

The decline and revival of environmentally-related taxation in Europe

Forthcoming in Akihisa Mori et al (eds) *The green fiscal mechanism and reform for low carbon development*, London: Routledge.

By Mikael Skou Andersen, Aarhus University (DK)

Introduction

In May-June 1995 Eurobarometer as part of its regular 4-year survey on 'The Europeans and the environment' posed several questions regarding environmental tax reform to European citizens. These questions were addressed to respondents in the then 15 member states of the European Union and the survey findings in a way reflect the high hopes and optimism that prevailed at the time in the mid-1990s for environmentally-related taxation in Europe.¹

In all member states at least 75% of the surveyed would agree with the basic idea of applying environmental taxes, in fact support was above 80% in all but 3 member states. The highest level of support was recorded in Spain, Greece, Portugal and Ireland, while the Belgians and Germans were the least supportive (see figure 1A).

It is rare for any category of taxes to achieve this level of popularity, yet when pressed about the dilemma that environmental taxes might involve some sacrifice for economic growth, a majority of the surveyed maintained their support for this then quite innovative fiscal instrument, now with the Nordic countries and Netherlands topping the list (see figure 1B).

The questionnaire also presented the idea of an environmental tax reform, involving a shift of the tax burden in line with what had been proposed in the Delors Whitepaper (European Commission, 1993). The option of reducing income taxes and social security contributions in return for new environmentally-related taxes was here tested with the surveyed. Even though the question was posed in such a way as to emphasise that the tax shift would take place at member state level, overall support by no means declined as compared to the more generic question about environmental taxes – about 80 per cent agreed with the option of a revenue-neutral environmental tax reform, with few differences among member states (see figure 1C).

¹Eurostat has reported the survey results from the specific questions on environmental tax reform only in a rather general way (European Commission, 1995). The detailed results cited here for the first time have been retrieved from the GESISdata server at the Leibniz Institute for Social Sciences. <http://zacat.gesis.org/webview/index.jsp?object=http://134.95.45.58:80/obj/fStudy/ZA2639>

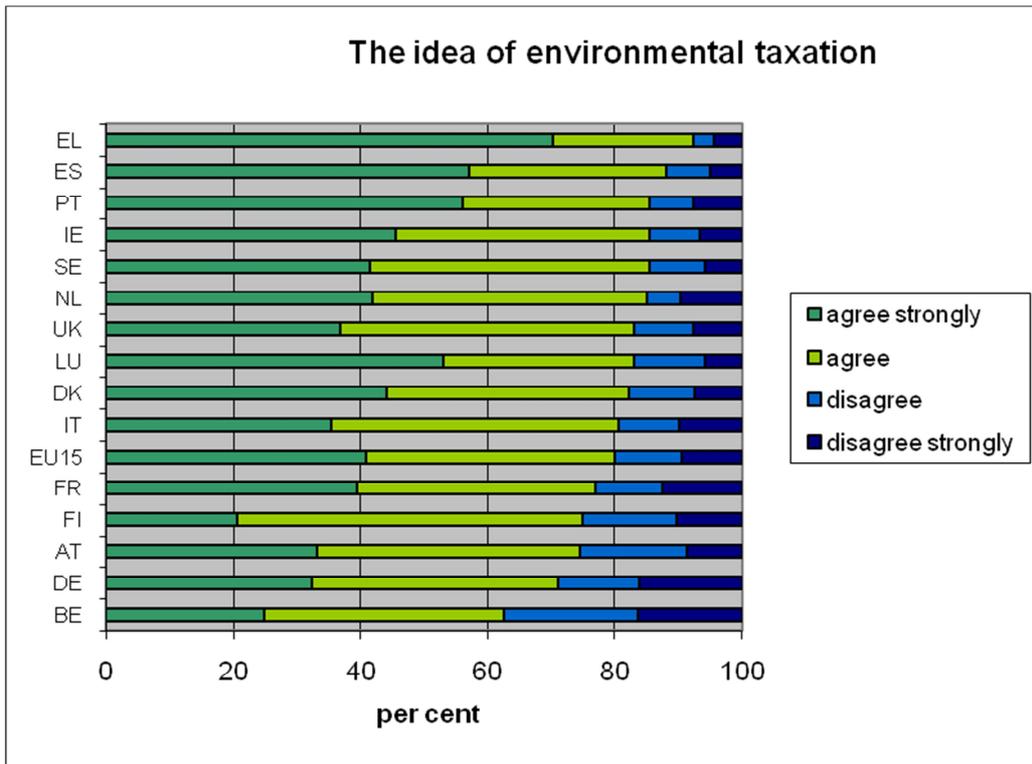


Figure 1A: "A possible means of slowing down the damaging effect of human lifestyle on the environment would be to introduce environmental taxes. Do you agree with this idea ?" (Source: Eurobarometer, 1995).

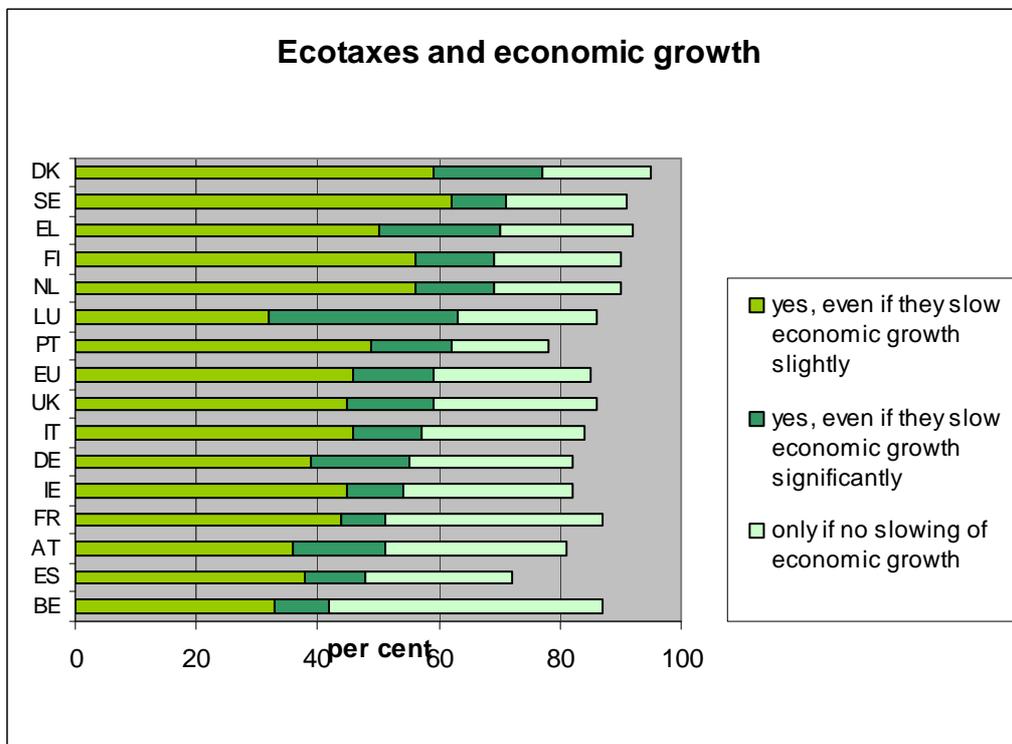


Figure 1B: "Do you think such taxes should be introduced even if they slow down economic growth?" (Source: Eurobarometer, 1995).

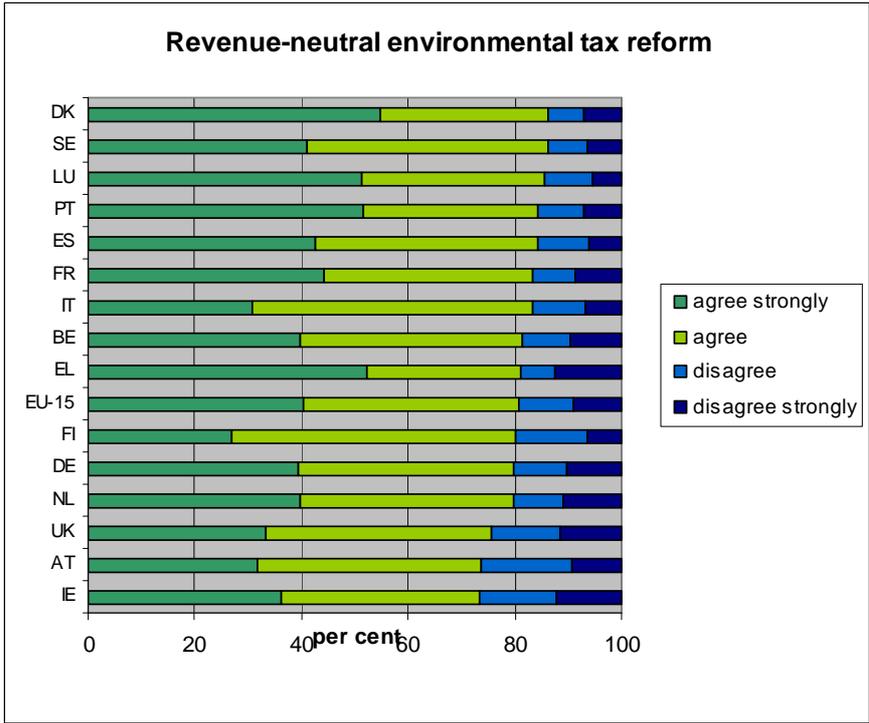


Figure 1C: “Imagine that in our country it was proposed to cut income taxes or social security contributions, but an equivalent amount of taxes would be put on goods and processes which damage the environment” (Source: Eurobarometer, 1995).

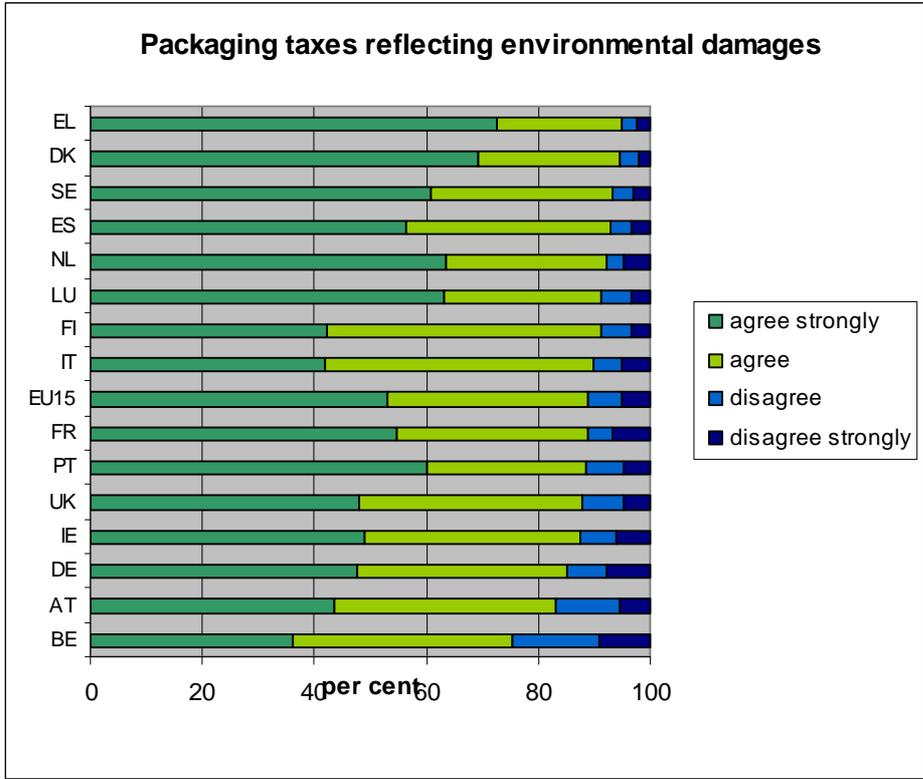


Figure 1D: “It has been proposed to increase taxes on product packaging that pollutes the environment and decrease taxes on environmentally friendly packs” (Source: Eurobarometer, 1995).

Finally one question reflected a more sophisticated use of environmental taxation and presented the option of introducing taxes on packaging that would match the specific environmental burdens of the various types of packaging. This option was wholeheartedly endorsed by the surveyed, as close to 90 per cent welcomed such environmentally-related taxes reflecting more closely the costs and burdens involved (see figure 1D).

In the second half of the 1990s several EU member states introduced and increased environmentally-related taxes, some of them as part of actual environmental tax reforms. This is reflected in Eurostat taxation data that shows an overall peak in the share of environmentally related taxes some years later in 1999 (2.82% in relation to GDP, respectively 6.94% ofTSC (total tax revenue, including social security contributions, SSC)). However, from that time and up to the year 2008, when the financial crisis appeared, environmentally-related taxes gradually declined in significance. In some member states such as Italy and Portugal the decline was very pronounced and represented a relative loss in revenue significance of about 30 per cent. Under the turmoil of the crisis, with declines in GDP, the share has increased slightly again in the EU, but the 15 'old' member states generally remain well below the level of significance back in 1995 when the Eurobarometer survey was carried out (Eurostat, 2012).

This chapter reports on recent trends in environmentally-related taxation in the European Union Member States and explores what underlying trends can explain the paradox that a tax instrument which was in fact relatively popular with the electorate came to decline in revenue significance. This more factual analysis is then taken as a starting point for a closing discussion and analysis of the prevailing trends in member state taxation and the EU harmonisation processes in the area of taxation.

Trends in environmentally-related taxation from 1995 to 2010

Eurostat traditionally has reported environmentally-related tax revenues in relation to GDP, but has complemented it also by their share of total tax revenues.

When reported in relation to GDP the figures reflect the share of the economy which is appropriated for public expenditures by means of environmentally-related taxes. A higher figure for environmentally-related taxes in relation to GDP reflects a more substantial role for these taxes in the economy. The proportion of environmentally-related taxes in relation to GDP may also be influenced by the relative size of public expenditures, which differ significantly among member states, from 48 per cent in Denmark to 27 per cent in Romania. Furthermore, because of recent fluctuations in GDP as a result of the fiscal crisis, taxation trends are becoming more difficult to distinguish when related to GDP.

When environmentally-related taxes are reported as a share of total taxation (incl. social contributions), then it can be seen to reflect the overall role accorded to this tax base in the taxation mix chosen by member states. The overall level of taxation expresses the preferences for public expenditures as well as more short term decisions on how to manage the economy. The share of environmentally-related taxes of total taxation then reflects the relative significance of these taxes as a source of revenues.

Figure 2 (A,B) provides for EU member States as of 1.1.2013 an overview of developments from 1995 to 2010 for environmentally related taxes in relation to GDP and as a share of total taxation respectively. According to Eurostat conventions the revenues are split between energy, transport and pollution and resources respectively. The category 'energy' comprises taxes on the transport fuels, notably petrol and diesel, which in fact is the predominant source of revenues. In addition taxes on other fuels and electricity are included here, including any taxes on carbon or CO₂ as related to energy use. The category 'transport' comprises mainly taxes on vehicles, notably registration taxes and annual user taxes. The category 'pollution and resources' comprises the wider range of taxes relating to water, waste, air pollution and water pollution, as well as specific resource taxes for aggregates etc.

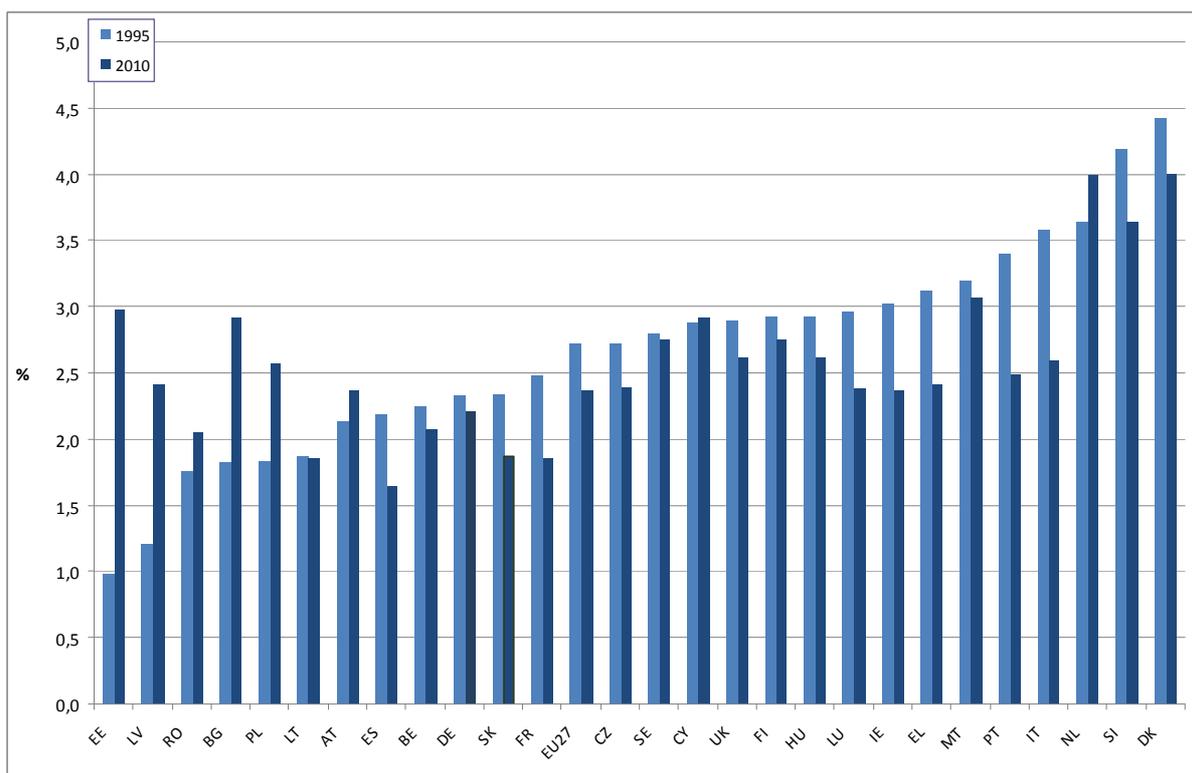


Figure 2A: Environmentally-related taxes in relation to GDP, ranked by their level in 1995 (Source: Eurostat).

When inspecting figure 2A and 2B it is seen that environmentally-related taxes declined for EU27 as a whole by about 0.35% of GDP, while measured as a share of total taxes including SSC they declined by 0.7%, a decline of about 13% in their tax share. The general patterns mask considerable differences among member states, reflecting the fact that whereas relative reductions can be noted for most of the old member states (Netherlands and Austria are the exceptions) several of the new member states (notably Estonia, Bulgaria, Poland) have been increasing their share of environmentally-related taxes.

In terms of ranking when considering environmentally-related taxes as a share of GDP, in 1995 Denmark and Netherlands topped the list of the old EU15, which took seven of the top 10 places,

but by 2010 the next in line were five of the new member states (Slovenia, Malta, Estonia, Bulgaria and Cyprus). Other member states, which have marketed their environmental tax shifting as success stories, such as Sweden, Finland and Germany, are only further down the list.

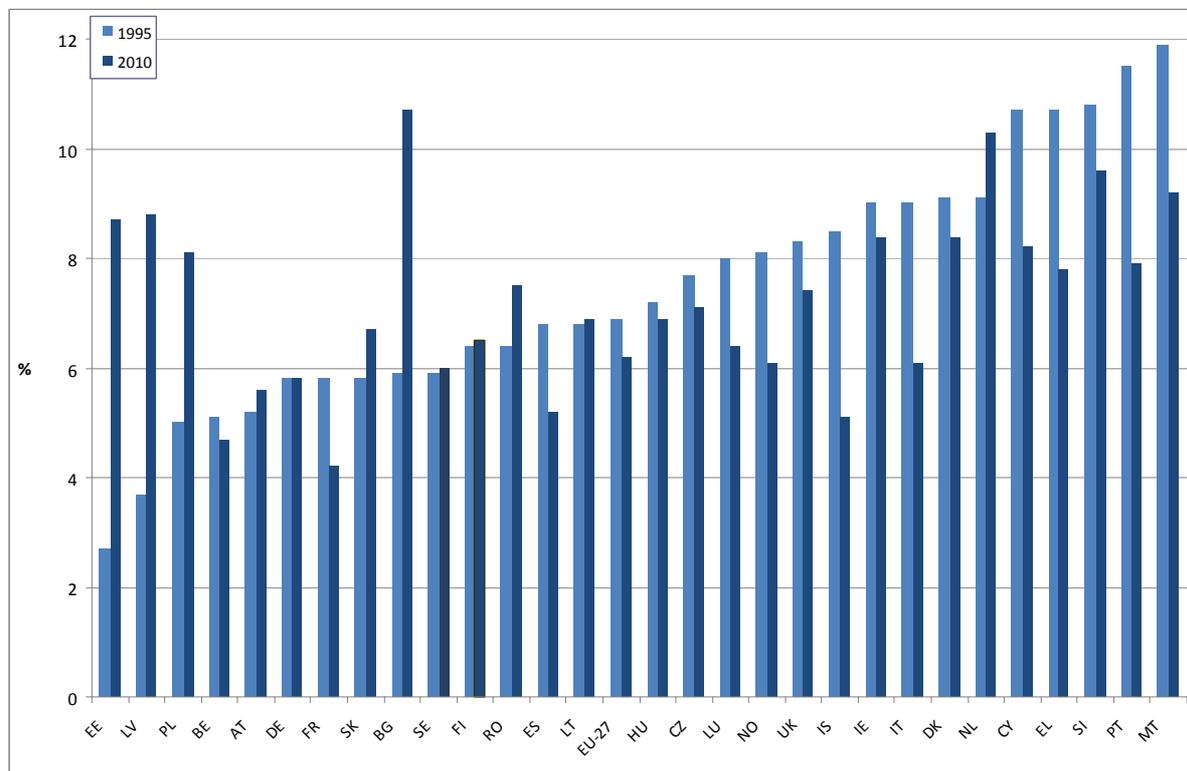


Figure 2B: Environmentally-related taxes as a share of total taxes (including SSC), ranked by their level in 1995 (Source: Eurostat).

The ranking among member states changes somewhat when considering environmentally-related taxes as a share of total taxation rather than as a share of GDP. For the share of total taxes, and with the exception of the Netherlands, it is new member states which top the list in 2010, e.g. Bulgaria, Slovenia, Malta, Latvia and Estonia. This reflects the fact that environmentally-related taxes play a somewhat greater role as a source of revenue in economies in transition, the reasons for this are discussed in the section below.

Trends in real effective tax rates

It is worth seeking an explanation for the decline in environmentally-related tax revenues that can be observed between 1995 and 2010. Some such decline from behavioural changes in response to environmentally-related taxes may be expected, but such changes can only be separated out from the time-series by appropriate econometric analysis, which is beyond the scope of this paper. As an alternative, analysis of the real and nominal tax rates can investigate whether policymakers in fact

have been opting for lowering of environmentally-related taxes. A lowering can take place through nominal reductions in the tax rates, but also more indirectly when failing to keep up with inflation or ignoring currency depreciations.

Figure 3 (A,B) shows the real effective tax² rates for petrol and diesel in a selection of six member states; three Mediterranean Eurozone countries (Italy, Portugal and Greece) and three transition economies outside the Eurozone (Poland, Estonia³ and Bulgaria). These Member States have been chosen as representing either side of the continuum, i.e. featuring either significant reductions in revenues from environmentally-related taxes or significant increases.

Tax revenues from petrol and diesel taxes account for 75% within the energy category of environmentally-related taxes. This category provides a good basis for exploring developments in environmentally-related taxes, both because it is the most significant category of environmentally-related taxes, and because 95% of the decline in revenues relates to this category. Focusing on this subset of environmentally-related taxes also allows for an improved, if still simple, understanding of some of the general trends that were observed in the previous section and which were noted in relation to figures 2A and B, in particular the different trends in transition economies versus Mediterranean euro-zone countries.

The European Union has with the Energy Taxation Directive (2003/96/EC) agreed on harmonised minimum tax rates for motor fuels and certain other energy carriers including electricity. These minimum rates have been phased in gradually for the individual Member States, so as to gradually narrow the band of tax rates originally in place. By the year 2013, ten years after the adoption, the minimum rates for motor fuels have been completely harmonised for all 27 Member States in the European Union.

Figure 3A on petrol shows how there was convergence towards the minimum rate agreed with the energy taxation directive. On one hand Poland and Estonia have increased their tax rates to comply with the minimum rates, while Bulgaria remains a special case due to the years of hyper-inflation (1996-97). Italy, Portugal and – until 2009 – Greece have seen a gradual erosion of their petrol tax rates. Italy used to have the highest level of petrol taxation in Europe, mitigated by handing tourists petrol discount coupons upon entering the country. From the mid-1990s and up to 2010 the real petrol tax rate declined by more than 20 per cent in Italy.

Figure 3B on real diesel tax rates further underlines the convergence that has been taking place across Europe up to 2010. Member States are now closer to the agreed EU minimum for diesel taxation; whereas for Poland, Estonia and Bulgaria this has involved a substantial increase in real tax rates, for Italy there has been a decrease comparable to the one noted for petrol. Portugal and Greece after an initial decline managed to recover the real tax rate for diesel. Diesel vehicles make up more than ½ and 2/3 of personal vehicles in Italy and Portugal respectively, but only 4 per cent in Greece, so the trends for diesel are mainly relevant in relation to the two first mentioned countries (ICCT, 2011).

² Net of inflation as well as currency depreciations (Euro introduced in 2002).

³Estonia joined the Eurozone only in 2011.

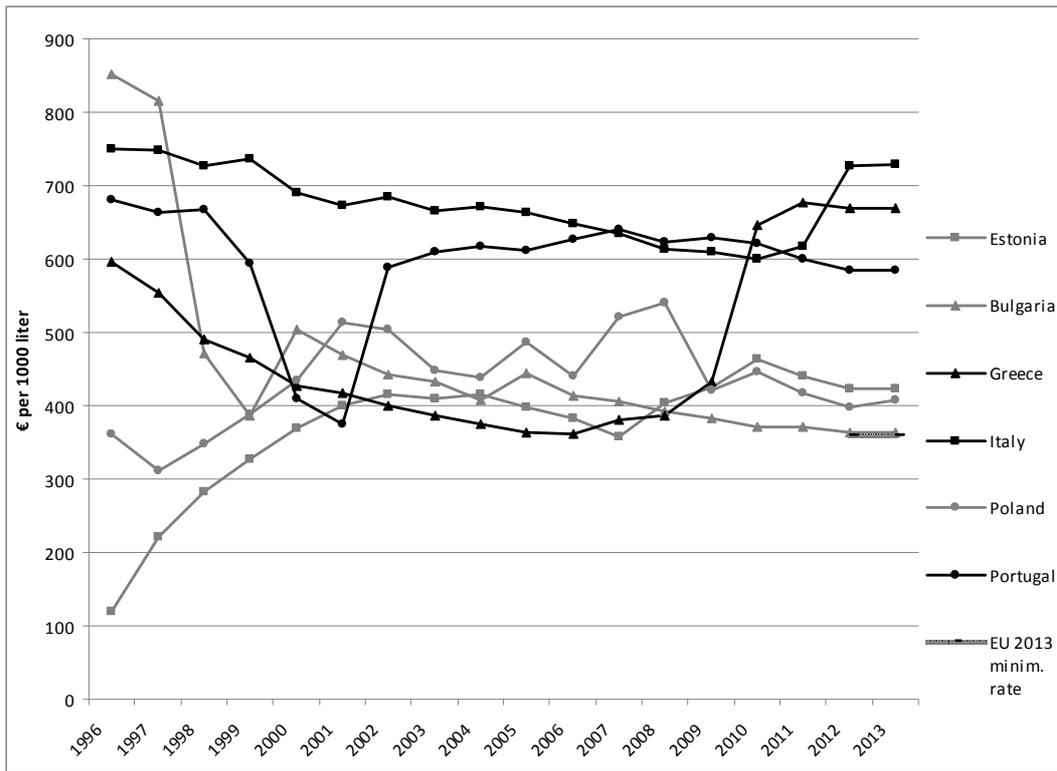


Figure 3A: Real effective fuel tax rate for petrol in selected Member States in 2012 prices (Source: IEA, OECD, REC).

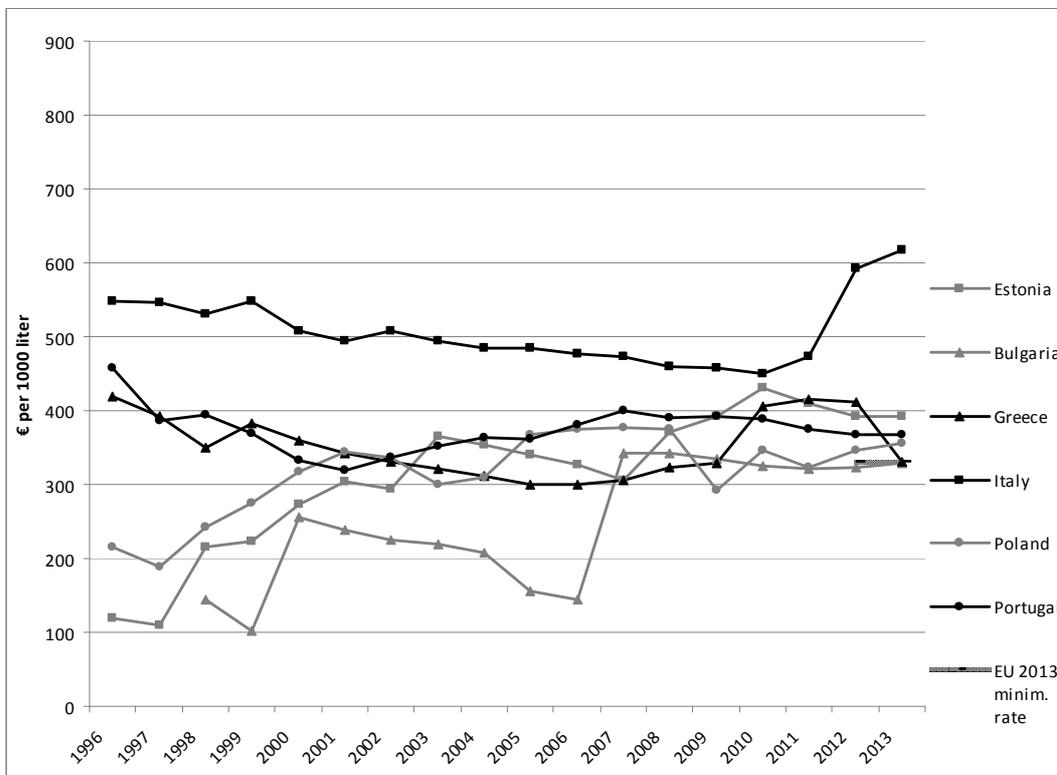


Figure 3B: Real effective fuel tax rate for diesel in selected Member States in 2012 prices (Source: IEA, OECD, REC, national).

An inspection of nominal tax rates show that the three transition economy countries have in fact not at any time lowered their nominal fuel tax rates, which implies that any temporary declines that can be observed in figures 3A and B with the real tax rates must result from temporary inflation effects or currency depreciations. Because these countries suffered from high inflation rates in the early 1990s, some of them even had put in place certain mechanisms for adjusting their environmentally-related tax rates with inflation (for Estonia see UNECE, 2001:78).

As for the Mediterranean Eurozone countries, fuel tax concessions were introduced in all three Member States in 2000 in response to the fuel tax protests that followed a rise in the international oil price at this time. Italy and Portugal further lowered their fuel tax rates in 2001, while Greece lowered its petrol tax over a period of 4 years starting already in 1997. Still, these reductions were relatively minor (with the exception of petrol in Portugal), and in the range of 5-7%, which underlines how in fact it was more likely inflation – and before 2002 also currency depreciations – that played a key role in hollowing out the real effective tax rates for petrol and diesel in the three Mediterranean euro-zone countries. Again the example of Italy is illustrative in that the nominal tax rates for petrol were not adjusted in six consecutive years from 2005 to 2010, in spite of annual inflation of about 2%. Also Portugal maintained petrol and diesel tax rates practically unadjusted for six consecutive years, from 2007 to 2012, while Greece featured a five year period with unadjusted tax levels from 2001-2005.

The possible role of inflation is mirrored in the declines in real effective rates being more significant in the years prior to introducing the euro for the three euro-zone countries. Overall, from 1995-2010 Italy and Portugal experienced a decline in the real effective tax rates for the dominant fuel, diesel, of 15-18%, while experiencing price inflation of 35-38%. In Greece the real effective fuel tax rate declined by 20% up to 2009 (2010 saw a 25% increase though), while inflation was just below 30%. In sum the absence of sufficient inflation adjustment can account for a great deal of the revenue erosion between 1995 and 2009/10 in these three countries.

Still, further variables need to be factored in to understand the marked decline in revenues from environmentally-related taxes across the EU as a whole.

Trends in real effective tax revenues

One difficulty with interpreting the decline in environmentally-related taxes in relation to GDP is that GDP has not developed in a coherent way across the European Union. While transition economies have experienced significant increases in GDP, most of the old Member States have experienced little or moderate economic growth.

Considering the real effective revenues, adjusted for inflation, can clarify the extent to which the relative revenue erosion of environmentally-related tax revenues in relation to GDP at the level of EU27 can be explained by a widening gap between growth in GDP and growth in revenues (see Table 1).

Italy, Portugal and Greece are countries in which revenues from energy taxes declined not only relative to GDP but also in real terms – the inflation adjusted revenues were less in 2010 as compared to the beginning of the period. Poland, Estonia and Bulgaria on the other hand have

experienced increases in their energy taxation related revenues that well exceed their growth in GDP.

Decrease in real revenues	Increase, but falling behind GDP increase	Increase, relatively more than GDP increase	Increase, relatively more than twice of GDP increase
Romania (-79%) Italy (-23%) Hungary (-19%) Greece (-9%) France (-9%) Portugal (-5%) Slovenia (-4%)	Sweden (4%) Belgium (5%) Germany (7%) Spain (11%) United Kingdom (14%) Finland (18%) Luxembourg (41%) Ireland (63%) Slovakia (65%)	Denmark (24%) Austria (37%) Netherlands (57%) Poland (121%)	Czech Republic (98%) Latvia (164%) Malta (172%) Lithuania (318%) Bulgaria (319%) Estonia (400%) Cyprus (470%)

Table 1: Energy taxes: Trends in real revenues over 1996-2010 in EU Member States as indicated in brackets (Source: Eurostat).

Only a handful of Member States experienced an actual decrease in their energy tax revenues in constant prices; in addition to the three Mediterranean countries mentioned also France together with Slovenia, Hungary and Romania.

All the remaining Member States saw an absolute increase in their energy tax revenues, but in particular for the old EU15 Member States rarely sufficient to keep up with developments in GDP.

Luxembourg has benefited from a surge in fuel tank tourism after Germany's Ecological Tax Reform of 1998, helping to boost real revenues by about 40 per cent, yet its relative revenues as a share of GDP have declined. UK is the only Member State to tax diesel at the same level as petrol and UK's fuel tax rates have in fact increased from 1995 to 2010, yet the relative revenue decline in UK is close to the EU27 average. These two cases clearly illustrate how keeping revenues up with GDP increases can be quite a challenge even in Member States with increasing revenue flows.

Only three of the 'old' EU15 Member States managed to increase their energy tax revenues above the level of GDP-increase: Netherlands in particular but also Denmark and Austria. Here additional non motor fuel taxes that have been introduced would appear to explain the trend.

The remaining eight Member States with energy tax revenues increasing above the level of GDP belong to the group of new Member States. With the exception of Malta and Cyprus these are economies in transition which featured rather low fuel tax rates in 1995 in the same way as can be seen in the figures above for Estonia, Poland and Bulgaria. Slovakia and Ireland also experienced substantial increases, but nevertheless well below their GDP growth.

For Germany, Sweden and Finland their trend is surprising, considering that these countries have introduced environmental tax reforms during the period considered which implied fuel tax increases. Also Spain and Belgium show relatively stagnant energy tax revenues. In the case of Spain an explicit lowering of the diesel tax rate to the agreed EU minimum rate seems to play a role but for

the others a further and more subtle mechanism might be at play: the erosion of revenues due to the dieselisation of the vehicle fleet resulting from the tax advantages of diesel relative to petrol in most Member States, because of the lower tax rates on diesel, implying a loss of revenues over time.

Trends in vehicle fleets and implications of dieselisation for revenues

According to Ajanovic (2011) one of the most remarkable developments in passenger car transport in recent years has been the rapid gain of market shares of diesel vehicles in many European countries. Ajanovic emphasises the role of significantly lower fuel taxes for diesel in contributing to this trend. These lower tax rates are in part being justified by diesel vehicles being more energy efficient than petrol driven vehicles.

About 50% of cars sold in the European Union are diesel cars, with shares above 70% in Member States such as France and Spain (ICCT, 2011:39). Diesel cars have a better fuel economy, on average about 30% better than petrol cars, but this improved fuel economy is not only due to higher fuel efficiency but also due to the pronounced differences in the levels of taxation for diesel and petrol. Except for UK, all Member States tax diesel more leniently than gasoline with discounts ranging up to 25-35%.

Between 1995 and 2008 the number of diesel cars in the vehicle fleet is believed to have tripled from only 12% to well over 35%, judging from data available for 10 Member States (Ajanovic, 2011:3). In France, Italy and Austria the stock is close to 60%. Obviously this transformation has implications for the motor fuels sold and due to the differences in tax rates also for the revenue flows.

Ajanovic reports a 9% improvement in the energy efficiency of the vehicle fleet between 1980 and 2007 of which 1% can be attributed to the switch from petrol to diesel, when taking into account a rebound effect of the switch, such that the generally larger diesel cars are driving more kilometres. In contrast, and assuming only average European figures, one result of the tripled European diesel fleet appears to have been a reduction in fuel tax revenues of about 6-7%. A more careful assessment taking into account the specific fuel tax rates of Member States might lead to an improved understanding of the mechanisms in play in countries such as France which experienced a loss of energy tax revenues between 1995 and 2010.

Fuel tax rebates are overcompensating diesel cars, partly because diesel is also in demand from lorries that can fuel strategically where prices are most advantageous. For this reason numerous Member States hesitate to raise their diesel tax above the level of their neighbours, at the same time facing difficulties with countries such as Luxembourg and Slovenia that operate with low diesel taxes only to attract international lorry traffic for fuelling.

A modest diesel tax can however be complemented by a *surplus* annual circulation tax for diesel passenger vehicles to offset lost revenues (from the tax differential between petrol and diesel) as compared to petrol cars. This approach has been practised for many years in Denmark, but the offsetting revenue is then counted under transport- related taxes and does not show up in the category of energy taxes.

A more far reaching approach would be to tax lorry diesel use according to the road sections travelled rather than at the point of fuelling. This would allow for more comparable taxation of petrol and diesel in individual Member States.

Final observations

EU GDP grew by nearly 35 per cent over 1995-2008 and reduced by approximately 3.5 per cent over 2008-2010. This represents an average annual growth of 1.8% over the whole period. To maintain environmentally-related taxation at the same level in relation to GDP as in 1995 real tax revenues should have grown at the same rate, but they did not.

Patterns differ considerably across Europe. New Member States with economies in transition generally increased their tax take with environmentally-relevant tax bases. Their revenues increased by about 50 per cent in constant prices. Old Member States on the other hand largely failed to adjust motor fuel tax rates and in some cases even lowered them, notably during fuel tax protests in 2000. As a group the old Member States managed to keep their real revenues relatively constant with a small increase of 4-6%, ranging however from big reductions in Italy to large increases in the Netherlands, and falling well behind increases in GDP.

Presumably the Energy Taxation Directive of 2003 and the agreed minimum levels of taxation explain a great deal of the dynamics with regard to motor fuel tax rates. On one hand the new Member States needed to align their much lower historical tax rates to the level agreed in the EU. On the other hand some old Member States may have opted not to adjust their rates for inflation so as to fall back and over time approach more closely the minimum levels.

The consensus achieved in the Council of Ministers on the Energy Taxation Directive itself may in fact have been promoted by the fuel protests, as Member States in the years 2000-2002 found themselves in a “downwards spiral” of fuel tax adjustments, affecting France and even Germany.⁴ In view of the enlargement, the old Member States were facing the risk of having to harmonise motor fuel tax rates at a low level, unless a compromise on minimum tax rates could be agreed. Between the Copenhagen Enlargement Summit in December 2002 and the new Member States entering in 2004 the Energy Taxation Directive minimum rates were finally agreed.

These observations would seem to underline the key significance of the Energy Taxation Directive (ETD) for the overall revenue-flows from environmentally-related taxes in Europe. The presently stalled negotiations in the Council of Ministers are not likely to progress, unless some external pressures can reignite the interest of Member States in expanding their revenue base.

In the current process of fiscal consolidation in EU Member States with budgetary challenges, the European institutions have stressed the advantages of shifting the tax burden away from labour taxation and towards environmentally-related and other indirect taxes. These recommendations have so far not been linked directly with the principles laid out in the proposal for ETD amendments, which not only imply a more harmonised structure for energy taxation but also that diesel will be

⁴Germany in the end opted to raise a commuter tax allowance to ease fuel price protests (ENDS Daily 25.9.2000).

taxed in a way more consistent with petrol and also reflecting the fuels' energy contents and associated CO₂-emissions.

The recent protests from Spain against requirements to increase the diesel tax rate as part of its budget consolidation process highlights the unresolved dilemmas on the taxation of motor fuels. The analysis presented here further suggests the key role that diesel plays in the gradual erosion of environmentally-related tax revenues, both from the transformation in the vehicle fleets, and, more indirectly, as reflected in the propensity of certain Member States not to adjust their fuel tax rates according to inflationary developments.

The most recent survey on the attitudes of European citizens to the environment was published in 2012 and offered only a rather simplistic opinion poll. It would be refreshing with a new special Eurobarometer survey to check on attitudes of European citizens to environmentally-related taxes and some of the dilemmas associated with shifts in the tax burden.

References

Ajanovic, A, 2009, The effects of dieselization of the European passenger car fleet on energy consumption and CO₂ emissions, Vienna: Vienna Univ of Technology, mimeo.

European Commission, 1993, Whitepaper on growth, competitiveness and employment: The challenges and ways forward into the 21st century, COM(93)/700 parts A and B, Brussels.

European Commission, 1995, Europeans and the environment, survey conducted in the context of the Eurobarometer 43.1 bis, Brussels. European Commission, 2012, Taxation trends in the European Union, Brussels.

Eurostat, 2012, Environment and energy, Eurostat statistics in focus, no. 53.

ICCT (International Council on Clean Transportation), 2011, European vehicle market statistics, Washington DC.

IEA (International Energy Agency), Energy prices and taxes, Paris.

OECD & EEA, Database on economic instruments, Paris.

REC (The Regional Environmental Center for Central and Eastern Europe), 1999, Sourcebook on economic instruments for environmental policy, Budapest.

UNECE, 2001, Environmental performance reviews: Estonia second review, New York and Geneva.