Transport Policy 53 (2017) 120–134

Contents lists available at ScienceDirect

Transport Policy

journal homepage: www.elsevier.com/locate/tranpol

Road fuel taxes in Europe: Do they internalize road transport externalities?

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ARTICLE INFO

Keywords:
Tax policy
Fuel taxes
Fuel duties
Transport externalities
External costs
Climate change
Global warming
Congestion costs
Air pollution costs
Accident costs
Noise costs
Corrective taxes

ABSTRACT

All countries in Europe have road fuel taxes and these account for roughly half of the net fuel price. We compare current road fuel taxes and corrective taxes, estimated on the basis of negative externalities from road transport for 22 European countries, taking into account the effect of fuel taxation on fuel efficiency. We focus on cars running on diesel or petrol and commercial vehicles running on diesel. If fuel taxes were intended to internalize all road transport externalities, then a number of countries could be considered to be on the right path already in what respects petrol taxation. Diesel, on the other hand, seems to be under-taxed in all 22 countries. Petrol tax increases would be in order in some countries and diesel tax increases would be in order in all 22 countries, at least as a bridge until fine-tuned policies, such as widespread peak congestion pricing or pay-as-you-drive insurance can be put in place.

1. Introduction

Road transport generates negative externalities. These include air pollution, congestion, accidents, noise and climate change, linked to Greenhouse Gas (GHG) emissions (Newbery, 1990; Parry et al., 2007; Small and Verhoef, 2007; Becker et al., 2012).[1] To correct externalities in road transport policy-makers tend to rely either on a command-and-control approach (CAC), or on taxes, or a combination of both.[2] A standard result is that taxes are more efficient than CAC from an economic theory point of view. However, CAC mechanisms are often preferred by policy-makers and consumers because they do not entail visible or direct financial costs and have a lower political cost. An example of this are the Corporate Average Fuel Economy (CAFE) standards used in the US.

Although fuel price elasticities are low,[3] there is some evidence that consumers respond more strongly to fuel tax changes than to changes in tax-inclusive prices (Li et al., 2014). In addition to this, fuel taxes are more efficient than fuel economy taxes and subsidies on vehicles (Sallee, 2010), and fuel economy standards (Li et al., 2014). Also, fuel taxes are already in place in many countries[4] and, being paid at the point of fuel purchase, they are easy, quick and inexpensive to collect. In Europe, fuel taxes represent on average roughly half of the net fuel price, as shown in Figs. 1–3. The graphs show 2008 values at 2010 prices, for consistency throughout the paper. Most parameters, estimates and traffic data correspond to the year 2008 or latest possible before 2008.

Fuel taxes are an attractive economic instrument to internalize transport negative externalities (Newbery, 2001; Small, 2010). Having said that, fuel taxes are very blunt instruments for externalities that vary with time and location of the trip and/or with vehicle type and characteristics (Newbery, 2001, p. 6) and this is a widely recognized fact. Parry and Small (2005, p. 1276), for example, state that 'except for carbon dioxide, it would be better that a tax be placed on something other than fuel: local emissions, peak-period congestion, or miles driven, preferably with a rate that varies across people with different risks of causing accidents. Nonetheless, ideal externality taxes have not been widely implemented: they raise objections on equity grounds, they require administrative sophistication, and there is often stiff political opposition to introducing new taxes. The fuel tax, by contrast, is administratively simple and well established in principle, even at very

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[1] Santos et al. (2010) provide a thorough review of road transport externalities and economic instruments to internalize them.

[2] Another option, at least in theory, would be the implementation of cap-and-trade systems. Although aviation was included in the European Union Emissions Trading Scheme (EU ETS) in January 2012, no cap-and-trade system has ever been implemented in road transport. However, over the last few years the academic literature has been actively assessing the idea of tradable permits to regulate road transport externalities (Verhoef et al., 1997), including air pollution (Raux, 2004) and CO_2 emissions (Albrecht, 2001; Raux and Marlot, 2005; Watters et al., 2006; Wadud et al., 2008; Abrell, 2010). Tradable permits in road transport are, for the time being, a theoretical idea, and fall outside the scope of this study.

[3] Both short- and long-run fuel price elasticities are under 1. For reviews see for example Graham and Glaister (2002) or Goodwin et al. (2004).

[4] Middle East and North African countries do not tax, but instead subsidize fossil fuels (Parry et al., 2014, pp. 26–27).

http://dx.doi.org/10.1016/j.tranpol.2016.09.009
Received 24 June 2015; Received in revised form 2 July 2016; Accepted 28 September 2016
Available online 29 November 2016

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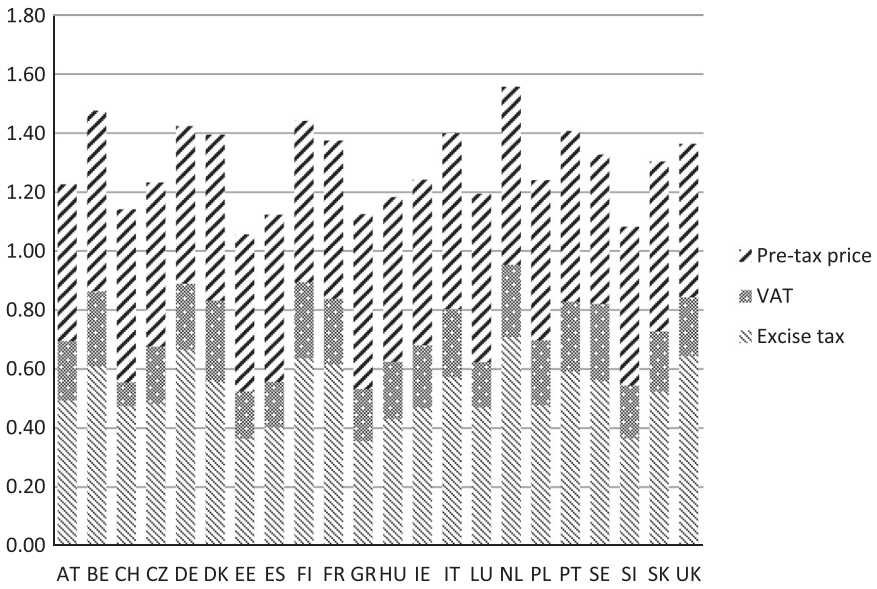

Fig. 1. Petrol prices in Europe, in €/L (2008 values and 2010 prices).
Source: International Energy Agency (2013)

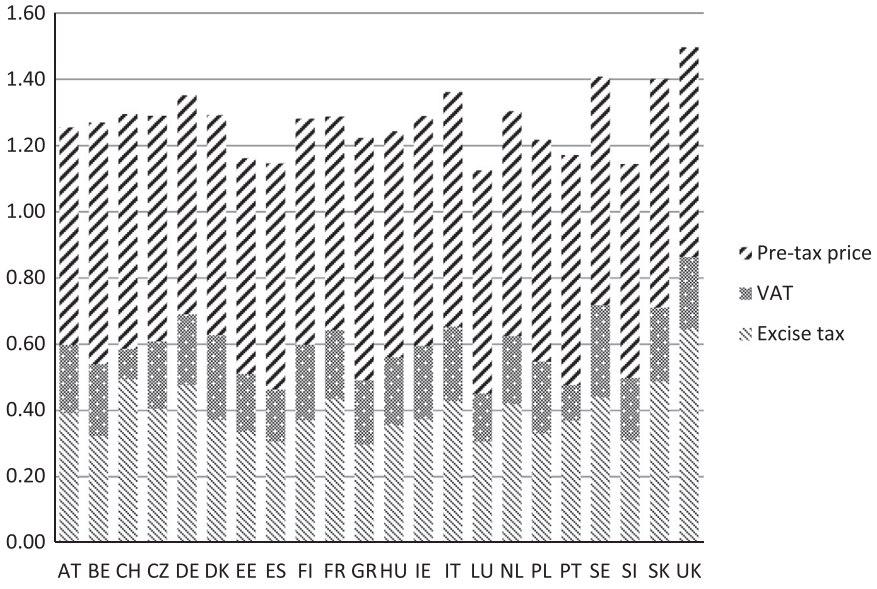

Fig. 2. Diesel prices in Europe, for cars, in €/L (2008 values and 2010 prices).
Source: International Energy Agency (2013)