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Abstract

Ten Central and Eastern European countries, as well as Cyprus and Malta, have applied for membership of the European Union. Membership involves, among others, alignment of the taxes on tobacco products. Within the *acquis communautaire*, accession countries can choose between a predominantly specific and a predominantly *ad valorem* excise regime. The choice affects revenue, tobacco consumption control, and EU competition. This paper examines the arguments and concludes that a predominantly specific regime seems to be the preferred choice.

JEL Classification: H2, P35.

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1. Introduction

Ten Central and Eastern European countries, as well as Cyprus and Malta, have applied for membership of the European Union (EU). Until recently, most of these countries could be considered developing countries or countries in transition to a market economy. One issue which these countries must face upon entry of the EU is how to tax tobacco. Within the *acquis communautaire* on tobacco taxation agreed to by the current EU Member States, accession countries can choose between a predominantly specific and a predominantly *ad valorem* excise regime. Specific rates are levied at a fixed monetary amount per thousand cigarettes, *ad valorem* rates at a fixed percentage of the retail price.

Current EU Member States are deeply divided on the pros and cons of the most appropriate regime. In fact, conflicting interests – mainly revenue and protection – have led to widely diverging balances between specific and *ad valorem* taxation. Most northern Member States want to retain an important role for the specific excise which tends to be more productive of revenue, may be more effective in reducing the level of tobacco consumption, and accords better with the competition objectives of the internal market. Most southern Member States, by contrast, want to make the excise almost exclusively *ad valorem*, because an *ad valorem* rate protects the cultivation of their low-priced home grown tobaccos.

Upon entry of the EU, the accession countries will have to decide what kind of regime, specific or *ad valorem*, they wish to adopt in order to comply with the EU directives on tobacco tax harmonization. This paper attempts to illuminate the choice. It is organized as follows. Section 2 looks at the basic design of the tobacco tax regimes in the EU as illustrated by the situation in the Netherlands. On the basis of the example, a number of ratios can be calculated which play an important role in the tobacco tax debate in the EU. Following a summary of the EU debate on tobacco tax harmonization (section 3), the ratios are used in reviewing the tobacco tax structures in the 15 Member States (section 4) and the 12 accession countries (section 5). Subsequent sections examine the pros and cons of the specific regime vs. the *ad valorem* regime having regard to social costs and tobacco consumption control (section 6), revenue (section 7), and trade diversion (section 8). A concluding section summarizes the main arguments and charts the preferred course of action for the accession countries (section 7).[1]

2. Tobacco Tax Design

The workings of the tobacco tax regimes in the EU can be illustrated by reviewing the design of the Dutch regime. Over the years, the Netherlands has seen one of the most spectacular shifts between specific and *ad valorem* taxation, particularly during the 1980s. In the 1970s, the share of the specific excise in total tax on cigarettes was only

[1] The paper deals mainly with taxes on cigarettes which account for more than 90% of tobacco consumption in the EU and in most accession countries. Most of the arguments and observations, however, would also apply to taxes on fine cut or roll-your-own tobaccos, cigars and cigarillos, and other manufactured tobacco products. For the current minimum excise rates on these tobacco products, see Council Directive 92/80/EEC of 19 October 1992 as amended by Directive 1999/8 EC of 29 July 1999.

5% and roll-your-own bore no specific excise at all. The share was raised to 10% in 1980, 25% in 1984, and finally to 50% in 1987, applying to cigarettes as well as roll-your-own. The Dutch government opted for a much heavier dose of the specific rate to bolster revenue from tobacco taxes and to increase their predictability (Keen, 1998).

a. The Netherlands

The current cigarette tax structure in the Netherlands is shown in Table 1 which specifies the retail price of 2 packs of cigarettes, brand A and brand B, that are sold for euro 3.50 and euro 2.50, respectively. The retail price, inclusive of taxes, can be broken down into the price exclusive of taxes (ex-factory cost plus profit and trade margins) and the taxes, i.e. excises and value-added tax.

Table 1. **The Netherlands: Specification of the Retail Price of Cigarettes**
(in euro)

	Brand A		Brand B		Difference	
1. Retail price (p), including taxes		3.50		2.50		1.00
2. Taxes						
a. Specific excise (t_s)	1.25		1.25		-.--	
b. *Ad valorem* excise ($t_{a1}p$)	0.72		0.51		0.21	
c. Value-added tax ($t_{a2}p$)	0.56		0.40		0.16	
d. Total tax ($t_s + t_a p$)		2.53		2.16		0.37
3. Retail price (p), excluding taxes		0.97		0.34		0.63

In accordance with EU codification directive 95/59,[2] the tax on cigarettes in the Netherlands comprises three elements.

- A specific excise, expressed as a fixed amount of euro 50.01 per 1000 cigarettes, or euro 1.25 per pack of twenty-five.

- An *ad valorem* excise, levied at a fixed percentage, i.e. 20.51% of the retail price inclusive of tax.

- The value-added tax of 19%, or 15.97% if expressed as a percentage of the retail price inclusive of tax.

Obviously, the *ad valorem* excise and the value-added tax are fully identical in effect. The value-added tax law in the Netherlands even has a clause stating that the value-added tax on tobacco products will be levied as if it were the tobacco excise. Therefore, only the sum of *ad valorem* excise and value-added tax, hereafter called *ad valorem* levy, is relevant for the analysis.

[2] This directive codified the provisions of the harmonization directive of 1972 (72/464), which aimed at approximating the rate structures, and the definition directive of 1978 (79/32), which provided uniform concepts for tobacco products.

b. Important ratios

From Table 1, a number of important ratios can be derived.

- The total tax burden (T) on the most popular price category, say, brand A, is equal to the ratio of the sum of all taxes, i.e. euro 2.53, to the retail price, i.e. euro 3.50, or 72% – approximately 260% of the trade price exclusive of taxes.

- The share (S) of the specific excise, i.e. euro 1.25, in total tax, i.e. euro 2.53, is close to 50% – a percentage that plays an important role in the harmonization debate.

- The share (E) of the sum of the specific excise and the *ad valorem* excise, i.e. euro 1.97, in the retail price, i.e. euro 3.50, is close to 57% – the minimum required under the codification directive.

- The ratio (M) of the difference in retail price, including taxes, i.e. euro 1.00, to the difference in retail price, excluding taxes, i.e. euro 0.63, is 1.6. More generally, this figure, called the multiplier, means that for every euro increase in factory cost the retail price has to be increased by euro 1.60.[3] The multiplier increases with the sum of *ad valorem* excise and value-added tax; it is independent of the specific excise.[4]

The various ratios can also be expressed algebraically. If the retail price is denoted by (p), the specific excise by (t_s), the sum of *ad valorem* excise ($t_{a1}p$) and value-added tax ($t_{a2}p$) by ($t_a p$), the total tax burden by (T), the share of the specific excise in total tax by (S), the share of the sum of t_s and $t_{a1}p$ in the retail price by (E), and the multiplier by (M), then the various ratios can be expressed as follows:

$T = (t_s + t_a p)/p;$
$S = t_s/(t_s + t_a p);$
$E = (t_s + t_{a1} p)/p;$ and
$M = 1/(1 - t_a) = 1/[1 - T(1 - S)].$

These ratios play an important role in the debate on the harmonization of the tobacco excises in the EU, as shown in the following sections.

3. Tobacco Tax Debate in the EU

Over the years, the EU has adopted some minimum harmonization requirements, called the *acquis communautaire*, on tobacco taxation. In 1972, just before the accession of

[3] Based on the precise rates shown in Table 2, the sum of the *ad valorem* excise and the value-added tax is 36.48% of the retail price which is 58.43% of the price exclusive of these taxes.
[4] The trade margin also functions as an *ad valorem* rate for the producer if it is set at a fixed percentage of the retail price. Fixed percentages are or used to be legislated in Belgium, France, Portugal, Italy, Luxembourg, and Spain.

Denmark, Ireland, and the United Kingdom (all specific excise rate countries!), agreement was reached on the harmonization of the specific excise in three stages. In the first stage, the share of the specific excise would have to lie in the range of 5-75%; in the second stage, 5-55%; and in the third stage, 5-35%. The second stage started 1 July 1978, but the third stage has never been implemented. Instead, the second stage has been extended repeatedly, and in the 1986 the implementation of the third stage (which was originally planned for 1 January 1980!) was removed from the directive. Currently, the 5-55% band is still in effect. In other words, hardly any progress has been made on the alignment of the specific excise rates.

The stalemate in the early 1980s manifested itself in a controversy between the European Commission and the Economic and Social Committee (ECOSOC) of the European Parliament. The Commission (1982) wanted harmonization to proceed on the basis of the ratio of the specific excise to total tax; in the end the ratio should become some 20%. ECOSOC (1981), on the other hand, favored harmonization on the basis of the *ad valorem* excise. At a given tax burden, this appears to be a case of six of one and half a dozen of the other, because the sum of the proportional elements equals the tax burden multiplied by one minus the ratio of specific excise to total tax.

But as Kay and Keen (1982) point out in an early but still relevant paper, the respective positions represented more subtle points of view. The proposal of the Commission implied a multiplier of 3 (corresponding to an *ad valorem* rate of about 56%), while ECOSOC had a multiplier of 2 in mind, which implied an *ad valorem* rate of 40% (inclusive of value-added tax) and a ratio of specific excise to total tax of 43%. In other words, an increase in the tax burden on cigarettes, under the Commission's proposal, would involve an increase in the *ad valorem* rate, whereas an increase in total tax, under ECOSOC's proposal, would involve an increase in the specific excise. The controversy was not resolved.

The matter was tabled again following the publication, in 1985, of the Commission's White Paper on *Completing the Internal Market*. On the basis of the arithmetic averages of the Member States, in 1987, the Commission proposed to harmonize the specific rate at euro 19.5 per thousand[5] and the ad valorem rate at 52-54%. Again, ECOSOC (1988) rejected the proposal of the Commission, concluding that "the existing structures and rates do not provide a sound basis for tobacco duties in a single, border free market." It was argued that the proposal violated competition policy, would force some Member states to raise the tax, and would be detrimental to poor Member States.

Without paying attention to ECOSOC's opinion, in 1989 the Commission (89/55, final) proposed the introduction, over the long term, of an indexed specific rate of euro 21.5 per thousand cigarettes and a combined *ad valorem* levy (excise and value-added tax) of 54%. Effective 1 January 1993, these rates would have to be euro 15 and 45%, respectively. The draft directive of the Commission was discussed in the Council of Economic and Finance Ministers (ECOFIN) in Luxembourg on 24 June 1991. After the

[5] Value figures originally denoted in ecu are shown in euro on a one-to-one basis.

smoke cleared, agreement had been reached on the following points.

- The maintenance of the earlier agreed rate band of 5-55% as regards the share (S) of the specific excise in total tax.

- A total excise burden (E), specific and *ad valorem*, of at least 57% of the retail price.

- The application of the standard rate of value-added tax which would have to be at least 15%, or 13.04% inclusive of value-added tax.

Soon it transpired, however, that the new *ad valorem* tilted 57%-rule forced high-excise member states to increase their excises when an increase in the ex-factory cost led to an increase in retail price which resulted in the overall excise falling below the 57% minimum.[6] To avoid a situation in which the dog would be chasing its own tail, the European Commission (1995) recommended the Council and the Parliament to amend the codification directive so that Member States whose absolute level of total excise on cigarettes was higher than euro 60 per 1,000 cigarettes would be allowed to disregard the 57%-rule. Presently, derogations are allowed under directive 99/81.

A recent draft Council Directive (COM(2001) 133 final), issued 14 March 2001, tightens the minimum excise requirement in favor of specific taxation. It proposes that the 57%-rule should be supplemented by the requirement that the total excise cannot be less than euro 70. Alternatively, Member States can choose between the 57%-rule or a minimum total excise of euro 100. The proposal as well as recent developments are reviewed in the recent report from the Commission (2001) to the Council and the European Parliament on tobacco taxation.

4. Tobacco Tax Structures in EU Member States

Clearly, the *acquis communautaire* permits widely different tobacco excise regimes. Thus, most northern Member States, as well as Portugal, have opted for a predominantly specific excise regime. On the other hand, southern Member States favor a predominantly *ad valorem* regime. Also in Finland and, more recently, Sweden, the share of the *ad valorem* excise in total excise is greater than the share of the specific excise.[7]

Table 2 presents an overview of taxes on cigarettes in all 15 member states of the European Union. The Table provides interesting information on the similarities and

[6] In implementing the Luxembourg agreement, Member States tried to keep the number of changes to a minimum. Changes in specific and *ad valorem* excise rates could be offsetting as long as the 57%-criterion was satisfied. Also, increases in value-added tax rates could be compensated by reductions of *ad valorem* excises and *vice versa*.

[7] For an account of the confusing developments in Sweden which in a few years switched from a specific regime to an *ad valorem* regime, see Joossens *et al* (2000). Reportedly, an earlier significant increase in tobacco excises was rescinded following popular opposition and anecdotal evidence that the tax hike had increased smuggling.

differences between northern and southern Member States.

[here Table 2]

- In all Member States, the total tax burden (T) on cigarettes clusters around 75% of the retail price, or 300% of the retail price exclusive of tax. No single product is taxed so highly as tobacco.

- In the northern Member States and Portugal, the share (S) of the specific excise in total tax lies close to the upper limit of the agreed band of 5-55%. In the southern Member States, by contrast, the share of the specific excise is much closer to the lower limit of 5%. The situation with respect to the *ad valorem* excise and the value-added tax is the other way around: on average, 37.7% of the retail price in the northern Member States as opposed to, on average, 65.1% in the southern Member States.

- In all Member States, except Sweden, the share (E) of the sum of specific and *ad valorem* excise in retail price is 57 percent or higher.[8]

- The total excise in Spain, Greece, Portugal, Luxembourg, and Italy is less than euro 70, the minimum proposed under the latest draft directive.

- Approximately equal relative total tax burdens, but large differences in the share of the sum of *ad valorem* excise and value-added tax in total tax, imply large differences in multipliers (M). In the northern Member States, M clusters around the value 1.6; in the southern Member States, M fluctuates around 2.9.

- Although relative total tax burdens are close to each other, substantial differences show up in the absolute amounts of total tax burdens and retail prices. The northern Member States and Portugal levy, on average, euro 152 tax per 1000 cigarettes (of which, euro 79 from the specific rate) against euro 98 by the southern Member States, Finland and Sweden (of which, euro 11 from the specific rate). Not surprisingly, retail prices average euro 195 and euro 134 per thousand, respectively – a difference of euro 1.53 per pack of 25 cigarettes.

As these figures indicate, the EU is divided by a smoke screen which, although not as impenetrable as the erstwhile iron curtain, still deeply divides the Member States. On the north side, Denmark, Germany, Ireland, the Netherlands, and the United Kingdom have dug in to defend their specific excises. Austria, Belgium, France, Greece, Italy, Luxembourg, and Spain are entrenched on the south side staunchly clinging on to their *ad valorem* rates. Finland, Portugal and Sweden are the only Member States whose tobacco excise regime is at variance with their geographical location.

5. Tobacco Tax Structures in EU-accession countries

[8] Sweden was permitted a derogation under Council Directive 99/81 until 31 December 2002.

Analogous to Table 2, Table 3 shows the various tobacco taxes in the accession countries. The information in the Table can be summarized as follows.

- The total tax on cigarettes (T) for six accession countries for which information is available is around 60%, 15 percentage points lower than in the EU.

- In four accession countries, the share (S) of the specific excise in total tax exceeds the upper limit of the 55% of the agreed band. In Slovenia and Poland, S is 19% and 35%, respectively. Information on other countries is not (yet) available.

- Malta is the only country in which the share (E) of the total excise in retail price is 57%. Other countries are still a long way off from meeting this criterion. No country comes even close to meeting the proposed requirement that the total excise should not be less than euro 70.

- The multiplier (M) averages 1.4 in the countries for which data are available.

- As in the EU, total tax amounts and retail prices differ widely between countries.

[here Table 3]

Obviously, the accession countries will have to make substantial (upward) adjustments of their tobacco excises to bring them in line with the EU *acquis communautaire*. Since the European Commission cannot promote a specific excise regime over an *ad valorem* regime or vice versa, the discussions focus mainly on the 57%-criterion. Gradual phase-in schedules have been proposed under which the adjustments will be completed between 2008 and 2010. In the meantime, the EU is likely to adopt the latest draft directive which means that the minimum total excise will have to be euro 70 per thousand cigarettes. This is a multiple of the total excise now being levied in most accession countries.

In raising the excise on cigarettes, however, accession countries are free to choose between a predominately specific and a predominantly *ad valorem* regime. The choice between the specific and *ad valorem* tobacco tax regime, in the EU Member States as well as the accession countries, depends on whether there are social costs to smoking that should be internalized, on government's health objectives, revenue goals, and on the EU's competition policies.

6. Social costs, health policies, and tax burden distribution

As regards social cost considerations, smoking, like bad eating habits and lack of exercise, has detrimental effects on a person's health.[9] Nonetheless, the principle of

[9] The health effects of smoking and the various tobacco-control measures used by governments, including taxation, are emphasized in a recent joint study (Jha and Chaloupka, 2000) by the World

consumer sovereignty implies that a rational person who weighs up all the costs and benefits of his actions should be free to smoke as long as he does not impose costs on others and is fully informed about his choice. In other words, from an efficiency point of view, there would be no external and internal costs. External or social costs occur, for instance, when the behavior of 'active' smokers affects the well-being of 'passive' smokers. Internal costs or information failures arise when smokers, especially teenagers, are not (fully) aware of the health risks of smoking or the addictive potential of tobacco. *Prima facie*, social costs and information failures establish a case for government intervention.

Social costs can be accounted for through the tax system by imposing a tax on cigarettes to the amount of the cost of the damage caused to the health of other people. Ideally, the tax should be equivalent to the marginal external cost per cigarette consumed. This cost, however, depends on who smokes what, where, and under what circumstances. Obviously, this kind of information is simply not available and, even if it were, it would not be feasible to impose a separate tax on each cigarette that goes up in smoke. In practice, therefore, an 'insurance' approach is adopted in charging for the social costs of smoking. Similar to car insurance, smokers as a group meet these costs by paying a uniform tax on tobacco products (O'Hagan, 1998).

The appropriate level of this uniform tax per, say, pack of cigarettes, depends on the total amount of the social costs of smoking divided by the number of packs consumed. On the basis of a careful review of a large number of studies, Lightwood *et al*. (2000) estimate that the *gross* costs of health care related to tobacco use – i.e. all costs in any given year that can be attributed to the extra healthcare needs of smokers – range from 0.1 to 1.1.% of GDP in high-income countries.[10]

Smokers, however, tend to live shorter than nonsmokers which saves on pension payments and health care costs of age-related diseases. From an economic point of view, therefore, it is *net* costs, which assess health care costs over a life-cycle, that should be the focus of analysis. Subject to a number of methodological caveats, Lightwood *et al*. (2000) conclude that the majority of the cross-section studies indicate that the net costs of smoking are positive.[11] These net costs are in the nature of a subsidy paid by nonsmokers to smokers who have higher lifetime health care costs than nonsmokers. These net costs are imposed on nonsmokers only, i.e. are in the nature of social costs, if smokers do not pay for them, either directly or indirectly through tobacco taxes (and/or higher health insurance premiums).

Bank (WB) and the World Health Organization (WHO) on the economic aspects of tobacco use. Focusing in particular on developing and transition countries, the WB/WHO study advocates measures to curtail tobacco consumption through, among others, higher taxes and tight controls on smuggling.

[10] The higher estimates are found in countries where health care costs account for a relatively large share of GDP. As regards EU Member States, research in the United Kingdom for 1986-87 estimated gross costs at between 0.08 and 0.13% of GDP. Furthermore, gross costs in Finland for 1987 were estimated at 0.07-0.08% of GDP. For the references, see Lightwood *et al*. (2000).

[11] An exception is a study for Finland (Pekurinen, 1992) which concludes that smoking involves net health care costs savings. In a similar vein, Atkinson and Townsend (1977) found that the actual cost savings to the UK exchequer from a hypothetical 40% reduction in cigarette smoking were relatively small.

The previous figures are aggregates. There remains the problem that smokers impose social costs, mainly in the form of irritation, on specific nonsmoking individuals whose company they share. These costs, however, cannot really be addressed through the tax system. They are better taken care off through regulatory devices, such as smoking bans in public places. Similarly, there is little role for taxation if lack of information is the central problem. This problem is best addressed through prominent warning labels and the dissemination of the health hazards of smoking through the media. Lack of information should not now be an issue in any EU Member State. Based on evidence from the US, it may be assumed that over 90% of consumers are aware of the long-term health effects of smoking. Perhaps, lack of information is somewhat of a problem in the accession countries.

If the social costs of smoking are negligible, government measures to reduce smoking through higher taxes would seem a form of paternalism on which economics has little to say. But, as Peck *et al*. (2000) point out, the fact that nicotine is addictive undermines the consumer-sovereignty argument against government intervention. The rationality condition ceases to apply, because the addicted smoker is to some extent a different person from the one who decided to start smoking. To these authors, this justifies the formulation of public health objectives aimed at reducing the level and number of smokers, among other methods through the tax system.

Higher taxes are particularly effective in reducing the incidence of smoking among teenagers, even though taxes are second-best to better education about the addictive nature of smoking and its long-term costs. Research (Chaloupka *et al*., 2000) indicates that the price elasticity of demand for cigarettes in high-income countries is, on average, -0.8% among the young, compared with, on average, -0.4% among adults. Generally, teenagers are better able to kick the habit (the addiction has not taken hold), more susceptible to peer pressure, and subject to greater budget constraints. Estimates for the US suggest that a tax increase of $2 per pack would reduce overall youth smoking by about two-thirds.[12] It is difficult to rationalize, however, why tax increases should penalize habitual smokers. As Shoup (1983) notes: "If … we put aside the problem of negative externalities, there seems to be no acceptable principle that justifies higher taxation of addicts."

If there is a (residual) case for government intervention through the tax system, then the specific excise is a better instrument to raise the cost of cigarettes than an *ad valorem* levy. The specific excise has a price effect which cannot be avoided by the manufacturer and the consumer. By contrast, an *ad valorem* excise can be reduced by using lower quality and hence lower priced tobaccos. As a result the total volume of cigarettes consumed tends to be lower the greater is the ratio of specific to total tax (Keen, 1998). A specific excise, moreover, does not tax items other than tobacco, such as wrappers or coal filters, which do not contribute to the generation of social costs, if any, and whose

[12] Particularly for adults, the effect of a permanent increase in price will be greater in the long-run than in the short-run, because current consumption depends to a large extent on past consumption.

value, therefore, should not be included in the excise base.[13]

If tobacco taxes cannot be justified on externality grounds, then they flaunt horizontal and vertical equity notions. In the EU, only 38% of men and 21% of women pay tobacco taxes. Moreover, smoking, and therefore the burden of tobacco taxation, is becoming increasingly concentrated in lower income classes. In the United Kingdom, smoking prevalence follows a continuous upward gradient from high to low socio-economic groups (Bobak *et al*., 2000). While the poor were the last to pick up smoking, they are also the last to quit. Similar findings are reported for Central and Eastern European countries. If education is taken as a proxy for socio-economic groups, then, among men, the better educated tend to smoke less than the poorly educated. In short, tobacco taxes are highly discriminatory and regressive, more so than any other tax. It is impossible, moreover, to adjust for these shortcomings through the income tax and social benefit systems.

7. Revenue considerations

Although tobacco taxes are difficult to justify on externality grounds, they have always been a lucrative and cheap source of revenue for governments. The addictive nature of nicotine implies a low price elasticity of demand and, among smokers, a large sales volume. Under these circumstances, a tax increase will nearly always guarantee higher revenue. To illustrate, assume that the long-run price elasticity of demand for cigarettes is constant at -0.4 and that cigarettes are taxed at 75% of the retail price. In this situation, a tax increase of 10% that is fully passed on to consumers would reduce demand by 3%, but raise cigarette tax revenue by 4.3%. In oligopolistic markets, moreover, a tax increase will most likely be overshifted (Keen, 1998; Harris, 1987). If so, the multiplier effect might then result in a tax increase greater than 4.3%. Beyond that, collection costs are relatively low because the number of producers is small.

Although, over the years, revenues from taxes on tobacco have declined in relative terms, they cannot be neglected as an important revenue source in the EU, as shown in Table 4. In the northern Member States, revenue from excises and value-added tax on tobacco products in 1998 was, on average, 0.9% of GDP (2.4 % of total tax revenue). The ratio was highest in Ireland (1.32% of GDP) and lowest in the Netherlands (0.51%) – a very low ratio, perhaps because the Dutch smoke something else. Among specific-rate countries, Portugal's ratio was lowest of all. In the southern Member States, Finland and Sweden, revenue from excises and value-added tax was, on average, 0.6% of GDP (1.3% of total tax revenue).[14] In this group, Austria led (0.75% of GDP) and Greece closed ranks (0.17%).

[13] A specific excise, based on the weight of tobacco (like the excise on roll-your-own and pipe tobacco in the Netherlands), would be a better internalization instrument than is the current excise, which is related to the number of cigarettes. Its administration, however, might be more costly.

[14] Luxembourg has been left out in calculations for the southern Member States. This country's tobacco tax revenue is very high, because it engages in considerable tax base snatching from neighboring countries by following a low tax/high turnover sales strategy.

[here Table 4]

The differences in revenue should mainly be attributed to differences in absolute tax burdens (as well as consumption and income). Per pack of cigarettes, revenue in Italy is only one quarter of revenue in the United Kingdom. At first sight, it may be thought that this has nothing to do with the nature of the rate. At a retail price of, for example, euro 3.50, a specific rate of euro 1.75 raises as much revenue as an *ad valorem* rate of 50%. This reasoning, however, bypasses the fact that the equality of specific and *ad valorem* rates holds only if all characteristics of the product, except volume, are the same and the price before tax is determined exogenously.

The characteristics of tobacco, however, are not the same, nor is there a pure monopoly. Someone who smokes knows that there are large differences in quality. A Virginia tastes better than two sticks of saw dust. Interestingly, it is the interaction between the *ad valorem* rate and quality which detrimentally affects revenue. In contrast to the specific rate, the *ad valorem* rate will induce manufacturers to decrease the price of their product by lowering its quality.[15] By contrast, a specific rate, applying to cheap as well as expensive tobaccos, will induce consumers to upgrade their choice of cigarettes, because the relative price of high-quality cigarettes falls. Not surprisingly, southern Member States with high *ad valorem* levies market cigarettes of lower quality at lower prices.[16] At a given volume of consumption, this implies less tax revenue.

Most of these observations also apply to EU-accession countries. Little reliable information is available on the revenue contribution of tobacco taxes in the accession countries, but it should be lower than in EU Member States in view of the much lower retail prices of cigarettes. These prices vary from euro 0.55 in Latvia to euro 1.67 in Cyprus. These countries would have to increase their tobacco taxes by 282% and 26%, respectively, to match the retail price of euro 2.60 in Spain which is the lowest in the EU. Increases would have to be much greater if the latest draft directive which proposes a minimum total excise of euro 70 per thousand cigarettes is accepted – a level which is not even attained in Spain, Greece, Luxembourg, Italy, and Portugal.

[here Table 5]

8. Competition Policy and Trade Diversion

From the beginning, the southern Member States, under France's leadership, have tried to practically eliminate the specific element of the tobacco excise in favor of the *ad*

[15] For the formal proof, see Kay and Keen (1983). The authors note: "Profit maximizing choice of quality requires that the after-tax marginal revenue from an increase in quality with output held constant be equal to the associated marginal cost; an increase in the ad valorem rate reduces this net marginal revenue, and under the usual regularity conditions - which here correspond to the requirement that consumers' willingness to pay for successive increases in quality decreases with the initial quality level - quality must fall to restore the equality."

[16] Also, this follows from the formula $T = (t_s + t_a p)/p$, in which a higher ad valorem rate, at a given tax burden, implies a lower retail price.

valorem element. The reason is protection.[17] The tobaccos of the southern Member States are cheaper than the higher quality American blends that the northern Member States import for their consumers. An *ad valorem* rate protects the inferior tobacco. After all, the multiplier effect enables producers to conduct a pricing policy, such that a difference in the price of the raw material of, for instance, euro 1.00 per kilogram is blown up to a difference of euro 3.50 per kilogram at the consumer level. It is difficult to rationalize this with the free competition policy of the internal market. If it would be desirable to provide income support to growers of tobacco, then it would be far better to do so directly than through the excise structure.

The balance between specific and *ad valorem* taxation is also important for the prevention of trade diversion in the form of bootlegging (the legal purchase of cigarettes in a country other than the country of consumption) and smuggling. Bootlegging and smuggling within the EU can only be prevented if price differentials between Member States are not too large. While differences in price exclusive of tax are relatively minor, differences in price inclusive of tax are enormous. And, of course, the latter differences determine how advantageous it is to buy cigarettes across the border or to trade cigarettes illegally.[18] To illustrate, Table 4 indicates that the reference price of cigarettes is euro 5.03 in Denmark, but only 2.60 in Luxembourg, a spread to the tune of euro 2.43 per pack. The temptation to illegally exploit this price differentials is enormous. A trip from Luxembourg to Copenhagen with a 7.5 ton lorry loaded with 1.5 million tax-paid cigarettes (60,000 packs) yields gross profits of euro 146.000. The net proceeds of a day trip with the same lorry from the duchy to Amsterdam are approximately euro 50.000.[19]

In line with these findings, Merriman *et al*. (2000) estimate that in a European country with the mean level of incentive, bootlegged imports account for about 3% of domestic consumption. As an example, cross-border and tourist shopping in the United Kingdom amounts to approximately 0.5% of cigarette sales and 3% of roll-your-own tobacco sales. In Finland 12% of domestic sales come from bootlegged imports. In addition, the unweighted average for smuggling as a percentage of in-State consumption is about 7.7% in the EU (Table 3); the population weighted average is 8.9%.

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[17] This situation resembles the approach to alcohol taxation in France which used to levy low excises on spirits made from grapes, e.g. cognac, but high excises on spirits made from grains, e.g. gin. Since grain-based spirits were mainly imported, the approach protected home-made spirits. The European Court of Justice ruled, however, that the excise should be based on alcohol content rather than the raw material.

[18] Research indicates that smokers will buy cigarettes across the border if the price differential is euro 0.15 or more per pack. In the EU, a little over 12% of the population lives near inter-EU frontiers, i.e. within a distance of 30 km of a neighboring Member State. Therefore, the effect of tax differentials on sales and revenue, could be substantial.

[19] That the increase in legal and illegal trade in cigarettes after 1992, implied by these examples, is not imaginary is shown by research in the United States on the consequences of differences in taxes on cigarettes (Price Waterhouse, 1991). In 1989, taxes on cigarettes (federal excise, state excise and retail sales tax) ranged from $0.03 cents per pack in North Carolina to $0.48 in Minnesota and average retail prices from $2.25 in Atlanta to $1.35 in Kentucky. As a result of the tax-induced diversion of cigarette purchases, the various treasuries lost some $179 million in revenue in 1989. Furthermore, it was estimated that some 620 million packs (2.4% of all sales) were traded illegally. More seriously, the mafia has cornered the illegal trade in cigarettes.

Table 5 indicates that the situation is worse in the accession countries. Smuggling has reached alarming proportions, particularly in the Baltic countries, Poland, Bulgaria and Romania. It is doubtful whether tobacco taxes can be sustained in the face of smuggling that exceeds 20% of domestic sales. The smuggling problem should become much worse if the accession countries have to meet the 57%-criterion and still much worse if the minimum total excise level is set at euro 70 as proposed by the European Commission.

Smuggled imports should be negatively correlated with enforcement activities in local markets.[20] The corruption indexes shown in Tables 4 and 5 are an indication of the quality of these activities. The European Commission (1998) reports that over 50 criminal networks have been identified by investigations of large-scale smuggling of various products, including tobacco. The Commission (2001) is very much concerned about the illegal trade between eastern European countries and the EU which "has reached alarming proportions and is disrupting the domestic market."[21]

Bootlegging in the EU can be brought down by narrowing price differences between cigarettes. Since a specific rate has only a price effect, it should be a more effective means to narrow price differences than an *ad valorem* rate would be. Furthermore, illegal practices can be countered by levying the excise as early as possible in the production-distribution chain and by severing the link between excise and retail price. If the excise were levied at the producer level and if the member state of production would not be the same as the member state of consumption, then origin states could be obliged to pay the excise and value-added tax of the destination state. This could be done by requiring the manufacturer to buy banderols from the consumer country's excise administration.

9. Concluding Observations

Tobacco taxes in the EU are the highest in the world. The total tax (excises and value-added tax) on cigarettes is, on average, 75% of the retail price which equals 300% of the retail price exclusive of tax. In comparison, the value-added tax rate of, on average, 19%, which is also calculated on the price exclusive of tax, is very modest indeed. The high taxes on tobacco are mainly rationalized as a charge for the social costs of smoking. But the principle of consumer sovereignty indicates that this argument is not very persuasive. In the event, tobacco taxes must be viewed as a paternalistic device to reduce consumption. In view of the low price elasticity of demand for cigarettes, the device does not appear to be very effective. Perhaps revenue is after all the main reason for the high taxes on tobacco.[22]

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[20] Merriman et al. (2000) find that corruption in a country is a stronger indicator of cigarette smuggling than price.

[21] Recent administrative measures, implemented 1 January 2001, have considerably tightened the rules on transit trade in cigarettes. This should reduce the level of bootlegging and smuggling.

[22] In passing, as noted by Kay and Keen (1982), it is of interest to point out that governments interested solely in revenue would probably wish to keep the retail price as low as possible under a specific

Most arguments seem to favor a predominantly specific tobacco excise regime over a predominantly *ad valorem* regime. A specific regime tends to be better for revenue (which enables a reduction in other, more distortionary taxes), may be more effective in reducing the level of tobacco consumption if a government objective, and seems a better instrument to combat trade diversion. The only argument in favor of an *ad valorem* regime is that it tends to protect the cultivation of low-priced home-grown tobaccos. But if this would be the goal, then it would be far better to increase the subsidies under the Common Agricultural Program (CAP).

Thus far, the EU tobacco tax harmonization proposals have not narrowed price differentials between Member States. After the elimination of border controls in 1993, the trade in cigarettes (and tax revenues) has been diverted to Member States with low absolute tax levels; in other words, Member States with high *ad valorem* rates. As a consequence, intra-EU trade in cigarettes is driven mainly by differences in the levels of taxation rather than, as is the objective, by differences in production costs. The only way to narrow these differences is to proceed with harmonization mainly on the basis of specific rates. The latest Commission proposal of a minimum total excise of euro 70 is a step in this direction.

A disadvantage of a specific rate is that, unlike the case of an *ad valorem* rate, its revenue does not fluctuate in tandem with movements in the price level. In case of inflation, the real revenue of a specific excise that is not adjusted will be eroded. To avoid this effect, the specific rate can be adjusted periodically for increases (or decreases) in the price index of tobacco or for changes in the general price index (as is done in the EU). The general price index is favored, because the issue concerns the maintenance of the real level of revenue, not the level which fluctuates with the price of tobacco. Moreover, if the specific rate has been chosen in order to internalize the social costs of smoking, then these costs are obviously more likely to vary with the general price level than with the price of tobacco. Logic also dictates the use of the general price index. After all, if the specific rate is indexed for movements in the price index of tobacco, then the result is an *ad valorem* rate.

This paper has shown that the accession countries still have a long way to go before their tobacco tax regimes accord with the EU directives on tobacco tax harmonization, especially the 57%-rule which sets the minimum level of the sum of the specific and *ad valorem* excise as a percentage of retail price and, further down the road, the proposed minimum absolute amount of total excise of euro 70. In moving to these levels, this paper recommends that accession countries consider the merits of a predominantly

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regime, so as not to depress sales volume. Under an *ad valorem* regime, on the other hand, governments have an interest in keeping the retail price as high as possible. This suggests that there is a combined rate at which revenue is independent of retail price. This situation occurs if the share of the *ad valorem* levy in total tax is equal to the price elasticity of demand. If the price elasticity equals -0.4, then the *ad valorem* levy should generate two-thirds of the revenue of the specific rate. This implies a multiplier of nearly 1.7.

specific tobacco excise regime.

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Table 2. **Taxes on cigarettes in the European Union as of January 2001**

	---------- **Proportional elements** ---------- (% of retail price)			----------**Absolute amounts**---------- (euro/thousand)			---------- **Important ratios**----------			
Member State[a]	Specific excise (euro/ thousand) (t_s)	*Ad valorem* excise (t_{a1})	VAT (t_{a2})	Total *ad valorem* levy ($t_a = t_{a1}+t_{a2}$)	Total excise ($t_s+t_{a1}p$)	Total tax (t_s+t_ap)	Retail price[b] (p)	Tax burden (%) $T=\frac{t_s+t_ap}{p}$	Share of specific excise in total tax (%) $S=\frac{t_s}{t_s+t_ap}$	Share of total excise in retail price (%) $E=\frac{t_s+t_{a1}p}{p}$	Multiplier $M=\frac{1}{1-t_a}$
Specific rates											
United Kingdom	153.98	22.00	14.89	36.89	233	287	361	79	60	65	1.6
Ireland	103.71	18.89	16.67	35.56	149	189	239	79	55	62	1.6
Denmark	81.40	21.22	20.00	41.22	124	164	201	82	50	62	1.7
Germany	49.54	21.60	13.79	35.39	82	102	148	69	49	55	1.5
Netherlands	50.01	20.51	15.97	36.48	78	100	137	73	50	57	1.6
Portugal[c]	35.09	26.00	14.53	40.53	58	70	87	81	50	66	1.7
Ad valorem rates											
Sweden	23.45	39.20	20.00	59.20	105	147	208	70	16	50	2.4
Finland	15.14	50.00	18.03	68.03	110	144	189	76	11	58	3.1
France	5.79	54.50	17.08	71.58	86	112	148	75	5	58	3.5
Belgium	15.72	45.84	17.36	63.20	80	105	141	74	15	57	2.7
Austria	19.11	42.00	16.67	58.67	73	94	127	74	20	57	2.4
Italy	3.86	54.26	16.67	70.93	60	77	103	75	5	58	3.4
Luxembourg	10.59	46.84	10.71	57.55	59	70	104	68	15	57	2.4
Greece	3.48	53.86	15.25	69.11	55	70	96	73	5	57	3.2
Spain	3.01	54.00	13.79	67.79	51	63	89	71	5	57	3.1

Source: European Commission, *Excise Duty Tables*, January 2001, Brussels: Directorate General of Taxation and Customs Union.

a Predominantly specific-excise regime if specific excise as % of retail price is higher than *ad valorem* excise. If not, predominantly *ad valorem* regime. Ranked within each group by total tax on cigarettes.

b Value of the most popular price category (MPPC) in January 2001.

c Portugal may apply a reduced rate of up to 50% less than the overall minimum rate to cigarettes consumed in the most remote regions of the Azores and Madeira, made by small-scale manufacturers each of whose annual production does not exceed 500 metric tons (Article 3.2 of Directive 92/79/EEC).

Table 3. **Taxes on cigarettes in the EU-Accession Countries as of March 2001**

Member State[a]	Specific excise (euro/ thousand) (t_s)	*Ad valorem* excise (t_{a1})	VAT (t_{a2})	Total *ad valorem* levy ($t_a = t_{a1}+t_{a2}$)	Total excise ($t_s+t_{a1}p$)	Total tax (t_s+t_ap)	Retail price[b] (p)	Tax burden (%) $T=\frac{t_s+t_ap}{p}$	Share of specific excise in total tax (%) $S=\frac{t_s}{t_s+t_ap}$	Share of total excise in retail price (%) $E=\frac{t_s+t_{a1}p}{p}$	Multiplier $M=\frac{1}{1-t_a}$
	---------- Proportional elements ---------- (% of retail price)				**----------Absolute amounts----------** (euro/thousand)			**---------- Important ratios----------**			
Specific rates											
Cyprus	Various[c]	No	9.09	9.09	41.17	47.96	74.72	64	86	55	1.1
Czech Republic	18.98[d]	No	18.03	18.03	18.98	28.43	52.41	54	67	36	1.2
Poland	13.14	20.00	18.03	38.03							
Slovak Republic	11.44[e]	No	18.70	18.70	11.44	18.34	36.90	50	62	31	1.2
Estonia	9.58	17.36	15.25	32.61	17.58	24.61	46.07	53	39	38	1.5
Latvia	8.80[f]	No	15.25	15.25	8.80	12.16	22.00	55	72	40	1.2
Lithuania	7.99	No	15.25	15.25	7.99						
Ad valorem rates											
Slovenia	6.38	32.81	15.97	48.78	23.55	31.91	52.33	61	20	45	2.0
Malta	5.51	53.10	13.04	66.14						57	
Romania	2.00	25.00	15.97	40.97							
Bulgaria	0.51[g]	9.09	16.67	25.76						39	
Hungary			20.00								

Source: Country legislation.

a Specific excise regime if specific excise as % of retail price is higher than *ad valorem* excise; otherwise, *ad valorem* regime. Ranked within each group by (apparent) total tax on cigarettes.

b Value of the most popular price category (MPPC) in March 2001.

c Five different amounts depending on tobacco use.

d An additional specific rate of euro 22.38 applies to long cigarettes.

e An additional specific rate of euro 20.59 applies to long cigarettes.

f An additional specific rate of euro 10.52 applies to filter cigarettes.

g An additional specific rate of euro 1.02 applies to filter cigarettes.

Table 4. **European Union: Tobacco tax revenues (1998)** [a] **and smuggling (1995)**

Member States	**Percent of total tax revenue**	**Percent of GDP**	**Price/ pack** (euro)	**Smuggling as % of domestic sales**	**Corruption index**[b]
Specific rates					
United Kingdom	3.0	1.10	8.80	2	8.7
Ireland	4.1	1.32	5.85	4	8.2
Denmark	1.7	0.86	5.03	na	10.0
Germany	1.9	0.71	3.38	10	7.9
Netherlands	1.3	0.51	3.43	8	9.0
Portugal	0.4	0.12	2.18	na	6.5
Ad valorem rates					
Sweden	1.1	0.56	5.20	2	9.5
Finland	1.4	0.64	4.73	na	9.6
France	1.5	0.69	3.70	2	6.7
Belgium	1.5	0.68	3.53	7	5.4
Austria	1.7	0.75	3.00	15	7.5
Italy	1.7	0.72	2.40	12	4.6
Luxembourg	5.1	2.08	2.60	7	5.4
Greece	0.5	0.17	2.40	8	4.9
Spain	na	na	2.10	15	6.1

Sources: Individual country tables in OECD (2000) and Table 15.3 in Merriman *et al*. (2000).

[a] Excises and value-added tax. Total tobacco tax revenue has been calculated by multiplying actual excise revenues shown in OECD (2000) by R_t/R_e, in which R_t and R_e are the total tax and total excise yield, respectively,
as calculated in Table 2.

[b] Perception index ranging from 0 (highly corrupt) to 10 (highly clean), based on surveys of business people, risk analysts, and the general public.

Table 5. **EU Accession Countries: Cigarettes Prices and and Smuggling (1995)**

Member States	**Price/ pack** (euro)	**Smuggling as % of domestic sales**	**Corruption index**[b]
Specific rates			
Cyprus	1.67	2	na
Czech Republic	1.31	7	4.8
Poland	na	15	4.6
Slovak Republic	0.92	3	3.9
Estonia	1.17	16	5.7
Latvia	0.55	39	2.7
Lithuania	na	30	na
Ad valorem rates			
Slovenia	1.31	na	na
Malta	na	na	na
Romania	na	20	3.0
Bulgaria	na	15	2.9
Hungary	na	na	na

Sources: Author and Table 15.3 in Merriman *et al*. (2000).