Why Tax Commercial Motor Fuel in the EU Member State Where It's Bought? Why Not Where It's Consumed?

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The tax systems of EU Member States have many features that reflect the fact that, until recently, the Member States were independent nations. Corporate income taxes, which are based on distinct national definitions of taxable income, separate accounting and the arm's length standard, provide the most striking and best known example of "legacy" EU tax systems that are not appropriate for an economic union.[1] Less appreciated is the need to reform the taxation of commercial motor fuel – that used in trucks and buses – to make it consistent with economic union.

The perceived problem and the European Commission's flawed solution

In the EU commercial motor fuel is taxed where it is bought, instead of where it is consumed, just like fuel used in private automobiles. Unlike a destination-based system for taxing motor fuels, this purchase-based system has a number of undesirable economic and fiscal implications, unless tax rates are uniform.[2] There is an obvious incentive to purchase motor fuel where, all else equal, tax rates are lowest. This means that the location of fueling stations may not be optimal – that they are likely to be concentrated in low-tax jurisdictions, especially near borders with high-tax jurisdictions. Truckers with greatest access to low-taxed fuels may compete unfairly with others located in high-tax jurisdictions. The distribution of tax bases among Member States is likely to be tilted toward low-tax jurisdictions, rather than reflecting distance traveled in each Member State, as would be more appropriate under the benefit principle of taxation. There is thus an incentive for Member States to engage in destructive tax competition; they may set rates below the level they might otherwise prefer either to "poach" the tax base of other Member States or to protect against poaching. The European Commission (2002, 10-11) explains the problem as follows, as it relates to taxation of commercial motor fuel:

"The large range of trucks allows hauliers to purchase a significant part of their diesel fuel in Member States where excise duties are the lowest. Member States which set high rates lose a large proportion of their excise receipts to the profit of Member States applying lower taxation. This tax competition between Member States leads to an erosion of budgetary resources and prevent (sic) Member States wishing to implement an autonomous policy".

The European Commission perceives the root of the problems just described to be the diversity of tax rates applied to commercial motor fuel. This is seen clearly in the following assessment from a Commission staff working document issued in 2006:

"Objective and root problem to be addressed: the existing differences in excise taxes produce distortions in internal market competition within the road transport market as they introduce an important fiscal advantage or disadvantage within competition which is independent from the internal efficiency and costs of road transport firms; any excessive differences in tax levels, especially on fuel, would need to be narrowed, a convergence of taxation levels would be therefore advisable". [3]

In order to ameliorate these problems, the EU has long set minimum tax rates for commercial motor fuels (that used by trucks weighing more than 7.5 tons and buses). Most recently, in March 2007, the

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[1] McLure (2008c) and literature cited there discuss the need to replace the present corporate tax system with one based on a common tax base, consolidation and formula apportionment – and the prospects for doing so.
[2] See European Commission (2007a; 2007b).
[3] European Commission (2006).

Table 1

Taxation of commercial diesel fuel, January 2009 (euros per 1000 liters)

Member State	Tax rate	Member State	Tax rate	Member State	Tax rate
Austria	347[a)]	Germany	470[a)]	Netherlands	413[a)]
Belgium	318[a)]	Greece	302	Poland	339[a)]
Bulgaria	307	Hungary	368	Portugal	364
Cyprus	245	Ireland	368	Romania	284
Czech Republic	406	Italy	423	Slovenia	383[b)]
Denmark	382[b)]	Latvia	330	Slovakia	481
Estonia	330	Lithuania	330	Spain	302
Finland	364[b)]	Luxembourg	302	Sweden	446[b)]
France	428	Malta	352	United Kingdom	661

[a)] If several diesel fuels are on the market, the rate reported is for low sulphur fuel. – [b)] Includes CO_2 tax.

Source: European Commission, Directorate General Taxation and Customs Union Tax Policy, Excise Duty Tables: Part II – Energy Products and Electricity, January 2009, available at http://ec.europa.eu/taxation_customs/resources/documents/taxation/excise_duties/energy_products/rates/excise_duties-part_II_energy_products-en.pdf.

European Commission proposed that the minimum rates be raised in stages from the then-applicable 302 euros per 1,000 liters to 380 euros per 1,000 liters in 2014.[4] Although the Council has not yet adopted this proposal, Member States have begun to raise their tax rates, perhaps in anticipation of its adoption. Even so, there remain substantial differences in the tax rates prevailing in various Member States; see Table 1 for the rates at the beginning of January 2009.[5]

The real problem and the ideal solution

The first-best solution to the problems described above is not to be found in minimum rates, because diversity of rates is not the root of the problem.[6] The problem arises because motor fuel is taxed where it is purchased, rather than where it is consumed. Minimum tax rates reduce the distortions of economic decisions, including the incentives for destructive tax competition, but do not eliminate them.[7] As long as commercial motor fuel is taxed in the Member State where it is bought, these distortions will remain, unless rates are uniform. Of course, mandating minimum rates – and, *a fortiori*, mandating uniform rates – interferes with the fiscal sovereignty of Member States. Beyond that, uniform rates would not necessarily produce a rational division of revenues among Member States; there would probably be a tendency for tax revenues to be concentrated at the beginning and end of trips, rather than being divided among Member States in proportion to distance traveled in each.

The ideal solution is conceptually simple and has long been employed in the United States: rather than taxing commercial motor fuel where it is purchased, states tax fuel where it is consumed. This is achieved by apportioning consumption of commercial motor fuel among the states on the basis of the distance a vehicle travels in each. Unlike taxation based on where fuel is purchased, this apportionment-based system accords relatively well with the benefit principle of taxation and produces a rational distribution of revenues.[8] There are no incentives to buy fuel where it is cheapest, no unfair competition among carriers, and no tax competition among states, because any price difference is eliminated by apportionment.[9] Finally, this system respects the fiscal sovereignty of states; each state is free to apply the tax rate of its choice to its portion of the total fuel con-

[4] European Commission (2007a). The European Economic and Social Committee of the European Parliament (2007) expressed reservations regarding some aspects of the Commission's proposals, and the European Parliament (2008) amended the proposal to reflect these concerns and set a lower ultimate level of the minimum tax rate (359 euros), to be reached a year later. These amendments are not relevant for the present discussion.

[5] In mid-2006, because of derogations granted during a transition period, nine Member States had tax rates below the mandated minimum of 302 euros per 1.000 liters. By the beginning of 2009 the tax rates of only two, Cyprus and Romania, still fell below the minimum.

[6] The arguments presented here are laid out in somewhat greater detail in McLure (2009) and in much greater detail in McLure (2008a) and (2008b).

[7] Kanbur and Keen (1993) analyze tax competition and cross-border shopping, assuming that taxes ostensibly follow the destination principle but there are no border tax adjustments on purchases by non-residents, a description of the taxation of commercial (and other) motor fuels in the EU. Apportionment-based taxation of motor fuel is equivalent to taxation with border tax adjustments.

[8] McLure (2009) presents the case for destination-based taxation of commercial motor fuel, which is the outcome of apportionment-based taxation. Although origin-based taxation can be justified in some instances (for example, to compensate for external damage associated with the refining of motor fuels), it is difficult to think of a persuasive argument for purchase-based taxation. Contrary to the situation with cross-border purchases of alcoholic beverages, tobacco products, and motor fuel consumed in private automobiles, where it is difficult to devise means of implementing destination-based taxation that would not unduly hinder the internal market, apportionment offers the opportunity to achieve destination-based taxation for commercial motor fuel – see McLure (2008a).

[9] Also, there is no need to impose different rates of tax on commercial and non-commercial motor fuel at the pump and (if there are no such differences) no need to refund the difference in tax rates on the two types of fuel, an approach has been found to be complex and cumbersome.

sumed. The good sense of this system is seen in the fact that the Canadian provinces voluntarily participate in it.

The mechanics of apportionment

Table 2 illustrates the mechanics of apportionment. The first three columns set out the underlying assumptions. During the year a trucker purchases 10,000 gallons of fuel in Utah and 90,000 gallons in Nevada, for a total of 100,000 gallons, as shown in column (1), paying the rate of tax shown in column (2) at the time of purchase. The truck travels a total of 600,000 miles during a year, 120,000 in Utah and 480,000 in Nevada, as shown in column (3). Thus the average number of miles per gallon (MPG) is 6.0, shown in column (4). From this and the assumed number of miles traveled in each state, the number of gallons of fuel apportioned to each state can be calculated (20,000 in Utah and 80,000 in Nevada), as shown in column (5). Each state's "Net untaxed gallons," shown in column (5), is the difference between what it has taxed (column 1) and what it should tax (column 4). Thus, Utah is due tax on 10,000 more gallons of fuel than it has taxed at the pump and Nevada has collected tax on 10,000 gallons more than the amount apportioned to it. Multiplying these figures by the state tax rates in column (2) indicates that the trucker owes Utah 2,800 US dollars and should receive as a refund of 3,200 US dollars from Nevada, as shown in column (7).[10]

Implementing apportionment

The apportionment-based taxation of commercial fuels in the United States has historically been based on manual record-keeping of the distance traveled in each state. Whether it would be advisable for the EU to switch to apportionment-based taxation, if it could only rely on manual record keeping, which is inefficient and vulnerable to error and fraud, is not obvious; the compliance and administrative costs might outweigh the manifest benefits. It seems, however, that this would not be necessary – that there are, or soon will be – high-tech solutions to the problem of tracking distance traveled in each EU Member State. Indeed, solutions that rely on the Global Positioning System (GPS) are already being implemented in North America, and non-tax applications that require similar technology are being deployed or contemplated in the EU.

Several systems for recording distance and/or calculating tolls or road user fees are already in use in the EU, but none would be fully satisfactory for apportioning fuel use without modification.[11] On-board microwave transponders are used to communicate with roadside equipment and calculate tolls in several countries, including Austria and Italy. These systems suffer from the obvious drawback for present purposes that they only operate where there is roadside equipment to record distance on selected roadways. By comparison, apportionment-based taxation of motor fuel would require recording by jurisdiction, distance traveled on all roads and streets, including travel outside the EU.

Switzerland does record all commercial vehicle travel within its borders, but it does not rely primarily on a satellite-based system – an approach that it rejected after early consideration. Rather, it relies on on-board recorders, which are switched on and off by roadside equipment or manually by customs officials at border stations or by drivers in response to a GPS signal. GPS is used only to monitor odometer readings and as a backup to the primary system. A sophisticated system in which locations obtained from GPS are compared with maps that have been downloaded and stored on board to calculate charges for use of German toll roads. It appears that the German system could be adapted to implementation of apportionment-based taxation, but the fact that it is proprietary could pose a problem. The United Kingdom considered adopting a satellite-based sys-

Table 2

Two-state Example of the Mechanics of Apportionment

State	Tax-paid gallons (1)	Tax rate (cents/gal.) (2)	Total miles (3)	Miles per gallon (4)	Taxable gallons (5)	Net untaxed gallons (6)	Tax due (in USD) (7)
Utah	10,000	0.28	120,000	6.0	20,000	10,000	2,800
Nevada	90,000	0.32	480,000	6.0	80,000	(10,000)	(3,200)
Total	100,000	–	600,000	6.0	100,000	0	(400)

Source: Author's calculations.

[10] Stated differently, Utah is owed 5,600 US dollars, but has collected only 2,800 US dollars, and Nevada is owed 25,600 US dollars, but has collected 28,800 US dollars. McLure, Pitcher and Turner (2007) describe this system in greater detail. Allowance can, of course, be made for distance traveled in jurisdictions that do not participate in the apportionment system, e.g. in Mexico in the case of the US, and in Switzerland in the case of the EU.

[11] McLure (2008b) describes these systems in much greater detail.

tem to calculate charges for the use of all streets, roads and highways that would depend on the type of road and characteristics of the vehicle (weight, number of axles and emission class). Although withdrawn, this kind of system could also underpin apportionment-based taxation of commercial motor fuel.

The EU has adopted a policy of making the equipment used by microwave and satellite-based tollway systems of all Member States interoperable. But this is presumably only an interim measure; the European Commission stated in its 2006 Green Paper on Satellite Navigation Applications: satellite navigation is recommended for its flexibility and its best fit with European charging policy, being infrastructure-free and easily expandable by nature. It allows varying pricing schemes, interoperability and intelligent transport system services.

Rather than relying on the GPS system maintained by the United States, the EU will deploy GALILEO, a system of thirty satellites circling the earth in geosynchronous orbit. The website of the European Commission's Transportation and Energy Directorate states:

Galileo will offer new and more advanced methods of user-friendly road charging: charge for the use of particular roads at particular times with particular vehicles, or charge users travelling in a certain urban zone, according to the distance driven. *Although there are other techniques for road tolling, only satellite navigation leads to a reliable seamless service. The vehicle will use Galileo to determine its location and to store the distance driven on every type of road (charged or free)*. Then it reports the results to a monitoring centre for a central charging entity to invoice the user. This would work on both inter-urban and urban roads.[12]

Unless this assessment is wildly over-optimistic, it appears that the EU Member States should, in the not too distant future, be able to replace their anachronistic purchase-based system of taxing commercial motor fuels with a destination-based system, relying on satellite tracking, rather than manual recording, to determine distances traveled in each Member State.

[12] http://ec.europa.eu/transport/galileo/doc/galileo_application_road.pdf, visited 4 May 2009.

Legal issues

Before concluding, it will be useful to consider some legal issues that are grounded in the EC Treaty.[13] That treaty provides (in Article 5) for subsidiarity – the principle that EU legislative action should be undertaken only when the actions of individual Member States do not suffice to achieve EU objectives – and for proportionality – the principle that EU legislation should not go beyond what is required to achieve such objectives. If – but only if – purchase-based taxation of commercial motor fuel is taken to be immutable, minimum tax rates are consistent with subsidiarity; given the existence of that illogical system, minimum rates are required to ameliorate the problems identified earlier, which the actions of individual Member States create and aggravate. But a conceptually superior and arguably more proportionate response would be to abandon purchase-based taxation in favor of an apportionment-based system. That would eliminate the problems (not just alleviate them), while fully respecting the sovereignty of Member States to set their own tax rates.

It is notoriously difficult to enact EU tax legislation, since the unanimous approval of all Member States is required. It may be impossible to gain the agreement of Member States that benefit from the present purchase-based system to switch to an apportionment-based system. If so, resort could, in principle, be had to "enhanced cooperation," a legislative procedure under which as few as eight Member States can agree to "go faster" in area where unanimity cannot be achieved. The Member States with the highest tax rates on commercial motor fuel have the most to gain from using enhanced cooperation to initiate apportionment; they are the ones most under pressure to hold tax rates down and most vulnerable to poaching of their tax base if they do not. At the beginning of 2009 eight EU Member States had tax rates of at least 400 euros per liter and two more had rates of at least 380 euros – the European Commission's target minimum rate for 2014. It does not seem inconceivable that at least eight of these would opt for an apportionment-based system if they were convinced that there is a technological solution to the implementation problem.

The EC Treaty (Article 93) entrusts to the European Commission the responsibility to make proposals

[13] McLure (2008a) discusses these issues in greater detail.

"for the harmonization of legislation concerning ... indirect taxation ... necessary to ensure the establishment and the functioning of the internal market ..." Thus, if there is to be legislative action to replace the purchase-based system, be it by a unanimous vote or by enhanced cooperation, the European Commission must be convinced of the case for it.

It is interesting to speculate on why the European Commission has never proposed replacing the purchase-based system, favoring instead minimum or uniform rates.[14] Perhaps it is just inertia: purchase-based systems existed when the European Single Market was created, and no one thought of replacing it. Maybe an apportionment-based system was considered, but was found too cumbersome, because of the need for manual recording of distances. Or perhaps this is just another reflection of the European Commission's apparent penchant for uniformity, even where it may not be desirable.

Maybe the explanation can be attributed in part to the European Commission's mandate under the EC Treaty quoted above. This mandate does not mention respecting the fiscal sovereignty of Member States or producing a sensible distribution of the tax base among Member States. The former is, of course, the realm of subsidiarity, and the desirability of a sensible distribution of revenues may have seemed so obvious to those who drafted and ratified the Treaty that it did not seem necessary to include it in the European Commission's mandate.

In any event, it is anomalous that in 2007 the European Commission proposed raising the minimum tax rate on commercial motor fuel rather than abandoning the existing purchase-based system in favor of a satellite-based system for apportioning motor fuel among Member States. After all, in 2006, in the Green Paper mentioned above, it had aptly noted the possibility of using satellite-based systems for road user charging.[15]

Concluding remarks: why tax commercial motor fuel?

It seems clear that the present purchase-based system of taxing commercial motor fuels in the EU can and should be replaced by apportionment. But the same technology that is likely to make an apportionment-based system feasible would also make it possible to implement more sophisticated systems of charging for road use directly, arguably rendering the taxation of commercial motor fuel redundant and obsolete. Why, then, tax commercial motor fuel at all, aside from the apparently insatiable appetite of governments for revenue? As Newbery (2005, 29) has written, "Road fuel taxes can be justified to a considerable extent as road user charges, *pending the political and technical developments of more finely targeted road pricing*".

It seems almost certain that comprehensive systems of charging for road use will not be applied to private automobiles as soon as to commercial vehicles. Thus, fuel used in private automobiles is likely to continue to be taxed, at least for a while. If that is true, imposing no tax on commercial motor fuel, relying entirely on road user charges, would be an open invitation to massive fraud. Thus, an apportionment-based system should be considered, if only as an interim measure.

[14] In 2002 the European Commission proposed complete harmonization of rates on diesel fuel. That proposal encountered political opposition and was withdrawn.

[15] In its 2008 "Action Plan for the Deployment of Intelligent Transport Systems in Europe," the European Commission proposed maximal use of high-tech systems to improve the EU's transport systems. It noted its previous endorsement of satellite-based systems of charging for road use, without elaboration.

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