco industry pricing strategy: the cigarette market in Great Britain

Industry pricing strategy, discussed in detail elsewhere (*57*), was reviewed be examining the academic and trade literature to identify and categorize cigarette brands into price segments in the British cigarette market. Four segments were identified: premium, mid-price, economy and ultra-low price, the last emerging since 2006. Brands were categorized into price segments on the basis of recommended retail price data from PriceChecker (1999–2005) and actual sales prices from Neilsen (a global leader in market research, measurement and information) (2006–2009)[1]. Trends (by volume) in the market share by price segment between 2001 and 2009 were observed.

As shown in Figure 5.1, around half the market was held by economy segment brands. The share held by this segment grew until 2007–2008, when it fell slightly because of gains in the ultra-low-price segment. As the tobacco companies acquired supermarket brands and launched their own ultra-low-price brands after 2006, the share of these brands increased substantially. In contrast, the market share of premium and mid-priced brands fell sharply from 2001 onwards. While the three segments (premium, economy and ultra-low priced) have clearly separate price ranges, the price of mid-price brands now overlaps entirely with the price of lower-end premium brands. Furthermore, the range of prices available within each segment appears to have

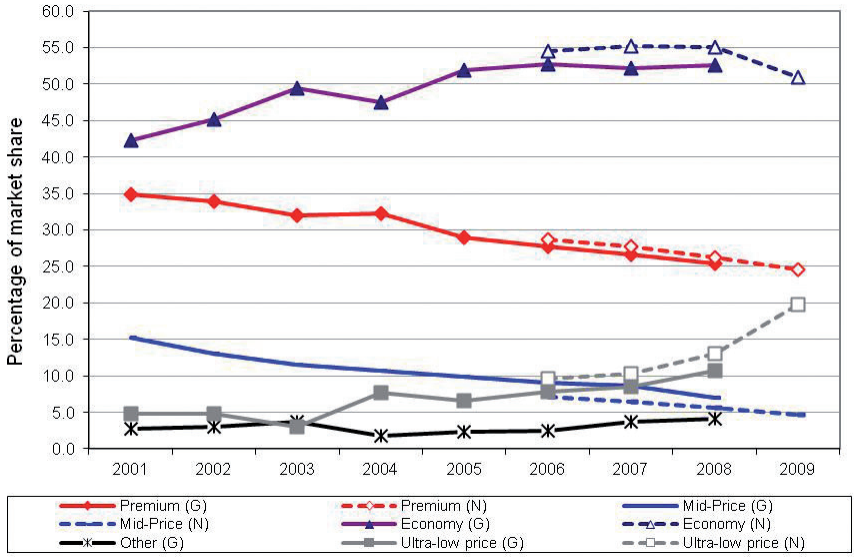

Figure 5.1. Market share of the Great Britain by volume (%) by price segment, 2001–2009

From PriceChecker and general household surveys (G) for 2001–2005 and from Nielsen (Ni) for 2006–2009. General household survey market share data based on survey responses during a calendar year; Nielsen market share data based on sales data from November each year

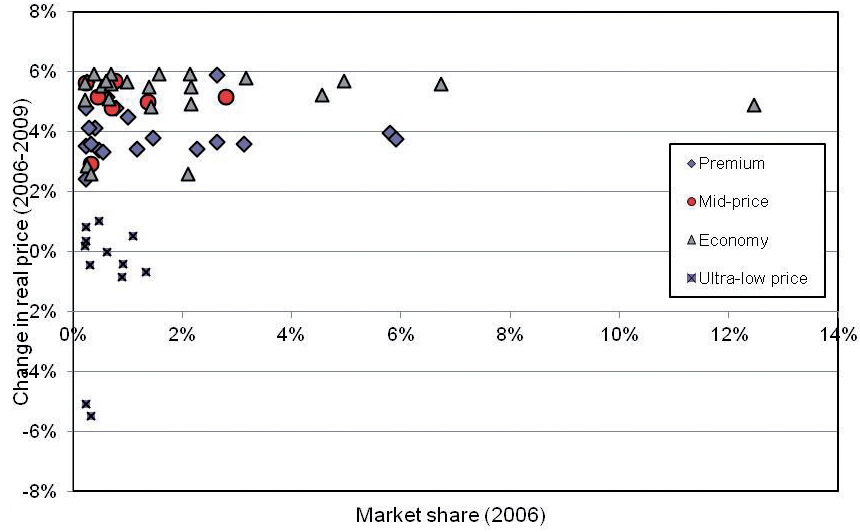

Figure 5.2. Market share of the Great Britain in 2006 and changes in price, 2006–2009, by brand segment; all brands with share over 0.2% in 2006

From Nielsen

widened, and the gap between the most and the least expensive brands has doubled *(57)*.

When trends in price increases by price segment were examined for 63 individual brands, each with a market share of 0.2% or greater (as of November 2006) between 2006 and 2009, it became apparent that the prices of brands in the ultra-low-price segment had increased much less than those of brands in other segments (Figure 5.2). The price

1 *A comparison of these two data sets, supermarket retail prices and manufacturers' recommended retail prices, showed that the data were almost identical, and the two sources could be relied upon to provide comparable data over time.*

Price segment	Average price increase (pence per pack of cigarettes)		
	November–May	May–November	November–November
Premium	2.8	1.2	4.0
Mid-	4.5	0.7	5.2
Economy	1.9	2.7	4.6
Ultra-low	-1.5	0.2	-1.3
All, weighted average	2.5	1.6	4.1

Data from Nielsen
Price data presented in real terms adjusted according to the consumer price index, with 2010 as the baseline

Table 5.1. Real price increases (net of tax) for cigarettes in the Great Britain in May–November and November–May, 2006–2009, by brand segment

of every brand in the ultra-low-price group increased by less than a 1%, and the real price fell in some cases. Meanwhile, the price of premium brands increased by 3–5% between 2006 and 2009 and that of mid-price or economy brands by 5–6% (57).

By examining the patterns of price changes in real terms (deflated against the consumer price index, with 2010 = 100), net of tax between November–May when taxes increase and May–November when taxes do not change, it was possible to establish whether tobacco companies over-shifted, under-shifted or simply passed on tax increases to consumers between 2006 and 2009. Overall, the results suggest that tax increases were over-shifted, with greater price increases in November–May when tobacco taxes rise than in May–November (Table 5.1). The extent to which tax increases were passed on to smokers differed by brand segment, the price increases for premium and mid-price segments being much higher during November–May than May–November. This suggests that, for these brands, cigarette manufacturers were using the increases in tobacco duty to disguise additional price increases, thus over-shifting taxes. The prices for the economy segment were also being over-shifted, but the larger price increase was timed so that it did not coincide with the tax increase. For the ultra-low-price segment, the prices net of tax actually fell between November and May when the tax burden rose, with a very slight increase in net prices between May and November. Overall, taxes on ultra-low-price brands were under-shifted.

These findings suggest that the tobacco industry is using a sophisticated pricing strategy in Great Britain to cross-subsidize cheaper brands with profits from more expensive brands. This study shows real price increases and over-shifting of taxes in the premium, mid-price and economy brand segments, while the real price of ultra-low-price brands did not increase and taxes on this segment were under-shifted. Consistent with this strategy, the price increases were greatest on mid-price and economy brands and lowest (and often negative in real terms) on individual ultra-low-price brands. Furthermore, the price increases appeared to be timed to accentuate differences in prices between brands in different segments at the time when duties were increased; however, overall prices increased and taxes were over-shifted to consumers, a pattern that contributes to rising industry profits (*57*).

As a result of this pricing strategy and the increase in the number of ultra-low-price brands, consumers have more opportunities to down-trade from more expensive to cheaper cigarettes. The market share by volume of ultra-low-price brands has increased in response. The availability of cheap brands undermines tobacco tax policy because it ensures that price-sensitive smokers, particularly the young and the poor, continue to initiate and maintain their smoking habits.

Tobacco industry influence on tobacco excise policy in four European countries: case studies in Bulgaria, the Czech Republic, France and Poland

The efforts of transnational tobacco companies to influence tobacco control policy (specifically tobacco excise policy) were examined in four European Union Member States by detailed analyses of tobacco industry documents, in which a socio-historical approach was used. Analysis of documents was triangulated and updated with the results of interviews and secondary data analysis. The findings for Bulgaria (1988–2011), the Czech Republic (1989–2011), France (1990–2011) and Poland (1990–2011) are summarized here and discussed in detail elsewhere (*58–61*).

The countries selected have several attributes that make them interesting for analysis. At the time of market entry, each country was of particular interest to the tobacco industry for its strategic importance and the opportunity it presented for market expansion. Bulgaria was seen as a lucrative market for several reasons. First, the existing production infrastructure, low average salaries and high production provided opportunities for improving profit margins. Secondly, Bulgaria was seen as the gateway to accessing the then closed markets of Turkey and former socialist countries (*58*). Thirdly, joint-venture initiatives with Bulgartabac provided opportunities for expansion of the existing brand portfolio. The Czech Republic was of interest because of its strategic location in central Europe, bordering former socialist countries that the transnational tobacco companies hoped to access (*59*). France has seen two major tax increases in the past twenty years, and also has close relationships between the industry and state, partly due to the state's former monopoly on tobacco products (*60*). The size of the Polish market and the potential for even further growth underpinned the transnational tobacco companies' interest in penetrating the Polish market (*61*).

The lack of effective government intervention in tobacco control provided a favourable business environment in each of the case countries. Bulgaria's tobacco control is weak, its ranking on the 'tobacco control scale' falling from 13 out of 30 European countries in 2007 to 24 out of 31 countries in 2010 (*58, 60*). The Czech Republic has one of the poorest tobacco control records in Europe, ranked fourth lowest in Europe for tobacco control policy implementation in 2010 (*62*), with senior political figures publicly supporting the tobacco industry (*59*). Although France ranked sixth on the 2010 tobacco control scale, rising one place from 2007 (*62*), the Government's policy on tobacco taxation and pricing is still considered friendly to the industry (*60*). Unlike most other central and eastern European countries, Poland had a fledging tobacco control movement in place in the late 1980s and early 1990s, providing some opposition to the transnational tobacco companies as they entered the Polish market (*61*). While Poland was a leader in implementing tobacco control policies in 1995, ranking 14 out of 30 European countries in 2007, it has been described as 'losing momentum', and its ranking fell to 19 out of 31 countries in 2010 (*62*).

In each of the case studies in the central and eastern European countries, the period considered covers the entry of the transnational tobacco companies into the country, privatization of the tobacco industry (except in Bulgaria where privatization is ongoing) and accession to the European Union. Transnational tobacco companies use industry privatization as an opportunity to manipulate tobacco excise structures in their favour, lobby against cigarette excise rate increases and influence the broader regulatory environment (*54*). Much of this evidence is, however, based on studies from the former Soviet Union and applies to British American Tobacco in particular. Accession to the European Union required elimination of any remaining barriers to European imports and implementation of European Union excise directives, as well as other tobacco control legislation; it also provided an opportunity for industry influence. In France, the study specifically addressed the two large tax increases in 1991–1993 and 2003–2004 and the industry's response to them, as there is little evidence on the impact of large tax increases.

Tobacco industry lobbying on tobacco excise structure and rates

As in studies in the United States and other high- and middle-income countries, the evidence suggests that the tobacco industry tends to lobby collectively against increases in tobacco excise rates but separately on tobacco excise structure.

One of the criteria for European Union accession was to harmonize the country's tobacco excise system

Aims	Arguments
Oppose any further large-scale increase in total tax incidence *(68, 69)*.	• Large price increases driven by a rapid tax increase would increase smuggling *(67)*. • Smuggling could reduce government revenue from tax; therefore, there is no guarantee that revenue would increase with European Union harmonization *(67)*. • The minimum excise tax level is to be reviewed by the European Commission in 1996, so the target level of 57% might be changed or removed by 2000 *(67)*.
Oppose the 57% minimum excise level required by the European Union *(68, 69)*.	• Avoid promoting, endorsing or even mentioning this requirement when lobbying governments *(68, 69)*.
Encourage derogation for implementing the minimum excise incidence of 57%, for at least 5 years after integration into the European Union *(69, 70)*.	• The European Union white paper on central and eastern Europe encourages gradual adoption of European Union legislation and preservation of macroeconomic stability during accession *(67)*. • Rapid restructuring of the tax systems would result in unsustainable price increases, which could seriously damage the economies of the accession countries *(67)*. • The European Union permits acceding countries to request derogations *(67)*.

Table 5.2. Transnational tobacco companies' tax harmonization goals and arguments for central European countries (Czech Republic, Hungary, Poland, Romania, Slovakia)

with that required by the European Union, by implementing a mixed system, combining specific and *ad valorem* components, and a total tax accounting for a minimum of 57% of the most popular price category (*63*). In 1995, a new directive was introduced, requiring that the specific component represent 5–75% of total excise (*64*). In response to these accession requirements, the industry formed regional groups to discuss taxation issues, including a 'central European tax task force' and an 'eastern European tax working group' (*58, 61, 65*). The aim of the central European tax task force was to review likely excise harmonization scenarios and devise "strategies for halting/slowing the increase in excise incidence" (*65*). The group later agreed to encourage only "very gradual harmonisation" of excise levels and "to develop joint argumentation aimed at opposing rapid and disruptive excise increases in the individual (accession) markets" (*66*). The importance of encouraging the governments of central and eastern European countries to seek derogations on tobacco excise was highlighted, amid concern that meeting the 57% threshold would cause cigarette prices to rise considerably in accession states (*67*). Table 5.2 summarizes the agreed tax harmonization goals and argumentation used by the task force in lobbying for these goals.

The transnational tobacco companies also used passage of the 1992 and 1995 European Commission directives on tobacco excise harmonization to lobby for favourable changes to the French tobacco excise system (*60*). The then-State-owned tobacco company Societé Nationale d'Exploitation Industrielle des Tabacs et Allumettes (SEITA) sold mainly cheap products and benefited greatly from France's predominantly *ad valorem* system; the transnational tobacco companies sought, unsuccessfully, to persuade the Government that a larger specific tax would improve the tax revenue from tobacco products (*60*). Documents on accession countries (*59*) show clearly that the transnational tobacco companies were concerned to prevent any significant increase in excise duties with accession and to ensure that any such increase would be gradual (*68, 69, 71*). The companies collaborated to prevent and postpone any increase in excise (*59, 60, 65, 72*) and lobbied successfully for derogation of increases in the excise level in accession countries (*59, 60*). As a result of the derogations and with the increase in income with accession to the European Union (an issue that the industry appears to have overlooked when claiming that tax increases would lead to rapidly rising cigarette prices), cigarettes actually became slightly more affordable in some accession countries (*59, 61*).

Although there was support for discouraging a rapid increase in excise levels, there was disagreement about the optimal speed of transfer to the European Union's mixed excise structure. British American Tobacco is recorded as favouring

a swifter move to a mixed excise structure than its counterparts (*66*). Its support for an earlier transition to the mixed system probably reflected its brand portfolio. While it then promoted a mixed system to advantage itself and disadvantage Philip Morris International, the latter promoted a specific structure to narrow the price gap between its lead brand Marlboro and cheaper brands (*59*).

The approach and arguments of the transnational tobacco companies appear to be context-specific (although always with the ultimate aim of securing corporate advantage, including over competitors) (*59*). For example, in the Czech Republic, Philip Morris International changed its position on the tiered excise structure in accordance with its changing market position, first lobbying against it and then working to maintain it once it acquired Tabak (and thereby an interest in local cigarettes) (*59*).

Industry arguments against increases in excise

Industry arguments against excise increases are questionable and often contrary to the international evidence. A current British American Tobacco employee suggested that the industry exploits a lack of expertise in tobacco excise to 'educate' politicians (*59*). In seeking to delay implementation of the European Union's minimum excise requirement, transnational tobacco companies argued that raising taxes would increase smuggling, a claim unsupported by the evidence (*73*), which indicates that smuggling is more pervasive in countries with low tobacco taxes and loose border regulation (*59, 74, 75*). In fact, greater European tax harmonization is likely to reduce smuggling (*76*). In France, the transnational tobacco companies appear to have increased prices (rather than taxes) by 6% per year since 2009, with no concern that this would result in more smuggling (*60*). The companies also contended that increased tobacco taxes could reduce government revenue; the French case study showed that the large tax increases of 2003–2004 raised Government revenue by €1 billion, and other international evidence indicates that increases in tobacco tax almost certainly increase government revenue (*77*). The companies further claimed that the tax increases required to meet the European Union's 57% excise level in the Czech Republic should be gradual in order to preserve the country's macroeconomic stability (*59*). It is unlikely that changes in the taxation of tobacco, which is not an essential good (*76*), could have such a significant impact on a country's overall economy (*78*), and the industry's approach increased the affordability of cigarettes after accession. The companies' preference for gradual rather than significant tax increases is more probably related to their awareness that consumers absorb gradual increases more easily. The fact that a significant derogation period was granted to accession states in relation to the minimum excise requirement (albeit a shorter period than the transnational tobacco companies were hoping for) suggests the companies were relatively successful in influencing this process, despite their flawed arguments.

To influence policy, industry targeted key government officials at both national and European Union level, as they have done elsewhere (*34, 53, 79, 80*). Interviewees in the Czech Republic suggest that this tactic continues and has been extended to high-level politicians, with whom the industry appears to have significant contact and influence. Industry documents show that the transnational tobacco companies targeted the current French President Nicolas Sarkozy when he was Minister of the Budget (*81*). Several of President Sarkozy's current advisors and ministers previously worked in the tobacco industry (*60*). In the Czech Republic, donations were made to 'friendly' political parties, the transparency of political funding being identified as a concern (*59*). Other tactics included trying to ensure favourable media coverage and commissioning third-party research to boost the credibility of the industry claims; again, tactics seen elsewhere (*34, 82, 83*). In Bulgaria and Poland, the transnational tobacco companies forged strong relationships with Government officials, which appear to continue (*58, 61, 84*).

In summary, there is clear evidence of an influence of the transnational tobacco companies on excise tax policy in the countries studied, and the influence continues, despite the WHO FCTC and its Article 5.3, which requires Parties to protect policy-making from industry influence. There is also evidence that ministries other than health are under the mistaken impression that Article 5.3 does not apply to them.

5.5 Tobacco industry rationale for investing in smokeless tobacco in Europe and their interest and rhetori on harm reduction

Current illegal online sales of *snus*

Although the sale of *snus* has been prohibited in the European Union outside Sweden since 1992, it is sold on the single market via the

Internet. It was easily purchased in all 10 European Union Member States where test purchases were attempted (WP5) (*85*). Online sales and promotion of *snus* contravene three aspects of European Union legislation. First, they clearly contravene the Tobacco Products Directive, which bans sales of *snus* outside Sweden. Secondly, as the majority of the test purchases were taxed in the country of origin (Sweden), the sales violate Directive 2008/118/EC, which requires that excise duties on distance sales (i.e. via the Internet) be levied in the country of destination. Thirdly, price-based promotions are widespread on the websites selling *snus*, which is in direct contravention of the European Union Tobacco Advertising Directive, which bans Internet tobacco advertising. Importantly, online vendors deliberately target non-Swedish European Union nationals, and most operate from Sweden, despite Swedish Ordinance 1994:1266 banning the export of *snus* to other European Union Member States. The apparent willingness of the tobacco industry to contravene European Union and Swedish legislation and profit from unlawful sales raises questions about the legitimacy of their involvement in consultations on future policy.

The transnational tobacco companies' interest in and approach to smokeless tobacco

All the transnational tobacco companies have entered the Scandinavian *snus* market, albeit to varying degrees, and are lobbying for removal of the European Union ban on *snus*, arguing that its use can be effective for reducing or quitting smoking and is therefore part of a harm-reduction strategy. Documentary evidence suggests that the tobacco companies have been exploring opportunities for introducing smokeless tobacco since the 1970s: British American Tobacco examined the market opportunities in Europe in the 1970s and 1980s, young people being their key target. The companies' interest in smokeless tobacco was motivated by the possibility of creating a new tobacco epidemic and not by a desire to reduce harm from cigarettes. Indeed, the danger of 'cannibalizing' cigarette sales was specifically recognized. Instead, smokeless tobacco was seen as a product for 'beginners', who would previously have taken up smoking, and for smokers who would otherwise have quit or smoked less (such as in smoke-free environments). There is no evidence that the companies' current strategy is different and some evidence that it is the same. For example, in countries where smokeless tobacco is legal (notably the United States), it is being promoted for use in smoke-free public places and targeted at the young. The transnational tobacco companies' current rhetoric on harm reduction (see below) contrasts directly with evidence of their interest in and marketing of smokeless tobacco. Removing the European Union ban on *snus* could reduce the impact of smoke-free legislation and create a new, long-term tobacco epidemic.

Snus in virgin markets

British American Tobacco's recent announcement that it has scaled back *snus* test markets in Canada and South Africa suggests that *snus* use is not as easily transferred to new markets as previously thought. While this may remove some of the dangers in markets where smokeless tobacco is not already established, it would not prevent the industry from continuing to use the rhetoric of harm reduction to its advantage (see below). The potential use of *snus* as part of a population-based harm reduction strategy is therefore limited.

Adoption by the transnational tobacco companies of the term 'harm reduction' and subsequent rhetoric

Documentary evidence shows that the transnational tobacco companies adopted the term 'harm reduction' and used it for their own benefit after being consulted by the United States Institute of Medicine in 2000 as part of their investigations into the evidence for a harm reduction approach (*86*). Since then, harm reduction has featured prominently in industry discourse and has become a key part of their 'corporate social responsibility' strategies. It provides several opportunities: it can be used to justify the inclusion of transnational tobacco companies in policy debates; it infers that the companies are committed to reducing harm from their products (despite evidence to the contrary), thereby rehabilitating their image; and it helps to establish common ground with public health professionals, researchers and policy-makers, thereby facilitating access and influence. Thus, the harm reduction debate could allow the transnational tobacco companies to re-enter the policy area from which they have increasingly been excluded and thus undermine Article 5.3 of the WHO FCTC.

Investment of transnational tobacco companies in smokeless tobacco and the mismatch between investment, genuine interest and rhetoric

Transnational tobacco companies began investing in smokeless tobacco in 2002, 1 year after publication of the report of the United States Institute of Medicine (*86*) and the year that cigarette volume in western Europe peaked (with a continuous decline thereafter) and smoke-free legislation began to be debated seriously in Europe. Despite their investments, cigarettes remain by far the dominant sector of the global tobacco market, accounting for 92%, with 2% from smokeless tobacco. The companies' investments in smokeless tobacco have effectively eliminated any genuine competition with cigarettes, thus ensuring that *snus* cannot 'cannibalize' the companies' highly profitable cigarette sales, and further increasing the already considerable pricing power of cigarettes. These investments help to ensure the industry's long-term future (should regulation further constrain the cigarette market or reduce the companies' pricing power), reassure investors (smokeless tobacco sales are growing globally, unlike cigarette sales) and, in the interim, have a vital public relations function. There appears to be a mismatch between the rhetoric on harm reduction and the lack of action on *snus*, which suggests that transnational tobacco companies do not see smokeless tobacco as part of their short-term business future.

5.6 Policy implications of PPACTE findings on the influence of the tobacco industry on tobacco taxation policy

Tobacco industry pricing

The tobacco industry both under- and over-shifts taxes, its tactic depending on the market structure and economic context. Under-shifting is most likely when the market is immature and the tax increase is relatively small; over-shifting is less of an issue for public health, but it represents a missed opportunity for governments to increase tobacco excise tax revenue.

The price differences between the most expensive and the cheapest tobacco products must be narrowed to prevent the industry from price-discounting the cheapest brands, cross-subsidizing with their profits from more expensive brands. A tax structure that includes a high minimum excise tax, a predominant specific element and a limited *ad valorem* component would achieve better approximation of the prices of all segments.

Large tax increases are likely to benefit public health and government tax revenues to a greater extent than incremental increases. Further research is needed to explore this issue.

Tobacco industry claims about tobacco taxation

Tobacco industry claims about tobacco excise policies must be interpreted with great caution. While industry presents its arguments as serving the interests of governments, their ultimate aim is to serve corporate interests. Industry arguments often contradict existing evidence.

The complexity of tobacco excise tax policy, perhaps more than other areas of tobacco control policy, enables the tobacco industry to make misleading arguments and to influence policy inappropriately. More effort is therefore needed to improve the understanding of politicians, civil servants and the public health community of effective tobacco tax policy and of industry efforts to mislead and undermine it. This is particularly important for governments transitioning from a closed market to a free-market economy. Such communication should be given independently of the industry, given its misleading statements in this area.

Accession to the European Union could be an opportunity to improve public health, but it is also an opportunity for transnational tobacco companies to influence policy. The companies may seek to capitalize on the excise and policy changes required of acceding states and to lobby for their own interests. Any future European Union accession states should receive independent advice on tobacco excise taxation and how changes in income after accession may alter the affordability of cigarettes.

Tobacco industry approach to smokeless tobacco (*snus*)

The online *snus* test purchases by WP5 showed that *snus* is currently sold illegally online by Swedish vendors to European Union nationals other than Swedes. As the transnational tobacco companies now all have a stake in the Scandinavian *snus* market, are profiting from these illegal sales and are lobbying for the European Union ban on *snus* sales to be removed, this is an important finding.

Online *snus* sales contravene several pieces of European Union legislation, in particular Directive 2008/118/EC, which requires that excise duties on distance sales (i.e. via the Internet) be levied in the country of destination. The European Commission (which is responsible for ensuring that European Union law is correctly applied) should investigate these illegal sales and Sweden's apparent failure to fulfil its responsibilities under European Union law and consider starting infringement proceedings; if necessary, it could refer the case to the European Court of Justice.

Other avenues of tobacco advertising are quickly diminishing, and the Internet is one of the last communication channels left in which the industry can have a visible presence and can communicate with customers worldwide efficiently and effectively to promote and sell its products. Serious thought should be given to monitoring these practices; however, unless the responsibility and funding are clearly allocated, this sort of monitoring is frequently overlooked.

Industry access to policy-makers

Tobacco control policies, and therefore the health of the public, suffer when policy-makers maintain connections with transnational tobacco companies, as this provides a direct avenue for influencing policy. The companies still meet with and hope to influence government officials responsible for tobacco control policy. For example, the tobacco industry continues to have contact with high-level political figures in Poland, in violation of Poland's commitments under the WHO FCTC. Through these contacts, industry has 'helped' Poland to negotiate a later excise harmonization deadline and influence the speed of meeting those requirements. Political links such as this contravene WHO FCTC Article 5.3, which seeks to protect policy-making from industry influence.

All policy-makers must be aware of the importance of tobacco tax policy for public health, the conflicts arising from industry's involvement in tobacco control policy and their responsibilities under Article 5.3 of the WHO FCTC. For proper implementation of Article 5.3, the industry's activities must be monitored and exposed, with greater public and political awareness of the industry's tactics. We recommend that the European Commission take action to ensure that the Tobacco Products Directive, including the ban on sales of *snus*, is reviewed without the involvement of the tobacco industry, in conformity with WHO FCTC Article 5.3.

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CHAPTER 6

TOBACCO TAXATION AND HEALTH INEQUALITIES

While no specific work package within PPACTE was dedicated to examining the impact of tobacco taxation or other tobacco control policies on health inequalities, implications for equity were considered to be ubiquitous, and, when the data were available, analyses by age, gender and socioeconomic group were considered. In particular, in the European survey on the economic aspects of smoking (WP2), smoking prevalence was estimated by age, gender and country income level. Furthermore, detailed analyses of the industry pricing strategy in the British cigarette market and tobacco brand and product preferences from household surveys provide interesting insights into how the tobacco industry pricing strategy perpetuates health inequalities by providing cheaper tobacco options to keep poorer smokers smoking and lead price-sensitive young people to take up the habit (WP5). For the Handbook, the international literature was reviewed, including the effect of price and tax on smoking among the poor (WP7). This section introduces the issue of tobacco use and health inequalities, summarizes the comprehensive review on tobacco tax, price and smoking among the poor, and provides a synthesis of PPACTE findings on tobacco taxation and health inequalities.

6.1 Inequalities and tobacco use

Studies of the social determinants of tobacco use reveal an uneven distribution of smoking in most populations and therefore in their tobacco-attributable morbidity and mortality. In the past, smoking was more prevalent in men than in women, men being first exposed to the health risks of manufactured cigarettes. The initial study of smoking and lung cancer in the United Kingdom, in which lung carcinomas were hugely overrepresented in male smokers, is an early record of smoking-associated gender inequality (*1, 2*). The gender divide was corroborated decades later by Ezzati and Lopez (*3*), who calculated that the worldwide smoking-attributable mortality rate was 18% in men and 5% in women in 2000. Smoking became widespread among men in high-income countries, increasing their exposure to health risks and the concomitant health outcomes. Social values and norms at the time precluded simultaneous initiation of the tobacco epidemic in women.

This situation has changed in many high-income countries, so that gender inequality in exposure and health-associated risks has decreased. In many countries in Europe now, the smoking prevalence by sex is similar (Austria, Denmark, Norway, United Kingdom) or even higher in women than in men (Sweden). In others, smoking is overwhelmingly a masculine habit (Armenia, Georgia, the Republic of Moldova,

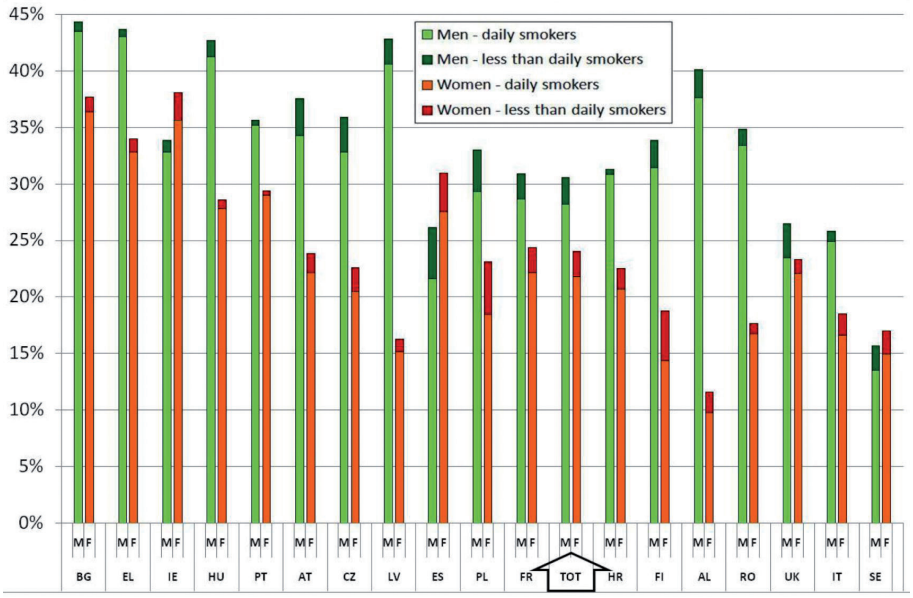


Figure 6.1. Sex-specific prevalences of current smokers, overall* and by country, sorted by prevalence of current smokers of each sex (descending order)

Data from PPACTE WP2 Survey, 2010 - UK refers specifically to England

**Computed by weighting each country in proportion to the population aged ≥ 15 years*

Turkey). Recent, comparable estimates of smoking prevalence by age and gender from the PPACTE European survey of the economic aspects of smoking (WP2) illustrate these gender inequalities in tobacco use. Figure 6.1 shows current smoking prevalences separately for men and women, overall and by country. The prevalence for men ranged from 15.7% in Sweden to 44.3% in Bulgaria, and for women from 11.6% in Albania to 38.1% in Ireland. The male-to-female smoking prevalence ratio was 1.27 overall; it was highest in Albania (3.47) and in Latvia (2.63) and lowest in Sweden (0.93), Ireland (0.89) and Spain (0.84), where the prevalence among women exceeded that among men (*4*).

The Global Youth Tobacco Survey showed that boys and girls in many countries have similar smoking prevalences, indicating that tobacco control should be targeted to emancipated youth *(5, 6)*. The PPACTE European survey confirms these patterns, with the estimate that 26.0% of boys and 27.0% of girls aged 15–24 years were current smokers (*4*) (Figure 6.2). For both sexes, the highest smoking prevalence was in the 25–44-year age group (39.8% of men and 32.0% of women) and the lowest among the elderly (15.3% of men and 8.6% of women). Except for the youngest group (15–24 years), in which the smoking prevalence was higher among females, men were more frequently current smokers than women in all age groups, the ratio increasing with age (0.96 for 15–24, 1.24 for 25–44, 1.27 for 45–64 and 1.79 for > 65 years) (*4*).

Income level and socioeconomic status are strongly associated with smoking prevalence. While the sample size in individual countries in the PPACTE European survey was insufficient to derive prevalence estimates by gender and socioeconomic status, prevalence estimates could be calculated by gender and country income (GDP per capita), categorized as < €16 000 or ≥ €16 000. Among men, the prevalence was systematically higher in poorer (< US$ 20 000) countries (36.0%) than in richer (≥ US$ 20 000) ones (28.9%), while no significant difference was observed for women, with smoking prevalence rates of 23.1% and 24.3%, respectively (Figure 6.2). Furthermore, the male-to-female smoking prevalence ratio was higher in poorer countries (1.56) than in richer ones (1.19) (*4*).

In low- and lower middle-income countries, striking differences in the prevalence of smoking were found by socioeconomic group, the prevalence being highest in the least advantaged groups, contributing to the emergence of health inequalities (*6*). The distribution of smoking by socioeconomic group also affects the social distribution of exposure to second-hand smoke, as nonsmokers and children in disadvantaged families are exposed more often than those in affluent households. Exposure to second-hand smoke is a risk factor for low birth weight, preterm delivery, sudden infant death syndrome, worsening of asthma in children, otitis media and other adverse health effects *(7)*.

A socioeconomic gradient in tobacco-attributable mortality in high-income countries has been reported to be due to differences in smoking prevalence, intensity and other factors. Mortality rates for 35–69-year-old men in Canada, Poland, the United Kingdom and the United States in 1996 reflect the health disparity inflicted by tobacco use across social groups. Jha *et al.* (*8*) showed that the risk of dying from lung cancer, a

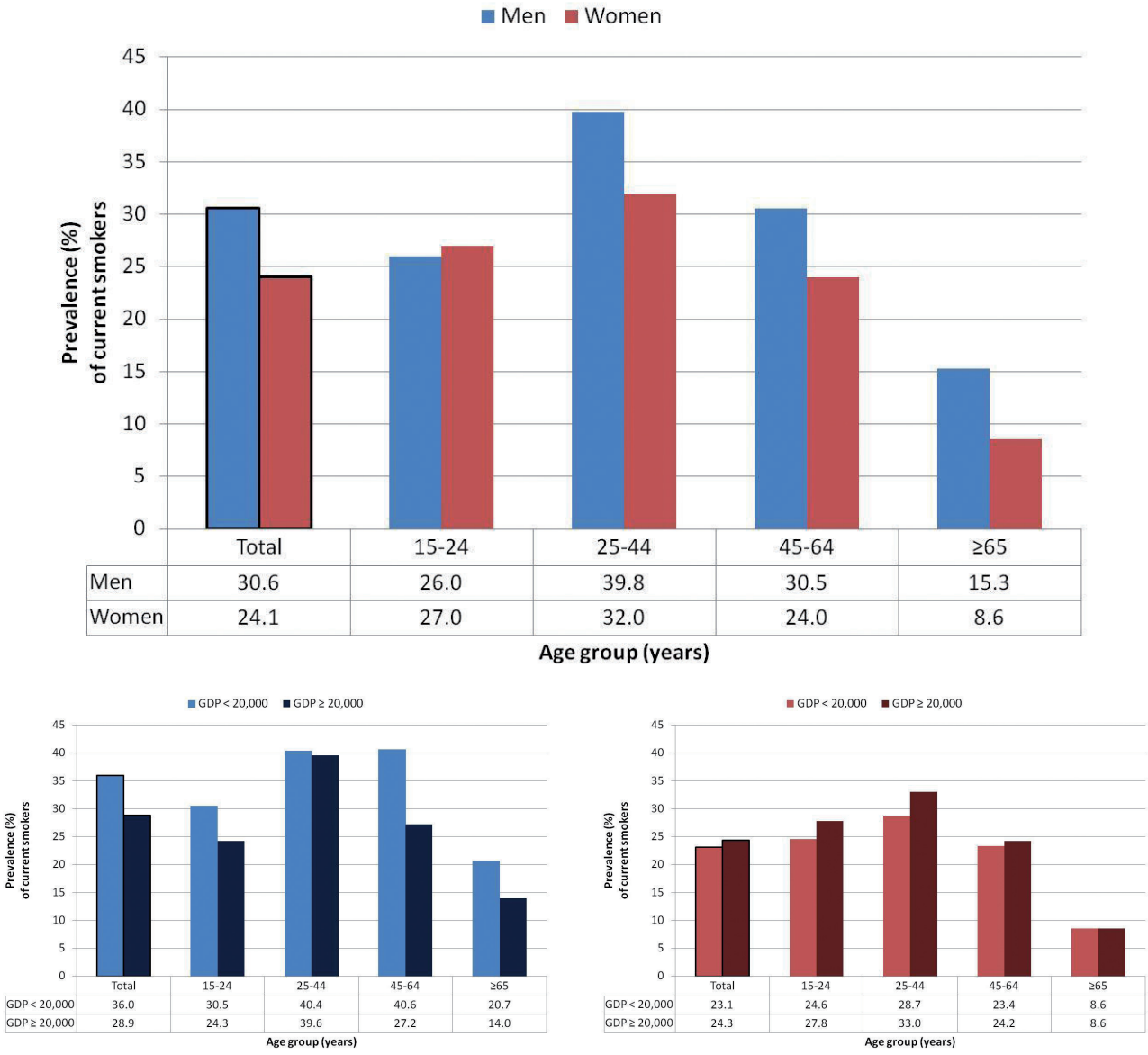


Figure 6.2. Sex-specific percentage prevalences of current smokers, overall* and according to age group in the total sample Data from PPACTE WP2 Survey, 2010 *- UK refers specifically to England*
**Computed by weighting each country in proportion to the population aged ≥ 15 years*

disease overwhelmingly caused by tobacco use, was significantly higher in the group with the lowest socioeconomic status, whether it was defined by education, income or social class, than in groups higher on the socioeconomic gradient in each country. In Poland, the risk of dying was more than four times higher for people with fewer than 12 years of education than those with the most education (*8*). Hence, despite overall reductions in smoking prevalence in high-income countries, subgroups of the population are vulnerable and continue to be exposed to tobacco.

Smoking is a heavier economic burden on users with a low socioeconomic status, given their low disposable income. It also reduces their ability to cope with genuine financial household needs, including health care and smoking cessation. Smoking establishes nicotine dependence, which diverts economic resources into satisfying the addiction, with economic repercussions to the whole household as well as negative effects on health. There is considerable evidence that tobacco taxes are one of the most efficient policy instruments for reducing tobacco consumption and the associated health harms. It has been

argued, however, that excise duties on tobacco are regressive, as the tax burden generally falls equally on the rich and the poor. Smokers of low socioeconomic status who continue to smoke after increases in tobacco taxes allocate more of their income to satisfying their habit than richer smokers. If more smokers in lower socioeconomic groups quit smoking than rich smokers as a result of increases in tobacco taxes, the increases will reduce the disparities by income and health (*9*).

The price responsiveness of tobacco demand generally varies by socioeconomic status within and between countries. More economically disadvantaged groups are more likely than others to reduce their tobacco consumption in response to an increase in tobacco price. The Handbook includes a review of the published evidence on the demand for tobacco products by socioeconomic status in low-, middle- and high-income countries (*10*).

Studies based on individual or household-level data allow estimates of the price elasticity of tobacco demand by income, education and other socioeconomic indicators. Estimates for total elasticity (the percentage change in consumption of a product that results from a 1% increase in price), elasticity of smoking prevalence (the percentage change in the prevalence of use of a product that results from a 1% increase in the price of that product; also referred to as 'participation elasticity') and elasticity of smoking intensity (the percentage change in the consumption of a product by consumers that results from a 1% increase in the price of that product; also referred to as 'conditional demand elasticity') by socioeconomic status, when available, were abstracted from studies conducted in high-income (Australia: 1 study, Canada: 2, the United Kingdom: 2, and the United States: 11), upper middle-income (Bulgaria: 1, South Africa: 1, Turkey: 1), lower middle-income (China: 2, Taiwan, China: 1, Egypt: 1, Indonesia: 1, Sri Lanka: 2, Thailand: 1, and the Ukraine: 1) and low-income countries (Bangladeesh: 1, Myanmar: 2, Nepal: 1, and Viet Nam: 1) and are summarized in the Handbook.

6.2 Differences in price sensitivity by socioeconomic status

Evidence from high-income countries

The price responsiveness of tobacco demand varies by the socioeconomic status (such as income, expenditure, education, race and ethnicity) of the population groups in a country. It is consistently higher among the poor than the rich in high-income countries, which can be explained by the 'present orientation' of poorer people, who tend to discount the future health costs and loss of earning due to tobacco use at a higher rate. Poorer people also incur an increasingly higher opportunity cost of tobacco use when the price increases and thus tend to reduce tobacco consumption more than the rich would do. As a result, the share of the total amount of tobacco tax paid by the poor is expected to decrease when the tobacco tax and prices increase.

Chaloupka (*11*) was the first to investigate socioeconomic variations in the price responsiveness of tobacco consumption. He used individual-level data from the Second National Health and Nutrition Examination Survey conducted in the United States in the late 1970s. The price elasticity of cigarette demand was greater for people with less than high-school education (ranging from -0.57 to -0.62) than in people with at least high-school education, who were relatively unresponsive to price changes.

Separate estimates of the price elasticity of smoking prevalence and smoking intensity were not available until 1998. Pooling data for 14 years (1976–1980, 1983, 1985 and 1987–1993) from the United States National Health Interview Survey, the Centers for Disease Control and Prevention (*12*) showed that the smoking prevalence among people with an income level below the median was more price responsive than that among people above the median income level. The opposite was true for smoking intensity: the daily number of cigarettes smoked by smokers above the median income level was more price elastic than that for smokers below the median income level. The overall price elasticity was, however, greater for people in the lower economic class (-0.29) than for those in the upper economic class (-0.17). The greater price responsiveness of low-income people was thus driven by their greater smoking prevalence elasticity.

The Centers for Disease Control and Prevention further observed that Hispanics were more price responsive than black or white populations, with respect to both smoking prevalence and smoking intensity (*12*). Blacks were more

price responsive than whites with respect to smoking prevalence, but less so with respect to smoking intensity. Studies by Biener *et al.* (*13*), Evans, Ringel and Stech (*14*), Hersch (*15*), Farrelly *et al.* (*16*), Gruber and Koszegi (*17, 18*), Stehr (*19*), and DeCicca and McLeod (*20*) confirmed the negative relation between socioeconomic status and the price responsiveness of tobacco demand; that is, poorer groups are generally more price responsive.

Using data from the 1984–2004 Behavioural Risk Factor Surveillance System surveys in the United States, Franks *et al.* (*21*) found that the elasticity of smoking prevalence with respect to cigarette price was larger in the lowest income group (-0.45) than in higher income groups (-0.22) in the period before the Master Settlement Agreement (1984–1996), whereas subsequently (1997–2004), smoking prevalence became price insensitive for all income groups. Farrelly and Engelen (*22*) reanalysed the data used by Franks *et al.* (*21*), adding 2 years of data after the Agreement and limiting the pre-Agreement period from 1990 to October 1998 and found that the lowest income group was price-sensitive. The difference in the findings of the two studies may be associated with the period examined. Colman and Remler (*23*) reinforced the finding of greater price elasticity in lower income groups, with values of -0.37 for the low-income, -0.35 for the medium-income and -0.20 for the high-income group.

Ringel and Evans (*24*) studied pregnant women in the United States and found that the price responsiveness of cigarette demand was highest in the best-educated cohort and declined with lower levels of education. They also found lower price responsiveness among black and Hispanic pregnant women than among whites.

Estimates of the price elasticity of smoking intensity in Canada (*25*) showed greater price responsiveness among high-school graduates (-0.33) than among people with less than a high-school education (-0.23) or university graduates (-0.30), suggesting an inverse-U relation between price sensitivity and level of education. Gruber *et al.* (*26*), however, found a more systematic relation between income and cigarette expenditure elasticity in Canada, with considerably higher estimates for the lowest two quartiles than for the upper two quartiles.

Biennial data from the British General Household Survey (1972–1990) analysed by Townsend *et al.* (*27*) showed that the price elasticity of smoking intensity was -1.02 and -0.88 for men and women in the bottom socioeconomic group, respectively, and -0.47 and -0.61 for the total male and female population. The elasticity of smoking prevalence among men was -0.61 in the lowest of five socioeconomic groups and -0.08 for the whole male population. For women, the smoking prevalence elasticity was -0.51 in the lowest socioeconomic group and -0.23 for the whole female population. This work corroborated earlier findings by Townsend (*28*).

Schaap *et al.* (*29*) studied the effectiveness of comprehensive tobacco control policies, including price and taxation, in 18 European countries. Of all the tobacco control policies examined, price policies were most strongly associated with quit ratios. No significant difference was found between high and low education groups.

In Australia, Siahpush *et al.* (*30*) found a consistently greater price sensitivity of smoking prevalence among lower-income respondents. The difference in price elasticity of smoking prevalence estimated for low-income groups (-0.32) and medium- (-0.04) and high-income (-0.02) groups was stark. This study is unique in that monthly data on smoking prevalence were used, representing a significant improvement over previous studies, which were limited by their use of annual prevalence data.

Evidence for low- and middle-income countries

Evidence for socioeconomic variations in the price responsiveness of tobacco demand in low- and middle-income countries is mixed. The poorest are not necessarily the most sensitive to tobacco price changes in these countries (*31–35*). In some countries, this can be attributed to the availability of untaxed, cheaper tobacco products. Therefore, the empirical evidence for equity implications of tobacco taxation increases in low- and middle-income countries is inconclusive.

6.3 Price responsiveness of smoking initiation, quitting and relapse

Studies on socioeconomic variations in the price sensitivity of smoking prevalence rarely differentiate between smoking initiation, quitting and relapse, mainly because this type of analysis requires longitudinal (prospective or retrospective) data on individual smoking habits. Madden (*36*), for example, used

retrospective data for a sample of Irish women aged 48 and under to identify the factors that influence smoking initiation and quitting and obtained mixed results on the effect of price by educational status. The strongest effect of tax on starting smoking was observed among people with intermediate education, while weaker effects were found for both people with the least education and those with higher levels of education, suggesting an inverse-U effect. The differences between intermediate and higher levels of education were not, however, statistically significant. Tax appeared to be the most effective factor for inducing quitting among people with the least education; there was little evidence of a significant difference in the effectiveness of taxation between groups with higher or intermediate levels of education.

6.4 Tobacco taxation and regressivity

Increasing tobacco taxes in order to reduce tobacco use is often criticized as being regressive, placing a disproportionate burden on people with low incomes. It is argued that the increase in taxes might reduce the overall ability of people with low incomes to purchase and consume other goods, thereby increasing income distribution inequality.

A situation considered to be regressive is an increase in the tax burden as the income level declines. As in many countries people with low incomes are more likely to smoke and spend a greater proportion of their incomes on tobacco than people on higher incomes, tobacco taxation could be considered regressive; however, if people with lower incomes are more sensitive to price increases and reduce their consumption in response to a price increase to a greater extent than people with higher incomes, as the literature summarized above suggests, tax increases could paradoxically reduce the burden of tax on people with low incomes. Hence, although taxes can be considered regressive on average, the tax increase is less regressive and reduces total regressivity.

6.5 New evidence from the PPACTE project on tobacco and health inequalities

The evidence summarized above shows that certain population subgroups have higher rates of tobacco use and find it harder to quit, with declines in smoking over time varying by population subgroup. In addition to having higher smoking rates, the least advantaged members of society tend to start smoking at a younger age, use more tobacco and are less likely to quit (*37*).

A recent review *(37)* concluded that price increases were the intervention most likely to reduce such inequalities. The effectiveness of tobacco taxation is fully realized, however, only if tax increases lead to increases in the price of the cheapest cigarettes or other tobacco product, whether manufactured cigarettes or hand-rolling tobacco. Otherwise, there is an opportunity and incentive for the most price-responsive smokers to trade-down to cheaper brands or products.

Cheap tobacco products are not limited to discount brands of manufactured cigarettes but include illicit tobacco sold at cut prices and hand-rolling tobacco, which is subject to lower rates of excise within the European Union. Estimates of the cross-price elasticity of demand in Finland (WP3) suggest that hand-rolling tobacco is substituted for cigarettes as cigarette prices rise. The negative short-run income elasticity for hand-rolling tobacco indicates that it is an inferior good, meaning that consumers with higher incomes prefer cigarettes to cheaper forms of tobacco (*38*). The results of many international studies of demand show that people who currently use hand-rolling tobacco or have switched from expensive cigarettes to cheaper pipe and hand-rolling tobacco tend to be poorer or in lower income groups (*39*).

The extent to which tax increases result in increases in the average price of the cheapest cigarettes depends on the structure of tobacco taxes and industry pricing strategies. Tobacco companies may use price-based promotions to position brands at various points in the market. Furthermore, as discussed above, companies may absorb tax increases (under-shifting), pass them on to consumers or increase prices on top of tax increases (over-shifting).

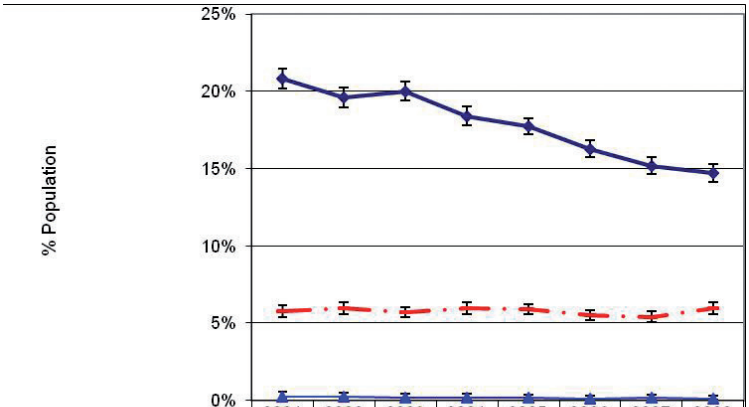
Industry pricing strategy and the availability of cheap tobacco products

A study of industry pricing strategies, discussed in greater detail in Chapter 5 and elsewhere (*40*), categorized cigarette brands sold on the British market into four price segments: premium, mid-price, economy and ultra-low price (WP5). Trends in market share (by volume) by price segment were then observed between 2001 and 2009. About half the market was held by economy segment brands. The share held by this segment grew until 2007–2008, when it fell slightly because of gains in the ultra-low-price segment. After the tobacco

companies acquired supermarket brands and launched their own ultra-low-price brands in 2006, the share of ultra-low-price brands increased substantially. In contrast, the market share of premium and mid-priced brands fell from 2001 onwards. While the three segments (premium, economy and ultra-low price) have clearly separate price ranges, the price of mid-price brands now overlaps entirely with that of lower-end premium brands. Furthermore, the range of prices within each segment appears to have widened, and the gap between the most and the least expensive brands has doubled (*40*).

When trends in price increases by price segment were examined for 63 brands with a market share of 0.2% or greater (November 2006) between 2006 and 2009, the price increases of brands in the ultra-low-price segment were much smaller than those of brands in other segments (*40*), with a < 1% increase in price for every brand in the ultra-low price group and real price decreases in some cases. Meanwhile, the price of premium brands increased by 3–5% between 2006 and 2009 and that of mid-priced or economy brands by 5–6%.

These findings suggest that the tobacco industry is using a sophisticated pricing strategy, in which cheaper brands are cross-subsidized with profits from more expensive brands. The study shows real price increases and over-shifting of taxes in the premium, mid-price and economy brand segments, while the real price of ultra-low-price brands has not increased and taxes on this segment are under-shifted. Therefore, the price increases are greatest on mid-price and economy brands and lowest (and often negative in real terms) on individual ultra-low-priced brands. Furthermore, the price increases appear to be timed to accentuate differences in prices between brands in different segments at the point when duties are increased; however, overall prices are increased and taxes are over-shifted to consumers, which contributes to rising industry profits (*40*).



	2001	2002	2003	2004	2005	2006	2007	2008
Filter cigarettes	20.8%	19.6%	20.0%	18.4%	17.7%	16.3%	15.2%	14.7%
Hand-rolling tobacco	5.8%	5.9%	5.7%	5.9%	5.9%	5.5%	5.4%	6.0%
Plain cigarettes	0.2%	0.2%	0.2%	0.2%	0.2%	0.1%	0.2%	0.1%

Figure 6.3 Smoking trends in the population of the Great Britain, 2001-2008: Proportions of the population smoking filter cigarettes and hand-rolling tobacco

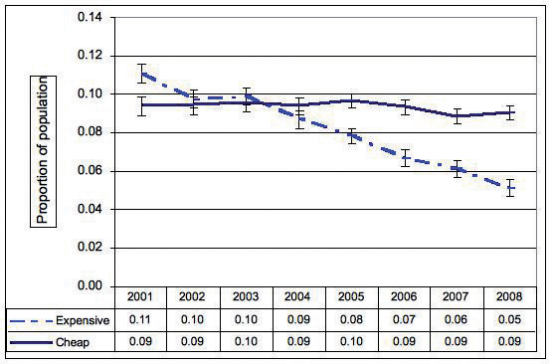
As a result of this pricing strategy and the increasing number of ultra-low-price brands, consumers have more opportunities to down-trade from more expensive to cheaper cigarettes; and the market share by volume of ultra-low-price brands has increased in response. The availability of cheap brands undermines tobacco tax policy, as it ensures that price-sensitive smokers, particularly the young and the poor, continue to initiate and maintain their smoking habits. If the young and most socioeconomically deprived parts of the population are the predominant users of these cheaper tobacco products, their availability is contributing to widening health inequalities.

Further analysis of annual data from the British General Household Survey (now known as the General Lifestyle Survey) for the period 2001–2008 provided further insight into the trends in the use of cheap cigarettes and hand-rolling tobacco, as well as the profiles of users of such products.

Trends in the use of cheap cigarettes and hand-rolling tobacco in Great Britain

While there was a marked decline in the smoking rate in the population of Great Britain as a whole during the period 2001–2008, from 26.8% to 20.8%, this decrease is only in the proportion smoking filter cigarettes (Figure 6.3), which has dropped significantly, from 20.8% to 14.7%. In contrast, the proportion of smokers smoking hand-rolling tobacco has not changed significantly, hovering around 6%. The proportion smoking unfiltered cigarettes has remained negligible, at 0.1–0.2% (*41*).

Among people smoking filter cigarettes, the proportion smoking expensive cigarettes has decreased significantly, from 11.1% to 5.1%,



	2001	2002	2003	2004	2005	2006	2007	2008
Expensive	0.11	0.10	0.10	0.09	0.08	0.07	0.06	0.05
Cheap	0.09	0.09	0.10	0.09	0.10	0.09	0.09	0.09

Figure 6.4. Smoking trends in the population of the Great Britain, 2001–2008: proportions of the population smoking cheap (economy and ultra-low-price) and expensive (premium and mid-price) cigarettes

From reference (47) The proportions presented do not add up exactly to the proportions who smoke filter cigarettes shown in Figure 6.3 because we were unable to allocate all filter cigarette brands to a price category, general household surveys did not identify a brand for each smoker or, for a few brands identified, we were unable to obtain price data.

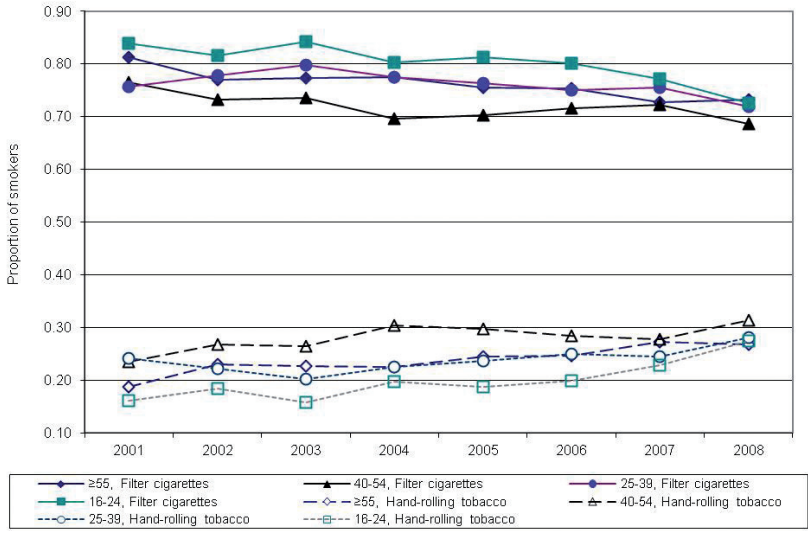


Figure 6.5. Smoking trends in the population of the Great Britain 2001–2008: proportions of smokers smoking filter cigarettes and hand-rolling tobacco, by age group

From reference (47)

while the proportion smoking cheap cigarettes has not changed significantly, remaining at 9.0–9.7% throughout the 8-year period (Figure 6.4) (*41*).

Among smokers, the proportion smoking filter cigarettes has fallen and the proportion smoking hand-rolling tobacco has increased in all age groups (Figure 6.5). This trend was most apparent for 16–24-year-olds, among whom the proportion using hand-rolling tobacco almost doubled, from 16% to 28%. The proportions in 2008 are significantly different from those in 2001 for all groups, although the results are of borderline significance for people aged 25–39 years (*41*).

Consistent with the marked decline in the proportion of the population as a whole smoking expensive cigarettes (Figure 6.4), significant decreases were seen in all age groups except those over 55 years in the proportion of smokers smoking expensive cigarettes, with concomitant increases in the proportion smoking cheap cigarettes. The increase in the proportion smoking cheap cigarettes was greatest in the youngest age group, which now has the highest rate of cheap cigarette use. Three quarters of 16–24-year-olds now smoke cheap cigarettes (*41*).

Determinants of smoking cheap cigarettes and hand-rolling tobacco

Analysis of the British General Household Survey data suggests that the odds of smoking cheap cigarettes are higher for women than men, for younger than the oldest age group, for whites than for other ethnic groups and for people with the lowest socioeconomic and educational

status (Table 6.1). Women were 50% more likely to smoke cheap cigarettes than men. People aged 16–24 were 3.6 times more likely to smoke cheap cigarettes than those aged over 55 years, and the odds for smoking cheap brands increased with declining age, although the confidence intervals for the intermediate age groups overlapped. The odds for smoking cheap cigarettes were significantly higher for all occupational groups than for managerial and professional occupations, although, as for age, a nonsignificant dose–response relation was seen. The proportion of full-time students who smoked cheap cigarettes was similar to that of managerial and occupational classes, but the number was too small to reach clear conclusions about their brand choice. In comparison with people achieving A-level or higher qualifications, those with less education were more likely to smoke cheap brands *(41)*.

The odds for smoking hand-rolling tobacco versus filter cigarettes showed similar inverse socioeconomic and educational gradients to the odds for smoking cheap cigarettes and were greatest for people with the lowest economic and educational status (Table 6.2). Marked differences were, however, seen. Men were more likely than women to smoke hand-rolling tobacco, but there were no significant differences by age group or ethnicity.

It is notable that women are 50% more likely than men to smoke cheap cigarettes. Interestingly, inequalities in smoking among women by socioeconomic factors have widened in recent years, while those in men have remained

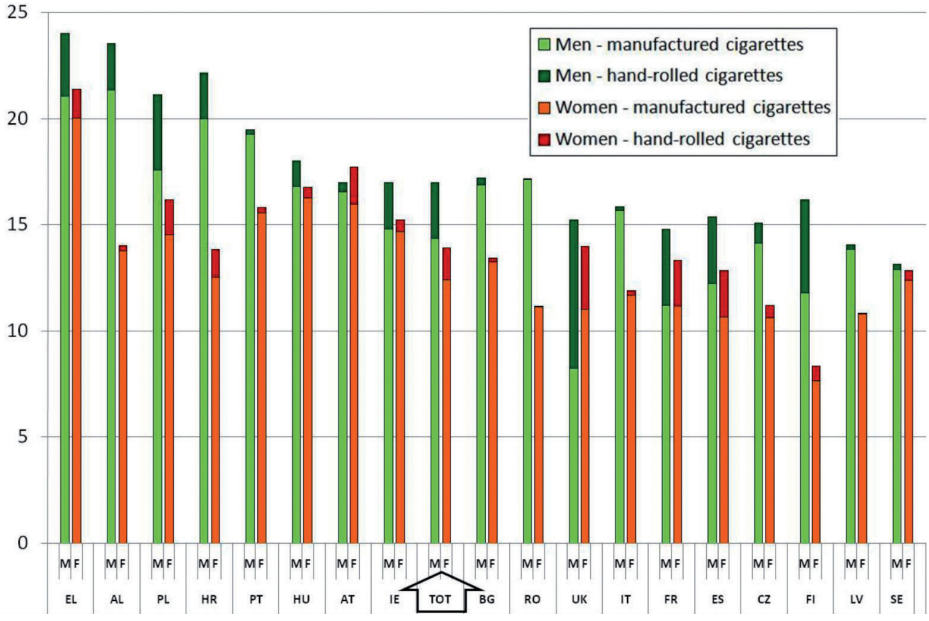


Figure 6.6. Numbers of cigarettes (manufactured and hand-rolled) smoked per day by current smokers, separately for men and women, overall* and by country, sorted by the consumption of cigarettes by current smokers of each sex (descending order)

Data from PPACTE WP2 Survey, 2010 - UK refers specifically to England

** Computed by weighting each country in proportion to the population aged ≥ 15 years*

constant *(42)*. We also found that the rates of cheap cigarette use increased with declining age. Similarly, smoking rates have been rising among young adults, who are more likely to smoke cheap cigarettes, even though overall smoking rates decreased and then remained steady during 2007–2009 *(42)*.

Studies of cessation interventions indicate that quit rates are lower among disadvantaged smokers. Given recent evidence that disadvantaged smokers attempt to quit at the same rate as more advantaged smokers *(43)*, this pattern appears to be attributable to lower rates of success in quitting among the disadvantaged. While several explanations have been considered, including lack of support for quit attempts, in part because other people in their social network are more likely to smoke, greater addiction to tobacco and poorer compliance with treatment *(43, 44)*, the role of the availability and use of cheap, legal sources of tobacco has been overlooked. These findings, well-established evidence on the importance of price in reducing tobacco use *(11, 13, 26, 45)*, particularly among poorer smokers, and newer evidence that the availability of cheap cigarettes reduces the ability of price to promote cessation *(46)* suggest that the availability of cheap tobacco may partly explain the high smoking rates and low quit rates of the most disadvantaged members of society *(41)*.

These findings suggest that the availability and use of cheap cigarettes play a key role in determining inequalities in smoking *(41)*. Moreover, given recent evidence from the British market that the major tobacco

N*	Bivariate analysis					Multivariate analysis		
		% smoking		OR (95% CI)		N*	OR (95% CI)	p
		Expensive	Cheap					
Gender								
Male	749	39.79	60.21	1		519	1	
Female	1165	33.58	66.42	1.31 (1.07;1.61)	0.010	829	1.51 (1.16;1.97)	0.002
Age (years)								
≥ 55	618	44.79	55.21	1	< 0.001	166	1	< 0.001
40–54	577	35.48	64.52	1.47 (1.13;1.93)	0.005	529	1.95 (1.25;3.06)	0.003
25–39	521	33.95	66.05	1.58 (1.21;2.07)	< 0.001	486	2.49 (1.58;3.93)	< 0.001
16–24	198	25.97	74.03	2.33 (1.64;3.31)	< 0.001	167	3.57 (2.05;6.20)	< 0.001
Ethnicity								
White British	1729	34.12	65.88	1		1227	1	
Other	181	50.98	49.02	0.50 (0.37;0.68)	< 0.001	121	0.47 (0.31;0.73)	< 0.001
National Statistics Socio-economic Classification								
Managerial and professional occupations	477	50.13	49.87	1	< 0.001	377	1	< 0.001
Intermediate occupations	348	40.13	59.87	1.49 (1.10;2.03)	0.010	246	1.61 (1.11;2.34)	0.013
Routine and manual occupations	804	28.70	71.30	2.49 (1.92;3.22)	< 0.001	545	2.45 (1.75;3.43)	< 0.001

Never worked and long-term unemployed	218	25.97	74.03	2.85 (1.94;4.20)	< 0.001	160	2.83 (1.74;4.62)	< 0.001
Full-time students	21	54.55	45.45	0.78 (0.33;1.85)	0.570	20	0.65 (0.24;1.73)	0.386
Education								
A level or above	550	46.14	53.86	1	< 0.001	521	1	< 0.001
O level	455	29.16	70.84	2.08 (1.58;2.74)	< 0.001	443	1.55 (1.14;2.11)	< 0.005
Other qualification	115	19.44	80.56	3.58 (2.15;5.96)	< 0.001	114	2.19 (1.27;3.77)	< 0.005
None	273	21.68	78.32	3.06 (2.13;4.38)	< 0.001	270	2.21 (1.46;3.35)	< 0.001
Area								
London	168	51.63	48.37	1	< 0.001	121	1	0.011
East and southeast England	411	46.70	53.30	1.21 (0.84;1.73)	0.303	312	1.06 (0.66;1.71)	0.808
East and West Midlands	328	31.60	68.40	2.29 (1.55;3.37)	< 0.001	230	1.67 (1.01;2.77)	0.048
Northeast, northwest, Yorkshire and Humber	553	30.90	69.10	2.37 (1.67;3.36)	< 0.001	386	1.73 (1.08;2.77)	0.024
Southwest England	118	33.33	66.67	2.09 (1.24;3.52)	0.006	81	1.68 (0.84;3.36)	0.144
Wales	106	20.25	79.75	4.23 (2.27;7.88)	< 0.001	81	2.29 (1.07;4.88)	0.032
Scotland	229	28.11	71.89	2.71 (1.76;4.18)	< 0.001	137	2.04 (1.14;3.67)	0.017

From reference (41)
**Unweighted*

Table 6.1. Bivariate and multivariate logistic regression analysis showing odds ratios (ORs) and 95% confidence intervals (CIs) for smoking cheap versus expensive brands versus in the Great Britain, 2008

	Bivariate analysis					Multivariate analysis		
	N*	Percentage smoking Filter cigarettes	Hand-rolling tobacco	OR (95% CI)	p	N*	OR (95% CI)	p
Gender								
Male	1307	61.59	38.41	1		910	1	
Female	1532	80.11	19.89	0.40 (0.33;0.48)	< 0.001	1108	0.38 (0.31;0.48)	< 0.001
Age (years)								
≥ 55	884	73.19	26.81	1	0.257	244	1	0.295
40–54	870	68.57	31.43	1.25 (0.99;1.59)	0.063	794	1.12 (0.76;1.65)	0.560
25–39	784	71.84	28.16	1.07 (0.84;1.37)	0.562	727	1.02 (0.69;1.51)	0.920
16–24	301	72.51	27.49	1.04 (0.77;1.40)	0.799	253	0.80 (0.50;1.26)	0.337
Ethnicity								
White British	2584	70.20	29.80	1		1848	1	
Other	250	80.39	19.61	0.57 (0.41;0.79)	< 0.001	170	0.80 (0.53;1.20)	0.286
National Statistics Socio-economic Classification								
Managerial and professional occupations	630	79.05	20.95	1	< 0.001	504	1	0.002
Intermediate occupations	471	75.43	24.57	1.23 (0.90;1.67)	0.193	334	1.12 (0.77;1.62)	0.557
Routine and manual occupations	1260	68.41	31.59	1.74 (1.36;2.22)	< 0.001	870	1.70 (1.24;2.32)	< 0.001

Never worked and long-term unemployed	369	63.85	36.15	2.14 (1.56;2.93)	< 0.001	272	1.78 (1.19;2.65)	< 0.005
Full-time students	39	67.50	32.50	1.80 (0.89;3.62)	0.101	38	2.57 (1.15;5.77)	0.022
Education								
A level or above	773	74.62	25.38	1	< 0.001	729	1	0.005
O level	690	71.55	28.45	1.17 (0.91;1.49)	0.215	671	1.19 (0.90;1.58)	0.219
Other qualification	189	67.07	32.93	1.43 (0.99;2.06)	0.053	187	1.40 (0.93;2.10)	0.103
None	434	62.01	37.99	1.80 (1.37;2.34)	< 0.001	431	1.76 (1.28;2.43)	< 0.001
Area								
London	230	79.10	20.90	1	< 0.001	164	1	< 0.001
East and southeast England	620	68.67	31.33	1.74 (1.21;2.49)	0.003	463	1.81 (1.14;2.87)	0.012
East and West Midlands	474	74.03	25.97	1.34 (0.91;1.97)	0.135	330	1.19 (0.73;1.95)	0.485
Northeast, northwest, Yorkshire and Humber	788	75.42	24.58	1.25 (0.87;1.79)	0.221	557	1.25 (0.79;1.99)	0.337
Southwest	264	43.58	56.42	4.94 (3.28;7.43)	< 0.001	202	6.85 (4.07;11.51)	< 0.001
Wales	167	66.94	33.06	1.86 (1.14;3.02)	0.013	122	1.52 (0.82;2.81)	0.187
Scotland	294	80.50	19.50	0.92 (0.59;1.43)	0.707	180	1.01 (0.58;1.78)	0.960

From reference (41)
**Unweighted*

Table 6.2. Bivariate and multivariate logistic regression analysis showing odds ratios (ORs) and 95% confidence intervals (CIs) for smoking hand-rolled tobacco versus filter cigartettes in the Great Britain, 2008

companies have been absorbing tax increases on the cheapest cigarette brands (so that the price of these products has not increased in real terms) and using price promotions to sell these brands (sometimes at a loss) *(47)*, this study suggests that tobacco industry pricing may play a role in explaining smoking patterns, including inequalities *(41)*.

While this analysis was limited to the British market, where the number of hand-rolled cigarettes as a proportion of daily cigarettes is higher than in other European Union countries (Figure 6.6), the findings are likely to be relevant to numerous other markets. As discussed in Chapter 3, hand-rolling tobacco represents a substantial proportion of total releases for consumption in Albania, Austria, Croatia, Finland, France, Greece, Hungary, Ireland, Spain and the United Kingdom. Furthermore, releases for consumption of fine-cut tobacco increased between 2002 and 2010 in the European Union overall and particularly in Cyprus, Germany, Greece, Hungary, Poland and Spain. Euromonitor data confirm these trends, indicating that sales of hand-rolling tobacco have increased in the Czech Republic, Germany, Hungary, Poland and Spain, and the share of cheap cigarettes is growing in Austria, the Czech Republic, Denmark, Hungary, Lithuania, Portugal, Slovakia and Sweden.

6.6 Policy implications of the PPACTE project findings for tobacco taxation and health inequalities

Urgent action should be taken to narrow the price differentials between the most expensive and the cheapest tobacco products (both manufactured cigarettes and hand-rolling tobacco) and to prevent the industry from price-discounting the cheapest brands, cross-subsidizing this practice with profits from more expensive brands. A tax structure that includes a high minimum excise tax, a predominant specific element and a limited *ad valorem* component would achieve greater convergence of prices across price segments, and comparable rates of excise on other tobacco products would discourage product substitution. Furthermore, price promotions and below-cost selling should be banned. Tighter controls on illicit trade could also contribute to reducing inequalities in smoking and associated inequalities in health outcomes, by restricting the supply of cheap tobacco products.

6.7 Data required to identify inequalities in tobacco use and the effectiveness of policy in reducing inequalities

Regularly collected data from surveys on tobacco use by product type and brand and price paid and by age, gender and socioeconomic status based on standardized definitions and measures would facilitate more detailed analyses of the effectiveness of tobacco taxation and its impact on health inequalities.

Moreover, data on price trends by price segment or brand would allow closer monitoring of the tobacco industry.

Future research on quit rates should include far more consideration of the role of price in cessation, and research on inequalities in smoking should consider the impact of price differences between the most expensive and the cheapest products.

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CHAPTER 7

CONCLUSIONS AND RECOMMENDATIONS FOR TOBACCO FISCAL POLICY IN THE EUROPEAN UNION

Background

The recommendations below derive from PPACTE research on the following policy themes: the effectiveness of tobacco taxation for public health (Chapter 2); tobacco price, tax structures and rates (Chapter 3); illicit tobacco trade (Chapter 4); tobacco industry influence on tobacco taxation (Chapter 5); and tobacco taxation and health inequalities (Chapter 6). These aspects were covered in research conducted over the past 3 years (2009–2012).

Approximately 650 000 people in the European Union die prematurely each year from smoking-related diseases. Across the European Union, there are threefold differences in cigarette prices and in smoking prevalence, with higher prevalences clearly related to lower tobacco prices. The aim of the European Commission Directive on tobacco taxation is to harmonize tobacco taxes in Member States, and public health is now also a consideration.

Tobacco tax increases

The results of the PPACTE work packages confirm convincingly that price is a major determinant of demand for cigarettes. This can be seen in Figures 2.1–2.13 (Chapter 2), which show an average price elasticity of demand of -0.3 to -0.4. Income is also shown to affect demand, with an average income elasticity of demand for cigarettes of +0.3 to +0.4. Price is another significant factor in the demand for pipe tobacco and *snus*, but income appears to be negatively related to the demand for these tobacco products. Price and tobacco taxation are therefore key factors both for public health and for generating national revenue.

Recommendation 1:
We strongly recommend a continuing increase in tobacco taxes, so that the price of cigarettes and other tobacco products is greater than the general rise in price of other goods and rises in incomes. This would make tobacco increasingly less affordable to smokers and potential smokers and result in increased national revenues from tobacco taxes for Member State governments.

Evidence compiled by WP5 suggests that large, intermittent tax increases may have greater public health benefits than small, gradual increases. While further research is required to explore this issue in more detail, consideration should be given to implementing tax increases in this way.

Support for increases in tobacco taxes among smokers and nonsmokers in the European Union

The PPACTE study (WP2) sought the opinions of smokers and

nonsmokers in Member States on the acceptability of raising cigarette prices. The findings demonstrate strong public support for tax increases when at least some of the tax is earmarked (hypothecated) to support smoking cessation and for prevention. Overall, 79% of nonsmokers and 49% of current smokers supported a price increase of 5%, with revenues allocated to support smoking cessation measures; 74% of nonsmokers and 40% of smokers supported a 20% increase in price; and 76% of nonsmokers and 67% of smokers perceived the provision of free smoking cessation support to be useful for controlling smoking. These results clearly show general support in Member States for significant increases in tobacco taxes.

Recommendation 2:
The European Commission should consider and act upon the high level of support from the citizens of Member States for substantial increases in tobacco taxes, particularly if some of the tax revenue is used to support cessation, public education and prevention.

Tobacco tax structure based on high minimum tax to discourage trading-down

Because price is an important factor in both tobacco demand and tobacco industry profits, tobacco companies continually try to persuade the governments of Member States to abstain from raising taxes, to lower them or to change tax structures to suit their interests. Tobacco companies seek to minimize the impact of a given excise policy on demand by providing cheaper alternatives (both cigarettes and hand-rolling tobacco), particularly for poor smokers who are the most price sensitive. These pressures have undermined the basis and intentions of European Commission legislation and European Union directives on tobacco tax. The main issues to be addressed in future directives are: the availability of cheap and ultra-cheap cigarettes, including 'dumped' cheap cigarettes; the relatively very low taxes on alternative products such as fine-cut tobacco used for roll-your-own cigarettes; illicit trade and smuggling; price-based promotions; and the pernicious interference and influence of tobacco companies in the preparation of tobacco tax policy. It is no easy matter to address these problems or loopholes, but changes to the tobacco tax structure and other supportive legislation could go a long way to achieving these aims.

Addressing the problem of low-priced cigarettes will require that a high minimum tax in monetary terms be set in each country as the main tobacco tax, to eliminate the tax advantage of cheap or ultra-low-price cigarettes. For example, the tax could be such that the minimum excise tax plus VAT is 80% of the weighted average price of cigarettes (or preferably 83%, as in Turkey). As some countries have very low pre-tax prices, the tax would have to be set at a minimum in euro equivalents, if higher than the 80% of weighted average price, possibly initially at €125 per 1000 cigarettes in 2012 terms, subsequently increasing to allow for future inflation and income changes. Member States would be free, and encouraged, to set this minimum tax at a higher level.

Recommendation 3:
We also suggest that selling cigarettes below cost and low-price-based marketing, including selling below the tax level, should be banned, as the deleterious effects of these practices were demonstrated in WP5. Member States should be transparent about all aspects of the taxes and publish an annual report showing all aspects of tobacco taxation and revenue and the weighted average price.

Recommendation 4:
We recommend that the European Commission move to a tobacco tax structure that makes trading down to cheap cigarettes less attractive. This would avoid the unintentional widening of health inequalities promoted by existing tax structures.

Extra *ad valorem* tax for cigarettes priced above the weighted average price

Frequently, while persuading Member States that tobacco tax increases reduce tax revenue or increase smuggling, the tobacco companies raise their own prices, particularly for higher-price cigarettes. This serves to increase industry profit, while the Member States miss out on potential increases in tobacco tax revenue and opportunities to optimize the health benefits. The industry recognizes the segmentation of the market and the low, often zero, price elasticity of higher-income smokers by raising the price of higher-priced cigarettes to subsidize the ultra-low-price market. They increasingly circumvent the high price sensitivity (higher price elasticity of demand for cigarettes) of low-

income smokers and attempt to retain them as smokers by providing ultra-low-priced cigarettes.

Recommendation 5:
To avoid this anomaly, we recommend that the *ad valorem* tax proposed above (minimum 80%, ideally 83%) be applied to all cigarettes priced above the weighted average price. This means that the excise tax plus VAT would be at least 80% of the retail price, with a minimum monetary tax equivalent to at least 80% of the average weighted retail price, or €125 per 1000 cigarettes, whichever is higher. Examples of the effects of these rates are given in Annex 4.

Adjustment for cost of living and affordability

Incomes and cost of living vary among Member States, creating differences in the level of affordability for a given tax or price. At present, the minimum monetary tax is set at €64 per 1000 cigarettes, but it must be raised to €90 per 1000 cigarettes by January 2014 to comply with Directive 2010/12/EC. Even at this low level, some Member States, under pressure from tobacco companies, have negotiated for derogation for several years, allowing their taxes to remain at even lower levels. This has the effect of causing governments to lose valuable tax revenue and increasing both cigarette use and the prevalence of disease related to smoking. (These Member States are mostly those with the highest smoking rates.) This also aggravates the problem of cross-border shopping by neighbours with higher tax levels.

This adjustment could be based on the 'comparative price level' or 'purchasing power parity', which are available for all countries. The basic minimum tax could be set for the lowest-income Member State and adjusted upwards for others. The basic minimum tax would then be adjusted annually in line with inflation, income levels and the relative cost of living. The minimum could be set, for example, at €125 per 1000 cigarettes for a specific low-price country and adjusted by comparative price level for all other countries.

Recommendation 6:
We recommend consideration of tailoring the minimum tax so that it is comparable in affordability between countries, thereby allowing higher levels to be set automatically in higher-income countries.

Taxing fine-cut tobacco for roll-your-own at the same level as cigarettes

At present, all countries tax fine-cut hand-rolling tobacco for roll-your-own cigarettes at a lower rate than manufactured cigarettes. Evidence from WP2 shows that, in many European Union countries, considerable numbers of smokers, particularly in low-income groups, have been switching from manufactured to roll-your-own cigarettes. The proportion of smokers of hand-rolling tobacco was highest in England (32%), France (17%) and Finland (14%). Some tobacco companies are exploiting this tax difference further by selling kits to convert hand-rolling tobacco to cigarettes, at a price much below that of the equivalent manufactured cigarettes.

The conversion rate used by the European Union between fine-cut and manufactured cigarettes is based on the assumption that a roll-your-own cigarette contains 1 g of tobacco; however, there is evidence from PPACTE WP2 that the weight of tobacco in one roll-your-own cigarette is nearer to 0.7 or 0.8 g. The ISO norm 15592–3 for measuring tar and nicotine in hand-rolling tobacco gives a somewhat lower estimate of 0.4–0.75 g of tobacco per hand-rolled cigarette. In whose interest is it to tax fine-cut and pipe tobacco at such low rates?

Recommendation 7:
We recommend that there be full alignment of tax rates, so that fine-cut tobacco for roll-your-own cigarettes (and also pipe tobacco) is taxed at the same rate as manufactured cigarettes and at an appropriate conversion rate. The tax should include both a specific component, based on the weighted average price of cigarettes, and an *ad valorem* component and not provide a choice between specific and *ad valorem*, as at present.

Dealing with illicit trade and the WHO FCTC proposed protocol on illicit trade in tobacco

Illicit trade in tobacco, in the form of both smuggled and illicitly produced products, represents a serious threat to tobacco tax policy, government revenue and public health. Estimates from WP5 suggest that tax avoidance and evasion represent about 11.8% of consumption in middle- and 9.8% in high-income countries. There are, however, few transparent or public data on illicit tobacco trade in European Union countries. Research on illicit tobacco trade has been carried out by KPMG as part of an agreement between the European Union and the

tobacco company Philip Morris International. According to the KPMG report, total cigarette consumption in the European Union was 685 billion units in 2009, 8.9% of which was from illicit trade. A redacted version of the report has now been published, but the full version and the methods used are still confidential and available only to European Union or Member State officials. This makes it difficult for independent authorities to verify the data. Evidence from Bulgaria, which suggests that the industry exaggerates the extent of illicit trade, highlights the importance of independent, public scrutiny of such data.

Following lawsuits by the European Union against tobacco companies, enforceable, legally binding agreements were concluded with Philip Morris International and Japan Tobacco International and subsequently with British American Tobacco and Imperial Tobacco. These agreements have been somewhat successful in reducing illicit trade in some jurisdictions but entail close relations between the tobacco industry and the European Union, such that the industry is involved in monitoring and measuring illicit trade. This contravenes Article 5.3 of the WHO FCTC. It is important that the European Commission instigate monitoring of illicit trade that is unbiased and fully independent of the tobacco industry.

The Parties to the WHO FCTC are negotiating a protocol on a universal system for counteracting illicit trade in tobacco. The main element of the protocol is tracing (re-creation of the route of seized illicit cigarettes) by the use of unique, secure, non-removable markings on all unit packets, packages and outside packaging of cigarettes within 5 years (and of other tobacco products within 10 years) of entry into force of the protocol.

There is extensive illicit trade into the European Union, particularly from its eastern border with the Russian Federation and the Ukraine, indicating major supply factors. Public data are needed on the extent of this illicit trade and on the transparency of the contacts between the transnational tobacco companies and enforcement officials, including information on any agreements.

Corruption contributes to the success of illicit trade and must be confronted. Member States that have not ratified the key anticorruption treaties should do so and then implement their provisions in a targeted, comprehensive, strategic manner. Corrupt customs, tax and other officials should be reformed. The European Union must agree on a comprehensive, practical anticorruption strategy.

Tax verification must remain the independent domain of Member States and not be conducted with the tobacco companies. For this to be effective, everyone engaged in tobacco production, distribution and retail sales should be licensed. Sufficient resources must be provided to support strong, effective enforcement, with severe penalties for people engaging in illicit trade.

Regular, independent audits are necessary to guarantee the validity of the system. The current KPMG audit is neither independent nor transparent and should undergo peer review and be open to scrutiny. PPACTE will provide a brief critical appraisal of its method and findings, if they are made available. Smuggling of cigarettes is a particular problem on the European Union eastern border, and we commend the recent European Commission anti-fraud strategy to address the problem. The European Union must continue working with officials in the Russian Federation, the Ukraine and other neighbouring countries on harmonization of taxes with the European Union.

Recommendation 8:

We recommend that, to support tobacco tax reforms, the European Union supports the proposed WHO FCTC protocol on illicit trade in tobacco products. This should include linking codes for individual packs with cartons and master cartons, a measure that is both feasible and essential. It should also be entirely independent of the tobacco industry.

Halting the influence of the tobacco industry

The European Union and all its Member States except the Czech Republic (at the time of writing) are Parties to the WHO FCTC and, under Article 5.3, are bound to prohibit the influence of the tobacco industry in the formulation of public health policy. The FCTC states that "in setting and implementing their public health policies with respect to tobacco control, Parties shall act to protect these policies from commercial and other vested interests of the tobacco industry in accordance with national law." As the PPACTE

case studies and research by WP5 show clearly, however, governments continue to engage with the tobacco industry in formulating tobacco taxation policy, allowing tobacco companies to lobby Member State governments constantly to persuade them to keep tobacco taxes low, arguing incorrectly that if taxes go up tobacco revenue will decrease and smuggling will increase greatly.

Recommendation 9:
We recommend that the European Commission educate Member States and the public about the beneficial effects of increased tobacco taxes and of improved tobacco tax structures in terms of government tax revenue and better health of citizens. The International Monetary Fund recommends, even insists, that European Union countries with high debt should increase their tobacco taxes, and the European Commission should reinforce that policy to counteract the misinformation from the tobacco industry.

There should also be greater recognition of, and publicity about, the known influence of transnational tobacco companies on the level and structure of tobacco taxes, particularly to the public in accession countries, where derogations harm health and financial interests and also harm revenue and public health in other Member States. The European Commission should consider becoming more closely involved in determining tobacco taxation levels in accession states and, in particular, in calculating likely increases in price after accounting for increases in income.

Recommendation 10:
We recommend that European Union institutions and Member States take action to ensure that tobacco taxation policies are developed without tobacco industry involvement, in conformity with Article 5.3 of the WHO FCTC.

Smokeless tobacco

The surveys in WP2 included questions on the use of and access to *snus* in 18 selected countries. Snus is sold legally in Sweden, where 18.9% of men and 3.5% women report using it regularly and a further 1% occasionally. Use was relatively low elsewhere, with 2.7% of men in the Czech Republic and Finland being regular users. In the other countries surveyed, regular use varied from zero to 1.4%, with some occasional use. Use by women was generally low or rare, although in Poland and Spain *snus* was used slightly more often by women than by men (1.8% of women and 1.4% of men were regular users in Poland, and 2.9% of women and 2.1% of men were occasional users in Spain). In Sweden, 93% of users said they obtained *snus* from legal tobacco shops, 1.6% from duty-free outlets, 2.6% from smuggled sources and 3.3% from friends. Of the non-Swedish users, 75% obtained *snus* from legal tobacco shops, 11% from the Internet, 11% from shops in other countries, 6% from duty-free shops and 2.3% from smuggled sources; 3.5% were offered *snus*. There is no clear agreement on the safety of *snus*, its relevance to smoking cessation or the extent to which it is used as a temporary or permanent alternative to smoked tobacco. Continued research is needed to answer these questions.

Online test purchases of *snus* by WP5 indicate that *snus* is currently sold illegally online by Swedish vendors to European Union nationals other than Swedes. As the transnational tobacco companies now all have a stake in the Scandinavian *snus* market, are profiting from these illegal sales and are lobbying to have the European Union ban on *snus* sales removed, this is an important finding.

Recommendation 11:
We recommend that the embargo on *snus* remain, unless clear evidence is provided on its safety and its overall beneficial effects on health. Reversing the European Union ban on *snus* sales without an appropriate regulatory framework would present a danger to public health and should therefore be considered extremely cautiously.

Recommendation 12:
We recommend that the European Commission (which is responsible for ensuring that European Union law is correctly applied) should investigate illegal sales of *snus* and Sweden's apparent failure to fulfil its responsibilities under European Union law. To remove any ambiguity, a specific clause should be inserted in the text of the revised Tobacco Products Directive, prohibiting the sale of *snus* via the Internet, with a clear indication of the penalties facing those who contravene the legislation.

Tobacco tax structure and health inequalities

Groups with lower socioeconomic status, lower incomes or lower educational attainment have a greater tendency to smoke tobacco. As a consequence, the burden of smoking-related ill health and mortality (including lung cancer, ischaemic heart disease and chronic obstructive airways disease) is increasingly concentrated in these groups. Tobacco companies tend to

target low-income groups, young people and women, whom they consider to be growing or continuing markets. The tax structure we have proposed would tend to equalize the tax on cheap and high-price cigarettes and fine-cut tobacco and so help to reduce inequalities in smoking and smoking-related diseases.

Recommendation 13:
We recommend the tax levels and structures proposed above as important contributions to reducing health inequalities resulting from socioeconomic inequalities in the prevalence of smoking.

Other tobacco control measures: cessation, media campaigns and plain packaging

Raising the tobacco tax leads some smokers to give up smoking. Many smokers achieve this without much support; however, smoking is a serious addiction, cessation is difficult for many and support should be offered, particularly to smokers in low-income groups. The SimSmoke analyses described in WP4 highlight the gains that can be achieved from improving smoking cessation services, as well as the importance of good mass media campaigns to support low-income smokers in quitting. A training manual for SimSmoke has been produced for 15 European countries to allow them to explore the possible beneficial interactive effects of various policy interventions with taxation.

Recommendation 14:
We recommend that a percentage of the extra revenue from increases in tobacco tax be earmarked (hypothecated) for smoking cessation services and well-designed mass media campaigns, particularly focused on the needs of low-income smokers.

Given the industry's documented willingness to sell ultra-low-priced brands at a loss and evidence of a growth in price-based cigarette marketing, our research on the industry pricing strategy (WP5) supports a prohibition on below-cost selling and price-based marketing. Packages displaying the product price are one form of price-based marketing used by the industry. Current discussions on revision of the Tobacco Products Directive 2001/37/EC include the introduction of plain packaging. This would prevent the use of price-marked packs and thus limit the industry's use of this price-based marketing strategy.

Further research

Detailed evaluation of the effectiveness of tobacco taxation across Europe is hindered by limited availability and access to comparable, adequate data sets. The researchers on this project found it expensive and sometimes difficult or even impossible to obtain adequate up-to-date information. Effective tobacco taxation policy requires access to the necessary data to allow independent observers to calculate the price and tax elasticities of demand, to verify the direction of tax revenues, to detect movements to lower-priced tobacco products, to estimate the extent of illicit trade and to describe annual changes in smoking prevalence and levels of initiation and relapse.

At a minimum, data on the following variables should be reported by the relevant government departments of Member States to the European Commission and made publicly available through Eurostat:

- Annual weighted average price by tobacco product type (e.g. cigarettes, pipe and hand-rolling tobacco, smokeless tobacco, including *snus*, snuff and chewing tobacco); and
- Annual tax-paid sales or releases for consumption of tobacco, by tobacco product type.

To allow more detailed monitoring and more sophisticated analysis of the effectiveness of tobacco taxation across Europe, data on the following variables should be reported to the European Commission and made publicly available through Eurostat:

- Annual (or more frequent) weighted average price by tobacco product type and price category;
- Annual (or more frequent) tax paid sales or releases for consumption of tobacco by tobacco product type and price category;
- Market share by tobacco product type and price category;
- Annual tobacco tax revenue;
- Tobacco tax structures and rates;
- Data on illicit trade when available; and
- Lists of licensees and registered products.

Furthermore, Eurobarometer and/or national population-based surveys should regularly collect and make publicly available data on:

- Tobacco use prevalence by age, gender, socioeconomic status and tobacco product type, with agreed definitions and measures; (In particular, smoking rates at early ages, such as 15–17, 18–21, 21–24 and 25–29 years are needed.) and
- The prevalence of former smokers by the number of years since they quit, so that cessation rates can be estimated and tracked.

Recommendation 15:

We recommend that all Member States be required to collect data and make them public, to allow monitoring and analysis of tobacco taxation and smoking prevalence.

Further research is needed on the impact of increased flexibility in the tobacco excise structure on: the demand for cigarettes, industry pricing strategy and illicit trade. Research is needed to provide evidence on the methods and consequences of further tobacco tax harmonization in the European Union and to facilitate alignment of tobacco taxes in neighbouring non-European Union states. The effects of changes in tax rates on revenues generated should be monitored. Research is needed into the relevant conversion rate between roll-your-own and manufactured cigarettes. Further methods for measuring illicit trade are required, with more detailed examination of its public health consequences. The effects of Internet sales and advertising on smuggling and illicit trade in the European Union should be evaluated. Lastly, independent research into the safety and role of smokeless tobacco is required.

GLOSSARY OF TERMS

***Ad valorem* excise**	Excise levied as a percentage of some measure of product value (currently the weighted average price of tobacco)
Counterfeit tobacco	Tobacco produced and distributed bearing a trademark without the approval of the trademark owner. These products are illegally produced and often bear counterfeit tax stamps.
Cross-price elasticity of demand	A measure, with no units, of how responsive the demand for one product is to the price of another
Comparative price level	The ratio of purchasing power parity to market exchange rate in each country. Provides a measure of the difference in cross-border price levels by indicating for a given product the number of units of the common currency required to buy the same volume of the product group in each country.
Down-trading	When consumers switch to a cheaper brand of a product in response to a price increase
European currency unit	A precursor to the euro, consisting of a basket of the currencies of the European Community Member States, used as the unit of account before replacement by the euro on 1 January 1999, at parity
Framework Convention for Tobacco Control	An evidence-based public health treaty negotiated under the auspices of the World Health Organization; sets standards and provisions for tobacco control that Parties to the treaty have a legal obligation to implement
Forestalling	When tobacco manufacturers or wholesalers accumulate stocks of tobacco and declare production prior to an increase in tobacco excise in order to avoid paying the higher rate of excise
Gross domestic product	Market value of all final goods and services produced within a country in a given period
Hand-rolling tobacco	Also known as fine-cut tobacco for rolling cigarettes or tobacco for roll-your-own cigarettes
Illicit trade	Any practice or conduct prohibited by law and which relates to production, shipment, receipt, possession, distribution, sale or purchase, including any practice or conduct intended to facilitate such activity
Income elasticity of demand	A measure, with no units, of how responsive demand for a product is to income, calculated as the proportionate change in demand divided by the proportionate change in income
MPOWER	Policy recommendations issued by the World Health Organization: M, monitor tobacco use and prevention policies; P, protect people from tobacco smoke; O, offer help to quit tobacco use; W, warn about the dangers of tobacco; E, enforce bans on tobacco advertising, promotion and sponsorship; R, raise taxes on tobacco
Most popular price category	The category of cigarettes with the largest market share in the previous year
Normal good	A good for which demand increases as the real income of an individual or the economy increases

Over-shifting	Passing tobacco excise increases on to consumers at a rate greater than one-to-one. When taxes are over-shifted, consumer prices increase by more than the tax increase.
Purchasing power parity	Amount of money needed to purchase the same goods and services in two different countries; used to calculate an implicit foreign exchange rate
Purchasing power standard	Name given by Eurostat to the artificial currency unit in which purchasing power parity and real final expenditures for the 25 Member States of the European Union are expressed, namely, euros
Price elasticity of demand	A measure, with no units, of how responsive demand is to price, calculated as the proportionate change in demand divided by the proportionate change in price
Retail price index	In the United Kingdom, a measure of inflation published monthly by the Office for National Statistics; measure of the change in the cost of a basket of retail goods and services
Smuggling	A type of illicit trade and products illegally traded across borders. Small-scale smuggling, or bootlegging, involves the purchase by individuals of quantities of lower-taxed tobacco products exceeding customs regulations, concealed across borders or for resale in higher-tax jurisdictions. Large-scale smuggling involves illegal transport, distribution and sale of large quantities of tobacco products, generally avoiding all taxes. This typically involves large organized crime networks transporting recognized international brands over long distances using 'in-transit' regimes, tax-free zones and sophisticated distribution systems in destination countries.
Specific excise	Excise levied as a fixed monetary amount of tax per quantity, volume or weight of tobacco
Tax avoidance	Legal activities for paying less or no tobacco taxes; for example, individuals purchasing tobacco products in lower-tax jurisdictions for personal consumption within customs constraints (e.g. cross-border shopping, tourist shopping, duty-free shopping, internet purchases)
Tax evasion	Illegal methods of circumventing tobacco taxes, involving the purchase of small or large quantities of smuggled and illicitly manufactured tobacco products; may involve criminal networks, tobacco companies or other large-scale operators.
The Handbook	Effectiveness of tax and price policies for tobacco control (IARC Handbooks of Cancer Prevention, Vol. 14), funded by the PPACTE Project.
Under-shifting	When all or part of a tobacco excise increase is absorbed, rather than passed on to the consumer. When taxes are under-shifted, consumer prices increase by less than the value of the tax increase.
Weighted average price	Reference value for calculating the total tax burden, calculated by reference to the total value of all cigarettes released for consumption, based on the retail selling price including all taxes, divided by the total quantity of cigarettes released for consumption in the preceding calendar year
Work package	Division of research work within the PPACTE Project

ABBREVIATIONS

DG TAXUD	Directorate-General for the Taxation and Customs Union
ECU	European currency unit
FCTC	Framework Convention on Tobacco Control
GDP	gross domestic product
IARC	International Agency for Research on Cancer
ISO	International Organization for Standardization
PPACTE	Pricing Policy and Control of Tobacco in Europe
VAT	value-added tax
WHO	World Health Organization
WP	work package of the PPACTE project

The country abbreviations used on some of the graphs are:

AL	Albania	**ES**	Spain	**MT**	Malta
AT	Austria	**FR**	France	**NL**	Netherlands
BE	Belgium	**FI**	Finland	**PL**	Poland
BG	Bulgaria	**HU**	Hungary	**PT**	Portugal
CY	Cyprus	**HR**	Croatia	**RO**	Romania
CZ	Czech Republic	**IE**	Ireland	**SE**	Sweden
DE	Germany	**IT**	Italy	**SI**	Slovenia
DK	Denmark	**LV**	Latvia	**SK**	Slovakia
EE	Estonia	**LU**	Luxembourg	**UK**	United Kingdom
EL	Greece	**LT**	Lithuania		

THE PRICING POLICY AND CONTROL OF TOBACCO IN EUROPE CONSORTIUM

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SUMMARY OF EUROPEAN UNION TOBACCO CONTROL LEGISLATION 1989–2010

Name and year of measure	Number	Key requirements
Labelling directives (1989, 1992)	89/622/EEC 92/41/EEC	Rotating health warnings on tobacco products Ban on the marketing of certain tobacco products for oral use
Advertising directives (1989, 1997, 1998, 2003)	89/552/EEC 97/36/EC 98/43/EC[1] 2003/33/EC 2007/65/EC	Ban on all forms of television advertising for tobacco products Ban on tobacco advertising in the press, radio and on the Internet Ban on tobacco sponsorship of events with cross-border effects Ban on all forms of audiovisual commercial communication, including product placement
Tar yield Directive (1990)	90/239/EEC	Sets a maximum tar yield of 15 mg per cigarette by 31 December 1992 and of 12 mg per cigarette from 31 December 1997
Tax directives (1992, 1995, 2002, 2003, 2010)	92/78/EEC 92/79/EEC 92/80/EEC 95/59/EC 2002/10/EC 2003/117/EC 2010/12/EU	Set minimum levels of excise duties on cigarettes and tobacco
Tobacco product regulation Directive (2001)	2001/37/EC	Requires larger warning labels on all tobacco products; bans descriptors suggesting that one tobacco product is less harmful than another; requires manufacturers and importers to submit a list of all ingredients used in the manufacture of tobacco products; defines maximum levels of tar, nicotine and carbon monoxide for cigarettes
Asbestos Directive (1983)	83/477/EEC	Prohibits smoking in areas where asbestos is handled
Workplace air quality directives (1989, 1992)	89/654/EEC 92/57/EEC 92/91/EEC 92/104/EEC	Require employers to ensure that workers have access to fresh air and ventilation

Framework Directive on Health and Safety in the Workplace (1989)	89/391/EEC	Requires a health assessment to be carried out on employees, which should include exposure to second-hand smoke in the workplace
Resolution on smoking in public places (1989)		Invites Member States to adopt measures banning smoking in public places and on all forms of public transport (non-binding)
Pregnant women Directive (1992)	92/85/EEC	Requires employers to take action to protect pregnant and breastfeeding women from exposure to an exhaustive list of substances including carbon monoxide from tobacco smoke
Carcinogens Directive (1990)	90/394/EEC	Restricts smoking in workplace areas where carcinogenic substances are handled
Council resolutions (1992, 1996, 1999)		Propose measures to combat smoking to Member States and the Commission (non-binding)
Council Recommendation on the prevention of smoking and on initiatives to improve tobacco control (2003)	2003/54/EC	Encourages Member States to take further tobacco control action. Concerns tobacco sales to children and adolescents, tobacco advertising and promotion that has no cross-border effects, provision of information on advertising expenditure, environmental effects of tobacco smoke (non-binding)
Council Recommendation on smoke-free environments (2009)		Call on Member States to act in three areas: 1) adopt and implement laws to protect citizens fully from tobacco smoke exposure as cited in Article 8 of the WHO FCTC within 3 years of adoption of the recommendation; 2) enhance smoke-free laws with supporting measures such as protecting children, supporting smoking cessation and introducing graphic health warnings; and 3) strengthening European Union cooperation for tobacco control

[1] *Annulled by the European Court of Justice in October 2000*
From references (1, 2)

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ANNEX 3

EVOLUTION OF EUROPEAN UNION TOBACCO TAX DIRECTIVES 1980–2010

The economic recession of the early 1980s distracted attention from the harmonization of indirect taxation; however, momentum was regained in 1985 with the publication by the European Commission of a White Paper on 'Completing the internal market', which sought to abolish all physical, technical and tax-related barriers to free movement within the Community by the end of 1992 *(1)*. The Commission proposal of 1987 contributed to the programme of action for the 1985 Commission White Paper *(2)*. The proposal covered two broad areas: (i) the changes that would be required in the operation of value-added tax (VAT) and excise duties once all controls at intra-Community frontiers had been abolished, and (ii) the rates of VAT and excise duties that Member States could levy *(2)*. Specifically, the Commission proposed that Member States should be required to set VAT rates within two bands: a standard rate of between 14% and 20% and a reduced rate of between 4% and 9% for basic goods and services. In addition, the Commission proposed that excise duties on tobacco (and alcohol and mineral oils) be set at uniform levels throughout the Community, generally at the average level of existing rates, to minimize disruption to the most Member States possible. With regard to excise duties, the proposal was that the following rates should be achieved by 1992:

Cigarettes

- A specific excise of ECU 19.5 per 1000 cigarettes
- *Ad valorem* and VAT (as a percentage of retail price) at 52–54%

Cigars and cigarillos

- *Ad valorem* and VAT (as a percentage of retail price) at 34–36%

Smoking tobacco

- *Ad valorem* and VAT (as a percentage of retail price) at 54–56%

Other manufactured tobacco

- *Ad valorem* and VAT (as a percentage of retail price) at 41–43%.

The proposal also included a suggestion that the specific element levied on cigarettes be adjusted annually in line with the general European Union consumer price index *(2)*.

Considerable debate ensued in response to this proposal, particularly with regard to the uniform excise duty structure for each product type for the whole Community. Introducing

uniform excise duty levels throughout the Community would require major adjustments in many Member States and face considerable resistance. "Not only would uniform levels of duty have had wide-ranging political and social policy implications in both high and low tax countries, but it would dramatically alter the tobacco market and have adverse implications for the competitive positions of individual manufacturers" (p. 37). Therefore, a new proposal was issued in 1989, which suggested more modest alterations of VAT, simplified the clearing mechanism and allowed Member States more discretion with regards to rates. With regard to excise duties, the rates proposed in 1987 became reference values, or long-term targets with rate bands around them, and a minimum excise rate that had to be achieved by 1993 *(3)*.

72/464/EEC and 79/32/EEC

In the case of tobacco, a limited degree of harmonization was achieved through Directive 72/464/EEC. This Directive defined the structures of excise duty on manufactured tobacco (defined to include cigarettes, cigars and cigarillos, smoking tobacco, snuff and chewing tobacco); provided for harmonization in successive stages and defined a range of relations between specific duty and the total duty *(4)*. While this Directive defined the first stage of harmonization, subsequent stages were to be decided on the basis of a progress review and proposal by the Commission to the Council and could be deferred if the revenue of any Member States would be substantially adversely affected. Further, Directive 79/32/EEC laid out specific definitions of the various types of manufactured tobacco.

In order to further harmonize the structures of excise duty on manufactured tobacco, the Commission report of 1990 presented a proposal for amending certain articles of directives 72/464/EEC and 79/32/EEC (5). The main aim of the proposed directive was to eliminate structural differences in excise duty systems in advance of the abolition of tax frontiers on 1 January 1993. Prior to the removal of frontiers, it was necessary to establish an overall minimum excise duty for cigarettes. In response to this proposal, directives 92/79/EEC and 92/80/EEC were introduced, the former applying to taxes on cigarettes and the latter to taxes on manufactured tobacco other than cigarettes.

92/79EEC

Council Directive 92/79/EEC of 19 October 1992, on the approximation of taxes on cigarettes, required Member States to apply a specific excise duty per unit of the product and a proportional excise duty calculated on the basis of the maximum retail selling price of the price category most in demand *(6)*. To guarantee a minimum level of excise duties on cigarettes in all Member States and to achieve approximation of tax rates, this Directive required an overall minimum excise duty of 57% of the retail price for cigarettes in the most popular price category as of 1 January of each year and a minimum excise duty of €60 per 1000 cigarettes of the most popular price category, increasing to €64 per 1000, effective on 1 July 2006. This Directive allowed a 2-year transitional period for Spain and provided the possibility of a reduced rate for small-scale cigarette producers in remote areas of Portugal.

92/80/EC

Complementing Directive 92/79/EEC, Council Directive 92/80/EEC of 19 October 1992, on the approximation of taxes on manufactured tobacco other than cigarettes, enabled Member States to determine the structure of their taxes, *ad valorem*, specific or a mixed structure, as long as minimum rates were achieved *(7)*. The minimum rates for these duties specified by this Directive were: 36% of the tax-inclusive retail selling price or €32 per kilogram for fine-cut smoking tobacco intended for hand-rolling, 5% of the tax-inclusive retail selling price or €11 per 100 items (or kilogram) for cigars and cigarillos and 20% of the tax-inclusive retail selling price or €20 per kilogram for other smoking tobacco. This Directive provided the possibility of imposing a lower rate of tax on cigars and cigarillos until the end of 1998 for Italy and Spain. Furthermore, Article 4 of directives 92/79/EEC and 92/80/EEC required that the overall incidence and structure of excise duties be adjusted every 2 years, on the basis of a report and proposal by the Commission, to consider the functioning of the internal market and the wider objectives of the Treaty, such as health protection.

95/59/EC

On 13 September 1995, the Commission issued its first report, in accordance with Article 4 of 92/79/EEC and 92/80/EEC,

which required a review of rates and structure of excise duty every 2 years *(8)*. This report noted that little approximation had taken place, drew attention to difficulties encountered in implementation of the directives, showed that adaptations to the structure and rates of excise were not needed in the short-term and concluded that a broad consultation should be held before further decisions were made. Council Directive 95/59/EC of 27 November 1995 therefore did not introduce fundamental changes but rather consolidated the substantially amended directives 72/464/EEC and 79/32/EEC into a single one *(9)*. This Directive redefined the various categories of manufactured tobacco (cigarettes, fine-cut tobacco for rolling cigarettes, cigars and cigarillos, and other smoking tobacco) and laid down the general principles governing taxation of manufactured tobacco *(9)*.

Specifically, Directive 95/59/EC required that excise duties on manufactured tobacco be harmonized in several stages. Progression through the stages was decided by the Council, on a recommendation from the Commission, on the basis that Member States had implemented measures in their excise duty systems in compliance with criteria defined for each stage *(9)*. During the first stage (July 1973–June 1978), the amount of specific excise duty levied was established for the first time with reference to the cigarettes in the most popular price category on 1 January 1973; this could not be less than 5% or more than 75% of the aggregate amount of proportional excise duty and specific excise duty levied on these cigarettes. In the second stage of harmonization (from July 1978), the amount of specific excise duty levied continued to be in reference to the cigarettes in the most popular price category on 1 January 1978 and could not be less than 5% or more than 55% of the aggregate amount of proportional excise duty, specific excise duty and VAT levied on those cigarettes. In addition, Member States were required to levy a minimum excise duty on cigarettes and fine-cut tobacco; however, this could not raise the total tax above 90% of the total tax on the most popular price category of cigarettes or fine-cut tobacco. In the final stage, the same ratio between specific and the sum of *ad valorem* tax and VAT should be established such that the range of retail selling prices fairly reflects the differences in manufacturers' costs. In addition, the rules for collecting excise duty should be harmonized during this stage.

1999/81/EC

During the broad consultation between the first and second review, neither national authorities nor the trade organizations spoke in favour of fundamental change to the existing tax structure *(10)*. The Commission therefore concluded that fundamental change was unnecessary but that a number of technical adjustments were required to address the issues encountered in implementing existing directives. The second review of directives, published in 1998, outlined these technical adjustments, which formed the proposal for amending Directive 1999/81/EC, adopted on 29 July 1999.

First, there were a number of differences in how Member States applied the 57% incidence rule. The overall minimum excise duty on cigarettes was expressed as a percentage of the retail selling price. If the retail selling price or VAT rate changed during the year, this changed the excise duty incidence. Some Member States checked compliance with the incidence rule on 1 January of each year when the most popular price category was established, while others interpreted this rule as an ongoing requirement that should be checked and adjusted throughout the year. The review proposed that Member States could delay adjusting the overall minimum excise duty until 1 January of the second year after the change. Further, the review suggested that Member States be authorized to temporarily neutralize the impact of an increase in VAT on excise duties, even if the overall minimum excise duty temporarily fell below 57% of the retail selling price of cigarettes in the most popular price category.

Secondly, the Commission adapted legislation to give Member States the flexibility to apply a minimum excise duty on cigars, cigarillos and smoking tobacco expressed as both a percentage of the retail selling price and a specific amount. With inflation, the gap between these two factors widens, and the specific minimum amount must be adjusted in line with inflation to maintain the ratio established between the two components when the rates were initially set. The Commission proposed that the minimum rates be increased in two stages: the first stage would adjust for inflation between 1992 and 1998 and take effect on 1 January 1999. The rates were ECU9 for cigars and cigarillos,

ECU24 for hand-rolling tobacco and ECU18 for other smoking tobacco. To allow for forecasted inflation between January 1999 and December 2000, the minimum rates applied effective 1 January 2001 were ECU10 for cigars and cigarillos, ECU25 for hand-rolling tobacco and ECU19 for other smoking tobacco.

Finally, the review suggested that the current 2-yearly reviews of structure and rates of excise duty required in accordance with Article 4 of directives 92/79/EEC and 92/80/EEC did not provide sufficient time for a proper evaluation of changes in Community legislation, and 5-year periodic reviews were proposed instead *(10)*.

This report was accompanied by a proposal for a directive amending the tobacco legislation to incorporate the recommended technical adjustments discussed above *(10)*. With a minor amendment to the review period (from 5 to 3 years) requested by the European Parliament, the proposal was adopted by the Council on 29 July 1999 as Directive 1999/81/EC.

2002/10/EC

At the request of a number of Member States after the adoption of Directive 1999/81/EC, the Commission initiated another broad consultation to consider a more fundamental review of the structure and rates of excise duties on tobacco products *(11)*. The Commission surveyed and engaged in bilateral discussions with Member States on a possible review of structures and rates of excise duty. Furthermore, trade associations were invited to submit position papers and engage in bilateral discussions. Of significant concern was the divergence between Member States in the total percentage of excise duties on tobacco and the real amount of excise on cigarettes. At this time, the percentage rates ranged from 50.47% to 65.14%, and the real amounts from €48.44 to €210.57 per 1000 cigarettes in the most popular price category—a difference of about 430%.

Among the concerns highlighted by Member States during the broad consultation were fraud and smuggling attributable to the price differentials between Member States. While Member States acknowledged that intra-Community fraud was decreasing because of better control measures, they raised concern about smuggling of tobacco products from eastern European states with low prices and taxes *(11)*. Furthermore, cross-border shopping (exceeding travellers' allowances), contraband and Internet sales were brought up as issues of concern. Further convergence of tax rates to reduce the price differentials, which provide incentive for these activities, were considered a priority for a functioning excise system, particularly with the predicted European Union expansion. Following the consultation, the Commission published a review containing proposals, which were adopted by the Council in Directive 2002/10/EC of 12 February 2002.

Analyses carried out during the review suggested that application of a minimum rate alone would not result in greater approximation of rates, and the review concluded that a minimum fixed amount, expressed in euros, should be introduced, in addition to the existing minimum percentage requirement for excise incidence. This Directive introduced an overall minimum excise duty (specific and *ad valorem* duty excluding VAT) of 57% of the tax-inclusive retail selling price that could be no less than €60 per 1000 cigarettes of the most popular price category (increasing to €64 per 1000 cigarettes effective 1 July 2006). Member States that levied an overall minimum excise duty of at least €95 per 1000 cigarettes of the most popular price category (increasing to €101 per 1000 cigarettes effective 1 July 2006) were not required to comply with the 57% incidence rule. The minimum fixed amount was €11 per 1000 items or per kilogram for cigars and cigarillos, €29 per kilogram (€32 per kilogram effective 1 July 2004) for fine-cut rolling tobacco and €20 per kilogram for other smoking tobacco. Phased introduction was permitted for countries in which immediate introduction of the minimum euro amount would create economic problems, and this was extended to the accession states Greece and Spain.

In addition, the review concluded that Member States should be allowed greater flexibility to levy a minimum excise duty on cigarettes. This amendment was proposed in response to the concern of certain Member States that cheap cigarettes were flooding the market. Article 16 *(5)* of Directive 95/59/EC allowed a Member State to levy a minimum excise duty as long as it did not raise the total tax above 90% of the tax on the most popular price category. Each pack of cigarettes

was required to bear at least a minimum rate of excise, to prevent sales at prices below market levels. This mechanism did not, however, prove effective in some Member States in preventing an increased supply of discount brands. The Commission therefore proposed an amendment, allowing Member States to levy a minimum excise duty on cigarettes, provided that it did not exceed the excise duty levied on cigarettes belonging to the most popular price category.

Another issue emerging from the review was increasing sales of a cigarette-like tobacco product that was taxed at the considerably lower rates of cigars and cigarillos. The product was similar to a cigarette in function, taste, filter, manufacture and presentation; however, it had the colour of a cigar or cigarillo and contained cut tobacco rather than a threshed blend. Under the definitions set out in Directive 95/59/EC, this product was categorized as a cigar. The review proposed an amended definition of cigars and cigarillos to exclude these cigarette-like products. Also, the review concluded that the minimum rates for fine-cut tobacco intended for rolling cigarettes should be gradually adjusted upwards to discourage substitution of this product for cigarettes.

Subsequently, Directive 2003/117/EC proposed a derogation from 1 January 2003 to 31 December 2009, authorizing France to prolong the application of lower rates of excise duty to tobacco products released for consumption in Corsica on the grounds that applying later directives would have significant economic consequences

2010/12/EU

Council Directive 2010/12/EU of 16 February 2010 amended directives 92/79/EEC, 92/80/EEC and 95/59/EC on the structure and rates of excise duty applied to manufactured tobacco and Directive 2008/118/EC. On the basis of a recommendation in the KPMG report, this Directive abolished use of the most popular price category as the basis for calculating minimum rates for cigarettes. Instead, it introduced the weighted average retail selling price (weighted average price) as the base for calculation, with the weighted average price equal to the total value of all cigarettes released for consumption (tax-inclusive retail selling price) divided by the total quantity of cigarettes released for consumption. The weighted average price is now also used as the reference for measuring the proportion of specific excise duty within the total tax burden and for determining the minimum excise requirement for rolling tobacco.

To reflect this change in the reference value for calculating tax incidence, Directive 2010/12/EU requires that the overall excise duty (specific and *ad valorem*) on cigarettes represent 57% of the weighted average price of cigarettes released for consumption and maintains the minimum tax floor of €64 per 1000 cigarettes, irrespective of the weighted average price. The escape clause also references the weighted average price: Member States that levy an excise duty exceeding €101 per 1000 cigarettes on the basis of the weighted average price need not comply with the 57% rule. In order to achieve greater convergence of prices and reduce consumption, this Directive increases the minimum levels of taxation for cigarettes (as well as rolling tobacco). Effective 1 January 2014, Member States are required to levy an overall excise duty of at least 60% of the weighted average price with a minimum tax floor of €90 per 1000 cigarettes. The reference value for the escape clause is also increased: from 2014, Member States that levy an excise duty exceeding €115 per 1000 cigarettes based on the weighted average price will not have to comply with the 60% requirement. Derogations were introduced for Bulgaria, Estonia, Greece, Hungary, Latvia, Lithuania, Poland and Romania until 31 December 2017.

The total tax burden of specific excise must also be calculated with reference to the weighted average price. This Directive introduced a change in the band of specific excise from between 5% and 55% of the total tax burden (specific, *ad valorem* and VAT) levied on the weighted average price to between 5% and 76.5% of the reference value until the end of 2013. In 2014, this band will be narrowed to 7.5–76.5%.

To prevent distortion of competition, diversions of trade and any associated revenue losses for the Member States that comply with the higher excise rates (both proportional and monetary minimum requirements) described above, Directive 2010/12/EU introduced quantitative restrictions limiting the number of cigarettes that may be brought into a Member State with a higher tax to at least 300 without further duty payment from a Member State applying a transitional period. Similarly, if a Member State is

applying a transitional period and has reached a monetary level of €77 per 1000 cigarettes, it may impose a quantitative limit on the number of cigarettes that may be brought in from other Member States in the transitional phase that have not reached this monetary limit.

Furthermore, to discourage the substitution of fine-cut rolling tobacco for cigarettes in response to increasing cigarette prices, amendments were introduced to create a partial alignment of excise on rolling tobacco and cigarettes. First, the minimum rates of excise on fine-cut rolling tobacco are based on the new weighted average price as the reference value for calculations. Secondly, the rates of excise will be gradually increased to bring greater approximation between the rates for fine-cut tobacco and the rates for cigarettes, such that the rates on fine-cut are up to two thirds of the rates for cigarettes. Effective 1 January 2011, the minimum rate of excise on fine-cut tobacco was 40% of the weighted average price or at least €40 per kilogram. This will increase to 43% of the weighted average price or at least €47 per kilogram by January 2013, 46% of the weighted average price or at least €54 per kilogram by January 2015, 48% of the weighted average price or at least €60 per kilogram by January 2018 and 50% of the weighted average price or at least €60 per kilogram by 2020 (in comparison with 60% of the weighted average price of cigarettes and €90 per 1000 cigarettes by 2014). Gradual increases were also introduced for cigars and cigarillos, bringing the minimum rate to 5% of the tax-inclusive retail selling price or €12 per 1000 items or per kilogram, with derogations for Germany and Hungary until January 2015. Similar increases were introduced for other smoking tobacco, bringing the minimum rate to 20% of the tax-inclusive retail selling price or €22 per kilogram.

Lastly, in an effort to ensure uniform, fair taxation, Directive 2010/12/EU introduced revised definitions of the different tobacco products. These definitions ensure that competing products are taxed similarly. For example, under the new definitions, rolls of tobacco, which could be considered two cigarettes on the basis of their length, should be treated as two cigarettes for excise purposes. These new definitions restrict the freedom of the tobacco industry to counter increasing excises with product innovations.

2011/64/EC

As Council directives 92/79/EEC, 92/80/EEC and 95/59/EC were substantially amended several times and in the interests of clarity and rationality, those directives have been repealed and codified in a single act. This combined Directive defines the various categories of manufactured tobacco (cigarettes, fine-cut tobacco intended for rolling cigarettes, cigars and cigarillos, other smoking tobacco), lays down the general principles governing taxation of manufactured tobacco and provides for overall minima to be applied to the various tobacco product types established by Directive 2010/12/EC. This Directive entered into force retroactively from 1 January 2011.

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EXAMPLES OF THE PROPOSED TAX STRUCTURE

Member State with relatively low-priced cigarettes:

1a Present price per pack, €2.50
Present tax (including VAT) at 60%, €1.50
Pre-tax price, €1.00

Under the proposed tax tariff:
Pre-tax price (weighted average price), €1.00
Tax at 80% retail price, €4.0
Retail price (weighted average) is raised to €5.0
Tax at 80% is greater than the minimum of €125 per 1000, which is €2.5 per pack
So
Tax would remain at €4.0 per pack.

1b (even lower pre-tax price)
Present price (weighted average), €2.50
Present tax at 80%, €2.00
Pre-tax price, €0.50

Under the proposed tax tariff:
Pre-tax (weighted average price), €0.50
Tax at 80% retail price would be €2.0, for a retail price of €2.50, but a minimum tax of €125 or €2.5 per pack is higher than 80% of the weighted average price
So
Tax is €2.50
Retail price is raised to €3.00.

Member State with relatively high-priced cigarettes but range allowing major down-trading:

Weighted average price, €6.00

2a Pre tax price €1.60
Tax 80% €6.40
Pack retails at €8.00 (high-price cigarette)

2b Pre-tax price €0.80
Tax 80% €3.20
Pack retails at €4.00 (50% high-price cigarettes)

Under the proposed tax tariff:
Pre-tax price €0.80
Minimum tax (80% of weighted average price, €6.00), €4.80
Price rises to €5.60, and the differential narrows to 70% of the high price.

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