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Excessive Motoring Taxes

Fuel Duty and Vehicle Excise Duty effectively single out motorists for additional taxation, on top of the VAT normally charged on goods and services. There are legitimate reasons why motorists might be singled out, to pay for road building for example. But this research note shows that motorists are taxed excessively, beyond a reasonable application of that standard:

- In 2008-09 motorists paid £30.2 billion in motoring taxes.
- In that year,¹ the cost of road building was £9.1 billion and the social cost of greenhouse gas emissions from road transport was £3.2 billion.
- That implies motoring taxes were excessive by £17.9 billion.
- Even with cautious assumptions about the likely trajectory of road spending and emissions, by 2015-16 we can expect excessive taxation of motorists to reach £22.3 billion.

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¹ Emissions and social cost data are only available in calendar years, therefore 2008 data is substituted for 2008-09 and a similar substitution is made for other years.

Theory

Cars and motor fuel are subject to Value Added Tax (VAT). Fuel Duty and Vehicle Excise Duty therefore constitute a substantial premium on the rate of tax considered fair on other goods and services. That premium is justified on the basis that driving creates costs for wider society that are not reflected in the price paid by the motorist otherwise. For example, greenhouse gas emissions are produced by burning petrol and cause global warming. That creates a range of social harms – or negative externalities – that are not reflected in the market price of petrol. Taxes can therefore correct for otherwise ignored negative externalities associated with driving. Taxes that aim to correct for negative externalities are known as Pigovian taxes.

Whether it is right to use Pigovian taxes to correct for externalities is open to debate. Economist Ronald Coase, in the Nobel Prize winning study “The Problem of Social Cost”, described how Pigovian taxes would not be necessary to control externalities and produce the socially optimal result if the common assumption in economics of zero transaction costs and properly defined property rights held. State intervention would only improve the situation if it lowered transaction costs.

This implies that the proper comparison is not between some ideal government that compensates precisely for externalities and a market that ignores them but between the imperfect efforts of markets and governments to come to a socially optimal result. There are many good reasons to think that the problems of setting and implementing an efficient Pigovian tax are sufficient that a result closer to the social optimum will be obtained without them.

It is useful though, to set these concerns about Pigovian taxation to one side and assess policy on its own terms; to ask the question ‘if we accept that Pigovian taxes should be in place to correct for externalities associated with motoring, are they set at the right level?’

This report compares the social costs associated with road transport with the amount that is charged in green taxes. That test establishes whether British green tax policy fits with the Pigovian logic and corrects for externalities proportionately.

What social costs should motorists pay for?

The estimates of excessive motoring taxes presented in this note are based on the difference between the costs of building roads and greenhouse gas emissions and the amounts charged in motoring taxes. A similar analysis of the externalities associated with road transport has been used when forming policy:

"I firmly believe that motorists should bear the full costs of driving - not only wear and tear and congestion on the roads, but also the wider environmental costs. Even those of us who frequently have to drive can take steps to cut fuel consumption and we all ought to consider carefully the use of our cars." – Ken Clarke, Budget Speech, 1996

It has been suggested in earlier studies that Fuel Duty is not set arbitrarily high as it corrects for a number of other externalities, including noise and air pollution, road injuries and fatalities, and – most importantly – congestion. This table shows one account of the externalities associated with driving:

Table 1: Estimated marginal external road costs (pence/vehicle km), 1998²

Externality	Low estimate	High estimate
Operating costs	0.42	0.54
Accidents	0.82	1.40
Air pollution	0.34	1.70
Noise	0.02	0.05
Climate change	0.15	0.62
Congestion	9.71	11.16

That ignores the range of existing regulations designed to control these externalities:

- Noise and air pollution are created by a vast spectrum of industrial activity. They are controlled by regulation which limits acceptable levels of noise and particle emissions in different geographical areas. New roads are subject to stringent planning controls based on the amount of traffic they are likely to carry. Equally, regulatory standards and the requirement to fit catalytic converters control particle emissions.
- There is extensive regulation designed to control road traffic accidents: driving tests, speed limits, speed cameras and installations such as speed bumps. Many of these impose substantial costs on drivers and others are paid for as part of the process of building and maintaining roads.
- The costs of congestion, except for the costs of building and maintaining roads, are internalised within the body of road users and create an incentive to use other methods

² Leicester, A. *The UK Tax System and the Environment*, Institute for Fiscal Studies, November 2006. <http://www.ifs.org.uk/comms/r68.pdf>, p. 25

of travel or travel less. Fuel Duty is also probably not the best measure to correct for the externality of congestion. Evidence to the Institute for Fiscal Studies' Mirrlees review described it as a "very blunt instrument" for addressing the problem of congestion.³

Pigovian taxes and regulation are substitutes as different methods of achieving the common objective of controlling externalities. Putting regulations and taxes in place to correct for the same externality is clearly disproportionate.

Studies that aim to comprehensively assess the external costs of driving too often focus purely on the negative externalities and ignore the positive externalities that are also associated with driving. Those positive externalities include the following:

- Most people do not live close enough to their place of work, or all the services they need to access, to be able to walk or cycle. That means that if they did not drive they would need to use public transport. Many rail and bus services are already struggling to cope with demand, despite the fact that trains only account for 7 per cent of passenger travel and buses and coaches 6 per cent, against 85 per cent who travel by car and van.⁴ By relieving congestion on public transport networks motorists do a significant public good.
- Motorists also encourage the development of greater road transport infrastructure. Just as motorists may be inconvenienced by other drivers who create congestion on the roads, those other drivers also support a network of services that make all motorists' lives easier. If there were fewer motorists the broad network of service stations, roads, mechanics, driving instructors and other services that support driving would be less comprehensive. This kind of social benefit is known as a network effect in the economic literature.
- By driving people enable economic activity to be more geographically dispersed. That eases pressure on public services such as water and sewerage.

The net social cost of driving is likely to be significantly lower than that estimated by studies focussing purely on the negative externalities. Driving necessitates public spending to build additional roads, in order to alleviate congestion, and repair wear and tear. That spending is an externality that motorists can reasonably expect to pay for. At the same time, charging motorists for the social cost of road transport greenhouse gas emissions, which aren't covered by the EU Emissions Trading Scheme for practical reasons, could reasonably be described as a Pigovian "green tax".

³ Institute for Fiscal Studies *Don't expect much extra revenue from green taxes, says study prepared for the Mirrlees Review*, July 2008

⁴ Department for Transport *Transport Statistics Great Britain: 2007 Edition*, Table 1.1, 2007



For that reason, the externalities this note will account for are spending on roads and greenhouse gas emissions.

Method

The method used in this study has been used in a number of TaxPayers' Alliance reports. It has also been used by researchers for the Department for Transport looking at aviation emissions and taxes.⁵ They summarised it as follows:

"The steps involved are:

- *take the most recent available Greenhouse Gas Inventory estimates of UK carbon dioxide emissions from all domestic flights and departing international flights;*
- *indicatively account for the non-CO2 climate change effects of air travel, applying a multiplier value of 1.91. To reflect the degree of uncertainty around this value, a sensitivity range of 1 to 4 will also be presented; then*
- *multiply this by the appropriate monetary value based on the Government's Shadow Price of Carbon, again using a sensitivity range to reflect the uncertainty; and*
- *compare this range of values with the air passenger duty/aviation duty and aviation gasoline duty receipts for the year concerned."*

As road transport emissions are at ground level, and the data available from the Department of Energy and Climate Change includes all emissions and not just CO₂, there is no need to apply a multiplier. As such, excessive taxes on motorists can be calculated as total revenue from Fuel Duty and Vehicle Excise duty minus total spending on roads and road transport emissions multiplied by the Shadow Price of Carbon.

The Shadow Price of Carbon is set out in a report by the Department for the Environment, Food and Rural Affairs and adjusted from 2007 prices using Treasury GDP deflators; road transport emissions are available from the Department of Energy and Climate Change inventories; estimates of revenue from green taxes are available in the June 2010 Budget and road spending from the Treasury Public Expenditure Statistical Analyses.

That gives the following results in 2008-09.

Table 2: Social cost of road transport emissions, 2008

Item	Amount
Shadow price of carbon	£26.77
Road transport emissions, Mt CO ₂ e	118.4
Road transport social cost of carbon	£3.2 billion

⁵ Department for Transport *Aviation emissions cost assessment 2008*, 18 July 2008

Table 3: Excessive motoring taxes, 2008-09

Item	Amount, £ billion
Road transport social cost of carbon, 2008	3.2
National and local road transport spending, 2008-09	9.1
Total social cost	12.3
Fuel Duty	24.6
Vehicle Excise Duty	5.6
Total motoring taxes	30.2
Total excessive motoring taxes	17.9

To project that result forward beyond 2008, the most recent year that emissions data is available for, it is necessary to make some assumption about the likely trajectory for emissions and road spending. It is assumed that road spending rises at 7 per cent after 2009-10, just above the average from 2003-04 to 2009-10 and emissions remain constant after 2008. Those are cautious assumptions as road transport spending is likely to fall with a planned cut in transport spending and major rail projects and road transport emissions have fallen significantly since 2002. If they do increase marginally in future years, that is unlikely to make a significant difference to the overall results.



Table 4: Excessive motoring taxes, projection to 2015-16

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Fuel Duty	£24.6 billion	£26.2 billion	£27.3 billion	£28.9 billion	£30.3 billion	£31.8 billion	£33.4 billion	£34.7 billion
Vehicle Excise Duty	£5.6 billion	£5.6 billion	£5.9 billion	£6.0 billion	£6.1 billion	£6.2 billion	£6.3 billion	£6.4 billion
Road spending	£9.1 billion	£9.6 billion	£10.3 billion	£11.0 billion	£11.8 billion	£12.6 billion	£13.5 billion	£14.5 billion
Social cost of carbon	£26.77	£27.68	£29.11	£30.53	£31.73	£33.25	£34.74	£36.42
Emissions	118 Mt CO ₂ e	118 Mt CO ₂ e	118 Mt CO ₂ e	118 Mt CO ₂ e	118 Mt CO ₂ e	118 Mt CO ₂ e	118 Mt CO ₂ e	118 Mt CO ₂ e
Social cost of road emissions	£3.2 billion	£3.3 billion	£3.4 billion	£3.6 billion	£3.8 billion	£3.9 billion	£4.1 billion	£4.3 billion
Excess road taxes	£17.9 billion	£18.9 billion	£19.4 billion	£20.2 billion	£20.8 billion	£21.4 billion	£22.1 billion	£22.3 billion