

ENERGY AND CO₂ TAXATION IN EU MEMBER STATES: AN EMPIRICAL ASSESSMENT

Claudia Kettner, Austrian Institute of Economic Research (WIFO), Tel. +43 1 7982601 - 406, claudia.kettner@wifo.at
Daniela Kletzan-Slamanić, Austrian Institute of Economic Research (WIFO), Tel. +43 1 7982601 - 258, daniela.kletzan@wifo.at

Overview

The EU has adopted ambitious climate policy targets: Greenhouse gas emissions are to be reduced by 20% by 2020 compared to 1990 and by even 40% by 2030. Since 2005, greenhouse gases from industry and energy are regulated under the European Emissions Trading Scheme (EU ETS), which covers approximately 45% of the EU's total greenhouse gas emissions. Due to the associated transaction and monitoring costs, only large emitters are covered by the EU ETS. Emissions from transport, households and small businesses, in contrast, are subject to national energy and CO₂ taxation, which varies strongly between EU Member States. In this paper an empirical analysis of the energy / CO₂ taxation in the Member States is performed and best practice examples in the EU are identified.

Methods

The paper provides a cross-country comparison of energy and CO₂ taxes in the EU Member States. Based on the excise duty tables of the European Commission [1], for the most important energy carriers and end-user categories the countries with the most ambitious tax rates are identified. For countries in which (significant) CO₂ taxes have already been introduced, a systematic assessment of the carbon taxes is carried out, i.e. the development of energy and CO₂ taxes is analysed inter alia with respect to the tax rates applied (and their development over time), possible tax benefits and exemptions as well as the development of tax revenues and their use.

In addition, the effects of the introduction of carbon taxes are analysed in a meta-analysis of studies for the selected "pioneer" countries. The effectiveness of taxes in curbing emissions and energy consumption is analysed on the basis of existing evaluations as well as the observed effects on economic growth and employment, and innovation and distribution effects.

Results

In 2011, the European Commission published a proposal for a new Energy Taxation Directive [2] focussing more strongly on the carbon content of energy sources. However, this proposal has not been adopted due to the resistance of some Member States - and the requirement of unanimity in EU tax law. Energy tax rates continue to differ strongly between Member States, use category (i.e. commercial /non-commercial, transport/heating/other) and energy sources, as shown in Figure 1 for the transport sector.

As of January 2016, petrol tax rates range from EUR 11.1 per GJ in Bulgaria to EUR 23.4 per GJ in the Netherlands, diesel tax rates are at the level of the minimum excise duty of EUR 9.2 per GJ in Greece and Bulgaria and range to EUR 18.8 per GJ in the United Kingdom. In 27 MS petrol tax rates exceed diesel rates by up to 100% (Greece), only in the UK the tax rate per litre is identical for petrol and diesel (ultimately implying again a higher petrol tax rate per unit of energy due to the lower energy content compared to diesel). In the majority of MS, excise duties on diesel have, however, increased more strongly than those on petrol over the past 10 years.

In relation to the CO₂ content, energy tax rates translate into an implicit CO₂ tax rate of EUR 142 to 264 per tonne in the case of petrol and EUR 118 to 240 per tonne for diesel in the EU MS in 2016. An explicit carbon tax in order to tackle emissions from the transport sector or other Non-ETS sectors, so far has only been introduced by ten MS (Denmark, Estonia, Finland, France, Ireland, Latvia, Portugal, Slovenia, Sweden and Poland). In most cases this CO₂ tax constitutes only a small part of the overall tax rate on energy and is well below EUR 10 per tonne. Notable exceptions in this regard are Sweden where the carbon component has increased to EUR 118 per tonne CO₂ and Finland with a CO₂ component of EUR 60 per tonne in 2016.

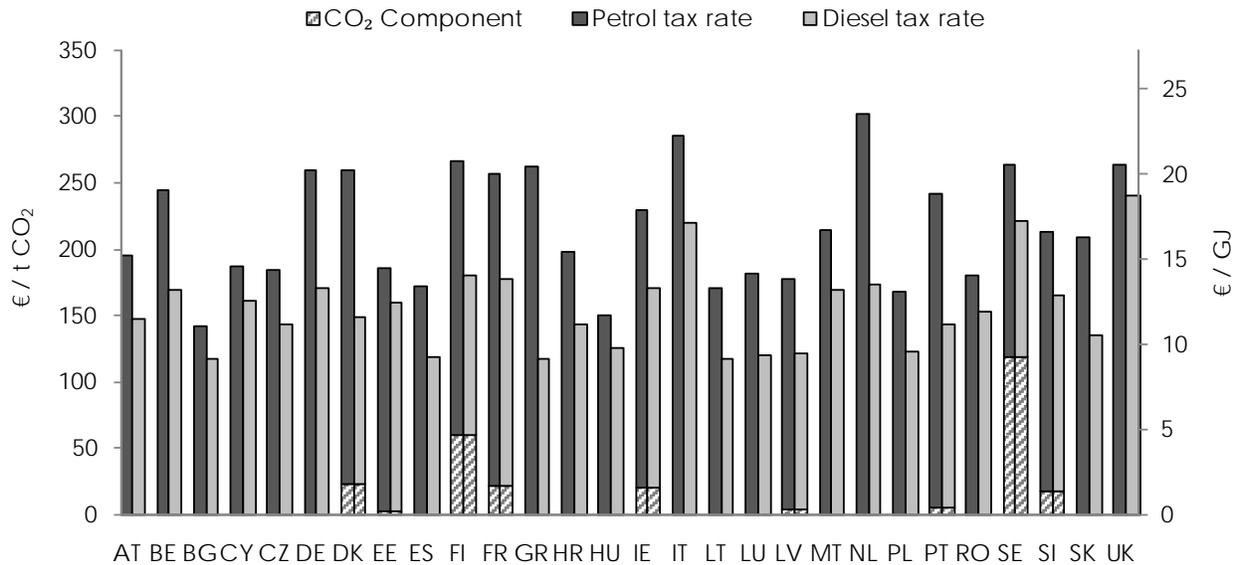


Figure 1. Petrol and diesel tax rates in the EU-28 in 2016.

The meta-analysis of the effects of energy and carbon taxes shows i.a. that these taxes tend to be mildly regressive¹ and confirms that carbon taxes tend to have a dampening effect on emissions (see e.g. [3] – [6]).

Conclusions

Energy taxes have already been implemented in the EU Member States prior to the introduction of the EU ETS. The primary objective of these taxes, however, was to generate tax revenues and not to pursue environmental objectives such as a reduction in energy consumption or greenhouse gas emissions. Although some climate change aspects have been included in Member States' energy taxation as a result of the EU Energy Taxation Directive of 2003 [7], national energy taxation still predominantly serves to generate tax revenues and only in a few cases explicitly to reduce energy consumption and greenhouse gas emissions. Even in cases where an environmental tax reform was implemented, the tax rates were determined according to the political feasibility and not according to the carbon content of the different energy sources (see e.g. [8]). Thus, in most cases taxation does not correspond to the theoretical concept of optimal (uniform) energy or CO₂ taxes.

References

- [1] European Commission (2016), Excise Duty Tables - Part II – Energy Products and Electricity, January 2016, Brussels.
- [2] European Commission (2011), Proposal for a Council Directive amending Directive 2003/96/EC restructuring the Community framework for the taxation of energy products and electricity, COM (2011) 169 final.
- [3] Wang, Q., K. Hubacek, K. Feng, Y.-M. Wei and Q.-M. Liang (2016), 'Distributional effects of carbon taxation', *Applied Energy*, 184, 1123–1131.
- [4] Withana, S., P. ten Brink, B. Kretschmer, L. Mazza, P. Hjerp and R. Sauter (2013a), Evaluation of environmental tax reforms: International experiences, A report by the Institute for European Environmental Policy (IEEP) for the State Secretariat for Economic Affairs (SECO) and the Federal Finance Administration (FFA) of Switzerland, Final Report, Brussels.
- [5] Speck, S. (2013), 'Carbon taxation: two decades of experience and future prospects', *Carbon Management*, 4 (2), 171–183.
- [6] Kosonen, K. (2013), Regressivity of environmental taxation: myth or reality?, in Milne, J.E. and M.S. Andersen (2013), *Handbook of Research on Environmental Taxation*, Edward Elgar, 161–174.
- [7] Council Directive 2003/96/EC of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity.
- [8] Böhringer, C. and R. Schwager (2002), Die ökologische Steuerreform in Deutschland – ein umweltpolitisches Feigenblatt, (ZEW) Discussion Paper No. 02-14.

¹ This conclusion is, however, to be qualified in a number of ways (see e.g. [6]).