



ENERGY AND CARBON TAXES: EMPIRICAL EVIDENCE FROM EU MS

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WIFO 



- EU has committed itself to ambitious climate targets
- EU CO₂ emissions from industry and energy supply are regulated under the EU ETS
- GHG emissions from private households, transport and other small sources are regulated on MS level
- Minimum energy tax rates for the MS are defined in the 2003 energy taxation directive
- EC proposal for a new energy taxation directive with more emphasis on carbon content of fuels not adopted in 2011
- Existing energy taxes serve mainly revenue raising, only in some cases an explicit reduction of emissions is intended

- Cross-country comparison of energy taxation in EU MS
 - Review of energy tax rates by energy source and use category based on the EU's taxation reports
 - Focus on fuels in the transport sector
 - Assessment of the CO₂ component included in the taxes
 - Energy tax revenues
- Complimentary evidence on vehicle taxation



Energy Tax Rates in EU MS in € / GJ 2016

	Coal - Heating business	Coal - Heating other	Petrol	Gasoil - Propellant	Gasoil - Industrial comm.	Gasoil - Heating business	Gasoil - Heating other	Gas - Propellant	Gas - Industrial comm.	Gas - Heating business	Gas - Heating other	Electricity - business	Electricity - other
AT	1.70	1.70	15.20	11.43	11.43	3.14	3.14	1.66	1.66	1.66	1.66	4.17	4.17
BE	0.40	0.40	19.03	13.14	0.64	0.50	0.50	0.18	0.00	0.28	0.28	0.83	0.54
BG	0.31	0.31	11.07	9.19	9.19	9.19	9.19			0.31	0.00	0.28	0.28
CY	0.31	0.31	14.60	12.52	12.52	3.47					2.60	0.00	0.00
CZ	0.31	0.31	14.41	11.21	11.21	11.21					0.31	0.29	0.29
DE	0.30	0.30	20.19	13.30	1.49	1.49					1.53	4.27	5.70
DK	9.53	9.53	20.19	11.57	9.04	9.04					8.67	0.15	32.98
EE	0.93	0.93	14.18	12.46	12.46	12.46					1.01	1.24	1.24
ES	0.65	0.65	13.42	9.21	2.36	2.36					0.65	0.14	0.28
FI	7.00	7.00	20.77	14.08	5.95	5.95					4.84	1.95	6.26
FR	2.00	2.00	20.05	13.85	3.57	2.68				1.17	1.17	6.26	6.26
GR	0.30	0.30	20.43	9.18	9.18	9.18	1.18	0.00	1.50	1.50	1.50	1.04	0.61
HR	0.30	0.30	15.40	11.14	11.14	1.14	1.54	0.00	0.00	0.15	0.29	0.14	0.27
HU	0.30	0.30	11.70	9.81	9.81	9.81	9.81	2.63	0.30	0.30	0.30	0.28	0.28
IE	1.89	1.89	17.92	13.32	2.84	2.84	2.84	2.60	1.03	1.03	1.03	0.14	0.28
IT	0.16	0.32	22.21	17.17	5.15	11.22	11.22	0.09	0.32	0.34	3.89	2.30	6.31
LT	0.15	0.30	13.24	9.18	9.18	0.59	0.59	6.56	6.56	0.15	0.30	0.14	0.28
LU	0.15	0.00	14.13	9.36	0.58	0.28	0.28	0.00	0.00	0.15	0.30	0.14	0.28
LV	0.30	0.30	13.29	9.48	1.09	1.09	1.09	2.67	0.46	0.46	0.46	0.28	0.28
MT	0.30	0.30	16.75	13.14	13.14	6.46	6.46	0.00	2.60	0.84	0.00	0.42	0.42
NL	0.54	0.54	23.47	13.48	13.48	13.48	13.48	2.55	2.55	2.55	7.16	11.43	27.99
PL	0.30	0.30	13.11	9.56	9.56	1.52	1.52	2.48	2.48	0.30	0.30	1.31	1.31
PT	0.59	0.59	18.83	11.18	2.51	9.53	9.53	3.13	0.59	0.59	0.59	0.28	0.28
RO	0.16	0.32	14.08	11.95	11.97	11.95	11.95	2.79	2.79	0.18	0.34	0.15	0.30
SE	12.89	12.89	20.57	17.19	8.36	8.36	12.02	6.40	5.87	5.87	8.89	0.15	8.66
SI	1.90	1.90	16.62	12.86	7.06	5.63	5.63	3.45	3.45	1.42	1.42	0.85	0.85
SK	0.31	0.00	16.24	10.49	10.49	10.49	10.49	2.60	2.60	0.37	0.37	0.37	0.00
UK	0.00	0.00	20.55	18.75	3.60	3.60	3.60	6.59	0.00	0.00	0.00	0.00	0.00
EU MED*	0.15	0.30	10.95	9.18	0.58	0.58	0.58	2.60	0.30	0.15	0.30	0.14	0.28

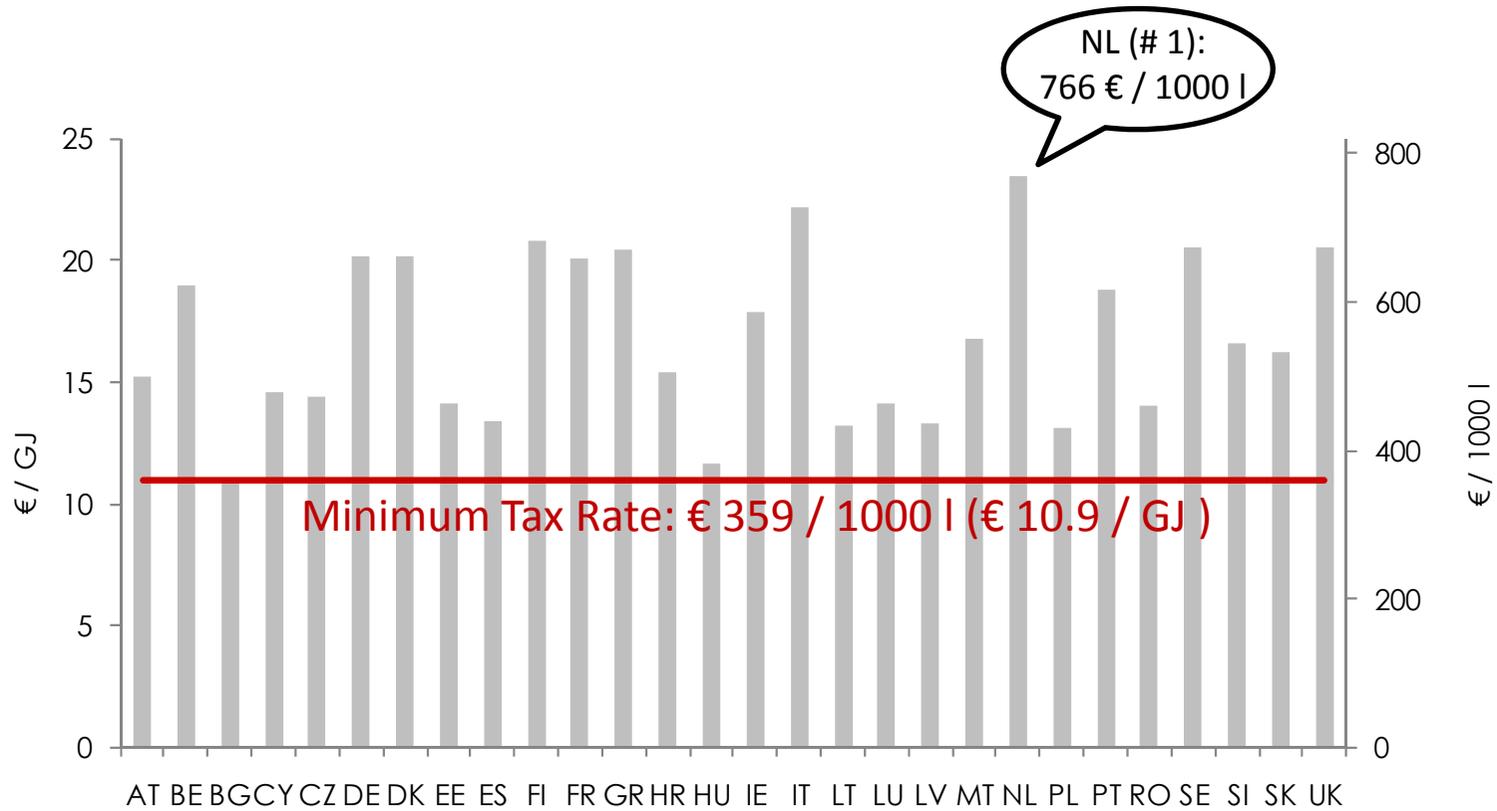
Highest tax rates for petrol and gasoil

* Minimum Excise Duty

Source: EC Excise Duty Tables January 2016

Petrol Tax Rates in EU MS

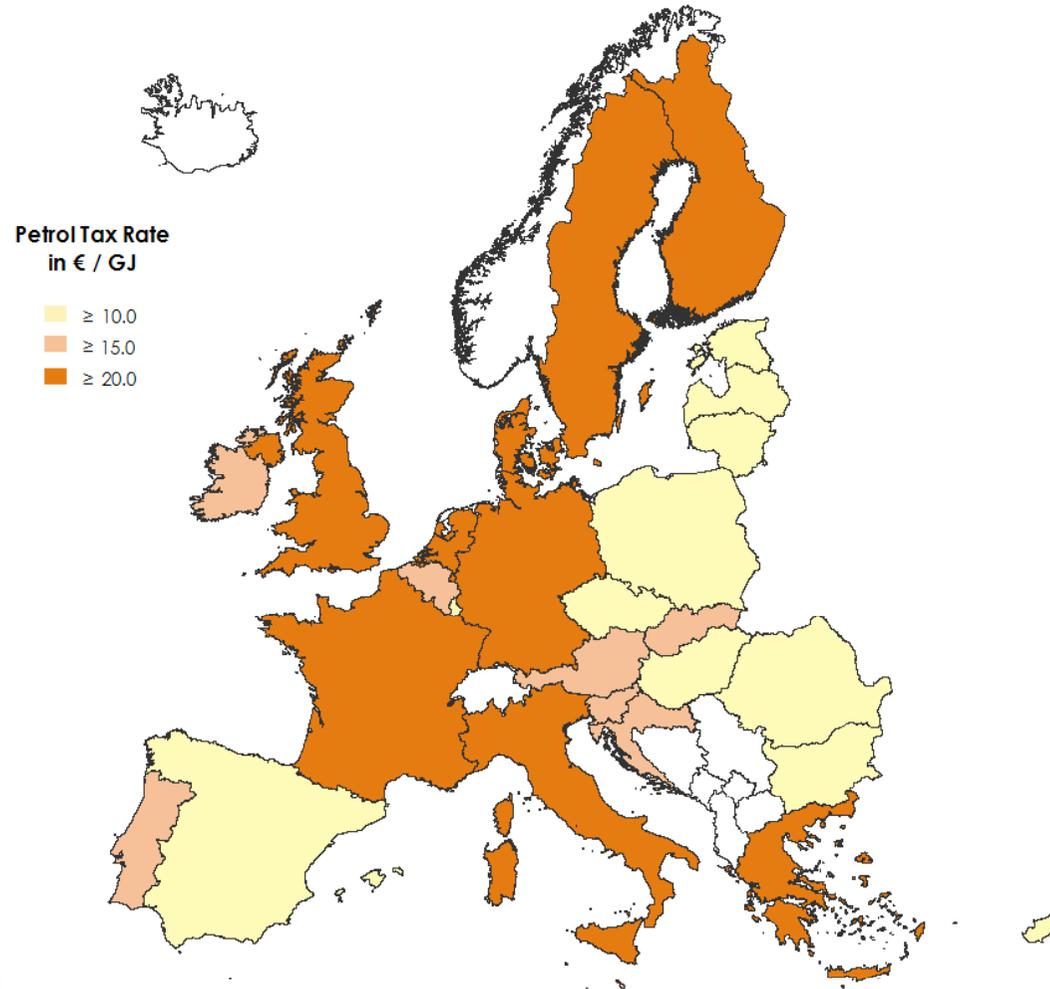
2016 (I)



Source: EC Excise Duty Tables January 2016

Petrol Tax Rates in EU MS

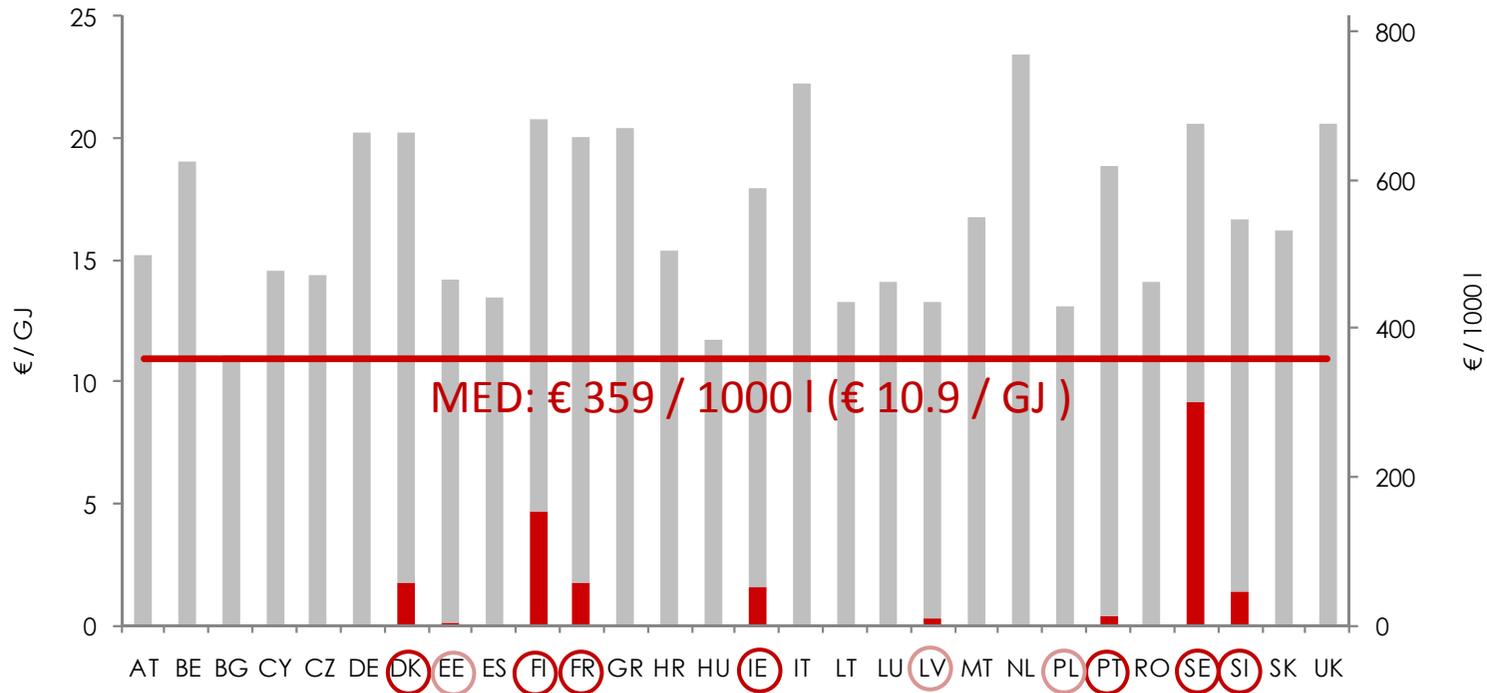
2016 (II)



Source: EC Excise Duty Tables January 2016

Petrol Tax Rates in EU MS

2016 (III)

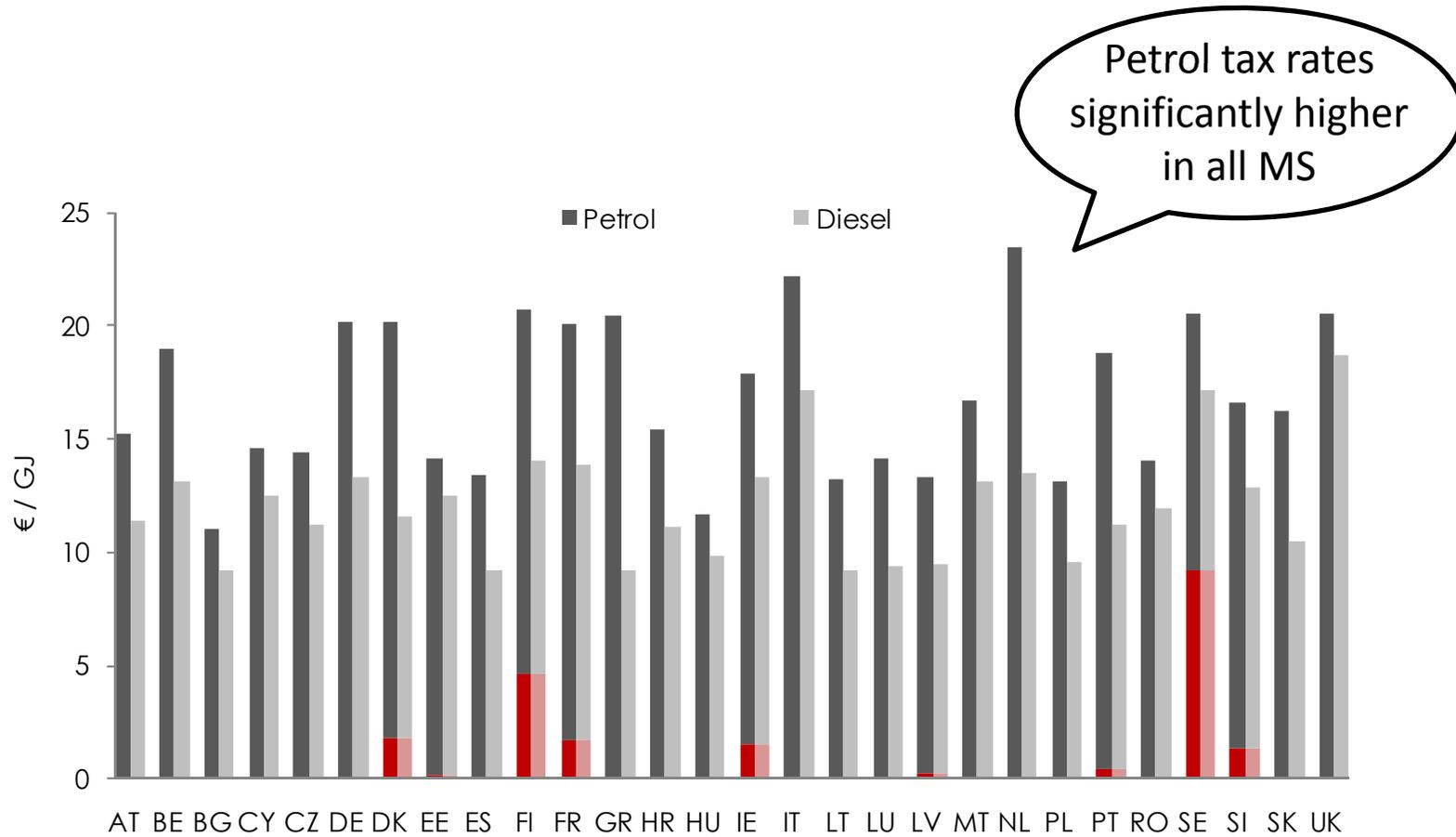


Source: EC Excise Duty Tables January 2016

Taxes in 10 countries have an explicit carbon component

Petrol vs. Diesel Taxes in EU MS

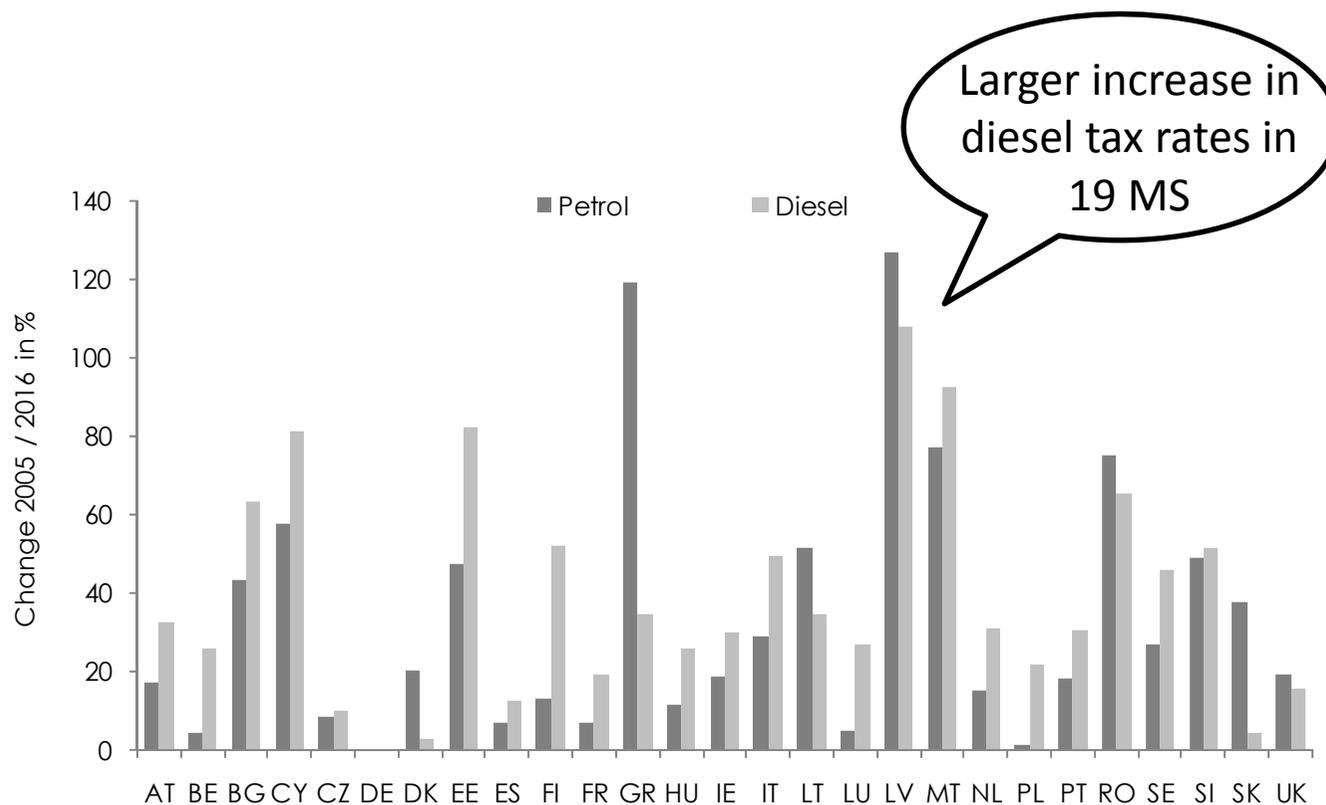
2016



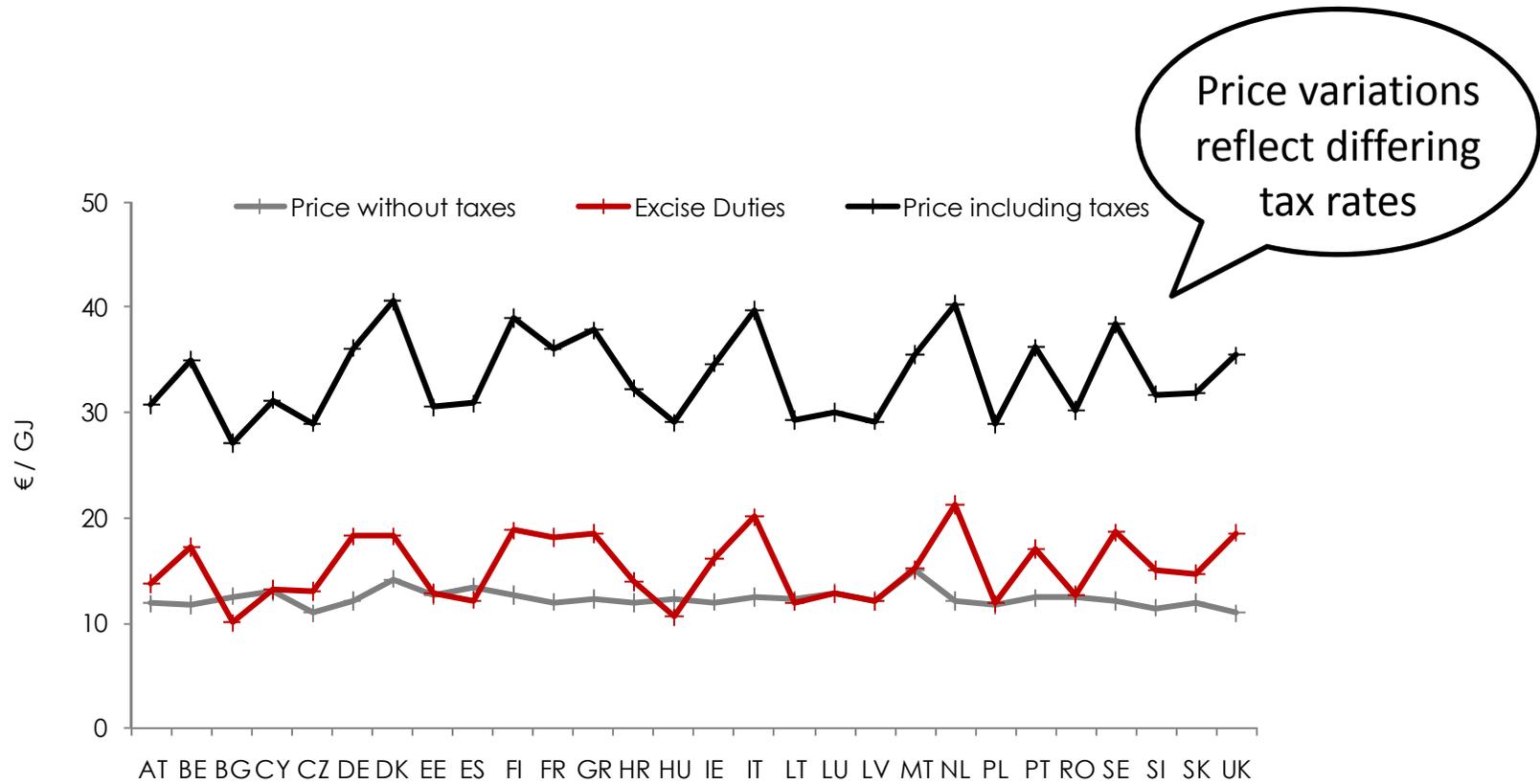
Source: EC Excise Duty Tables January 2016

Petrol vs. Diesel Taxes

Development 2005/2016

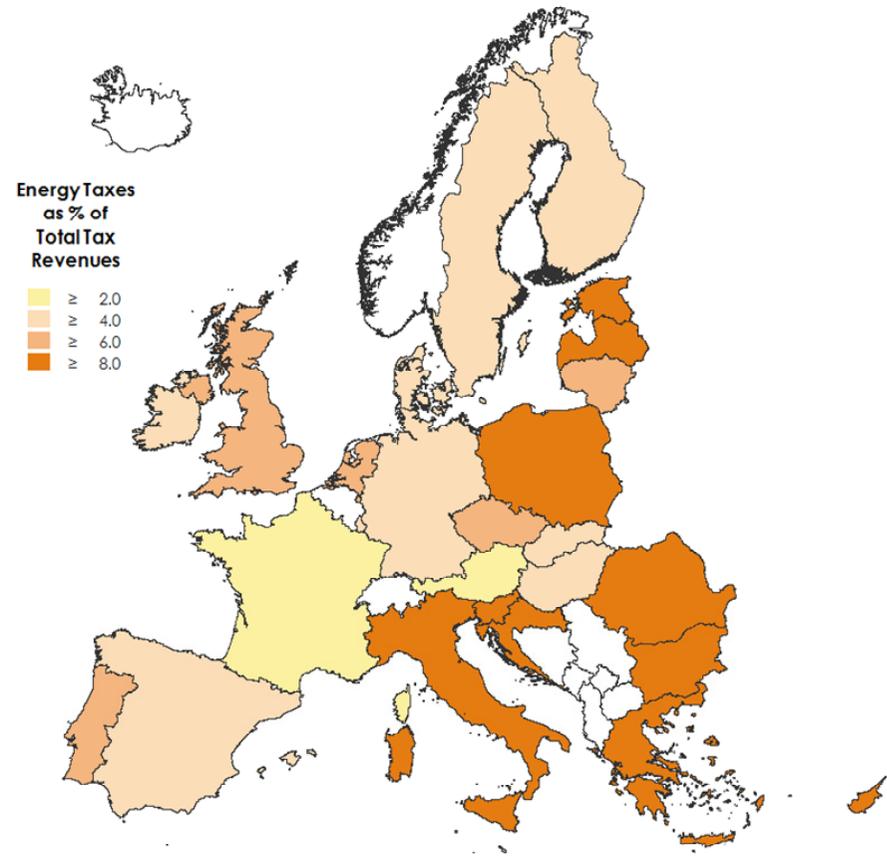
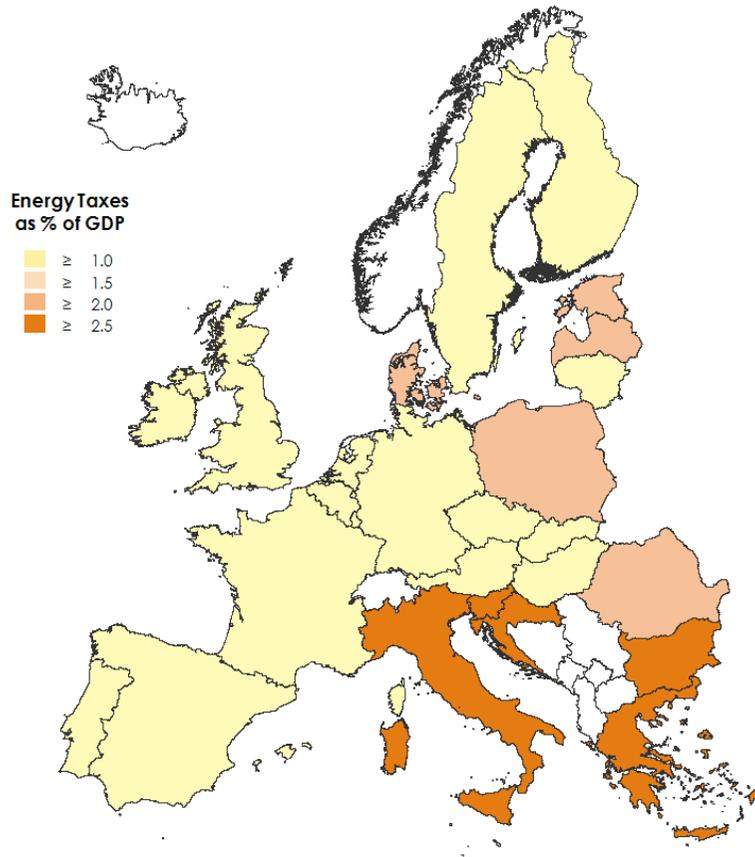


Source: EC Excise Duty Tables January 2005, 2016



Energy Tax Revenues in EU MS

2015

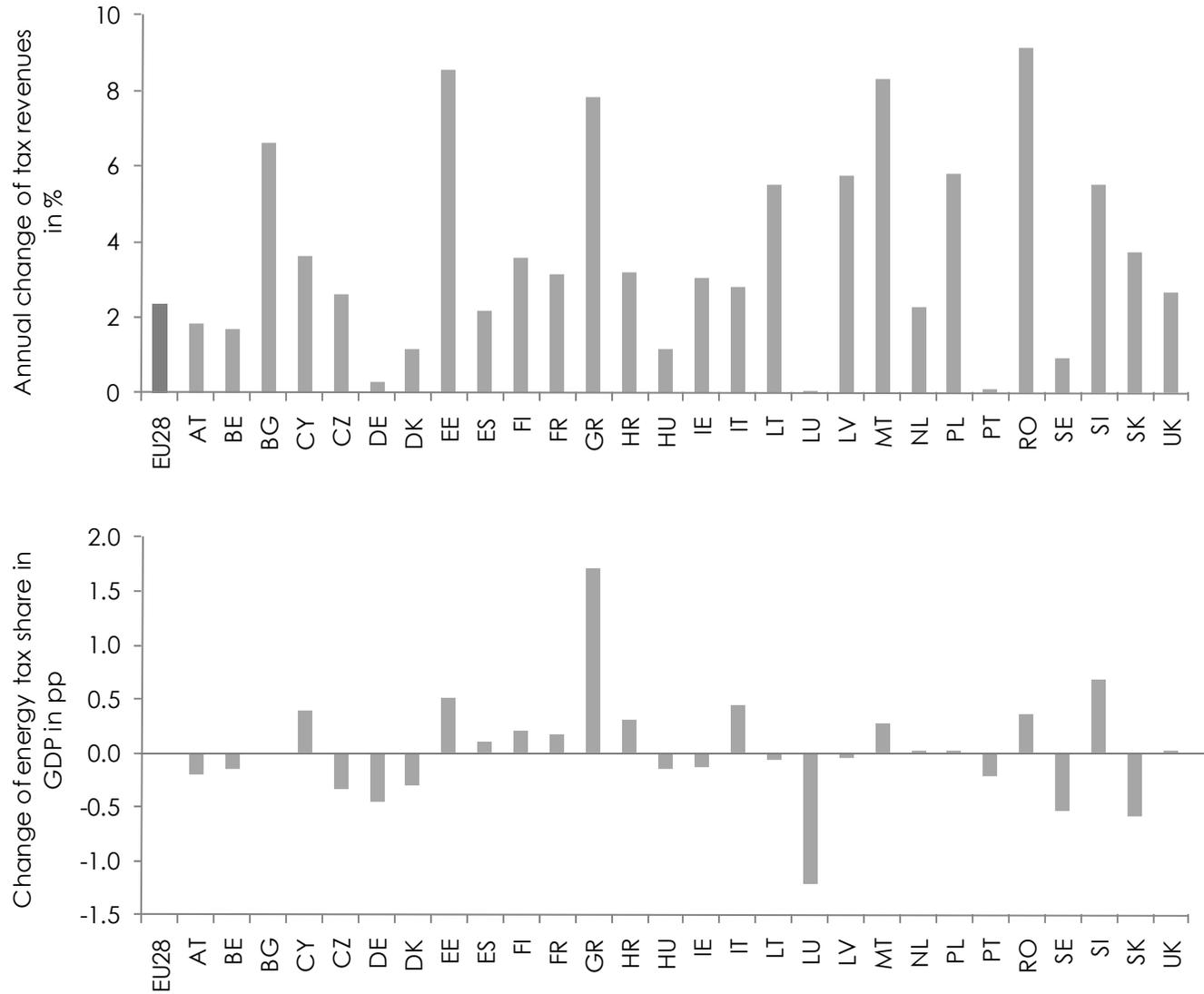


Source: Eurostat



Energy Tax Revenues in EU MS

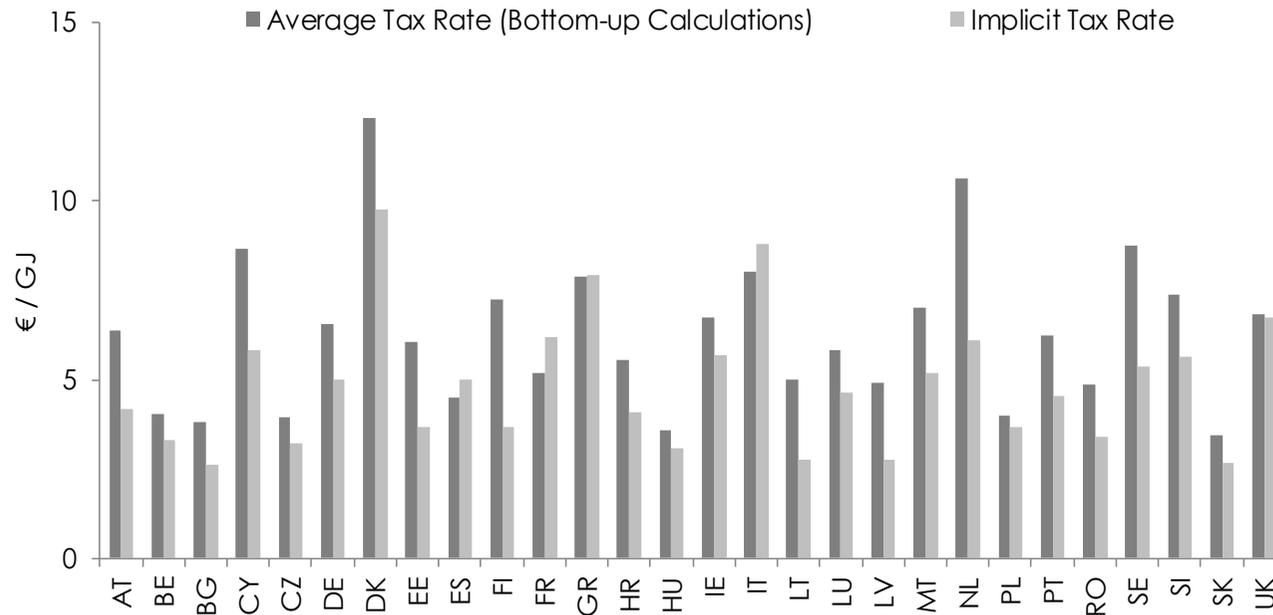
Development 2005/2015



Source: Eurostat

Implicit Energy Tax Rates in EU MS

2015 (I)



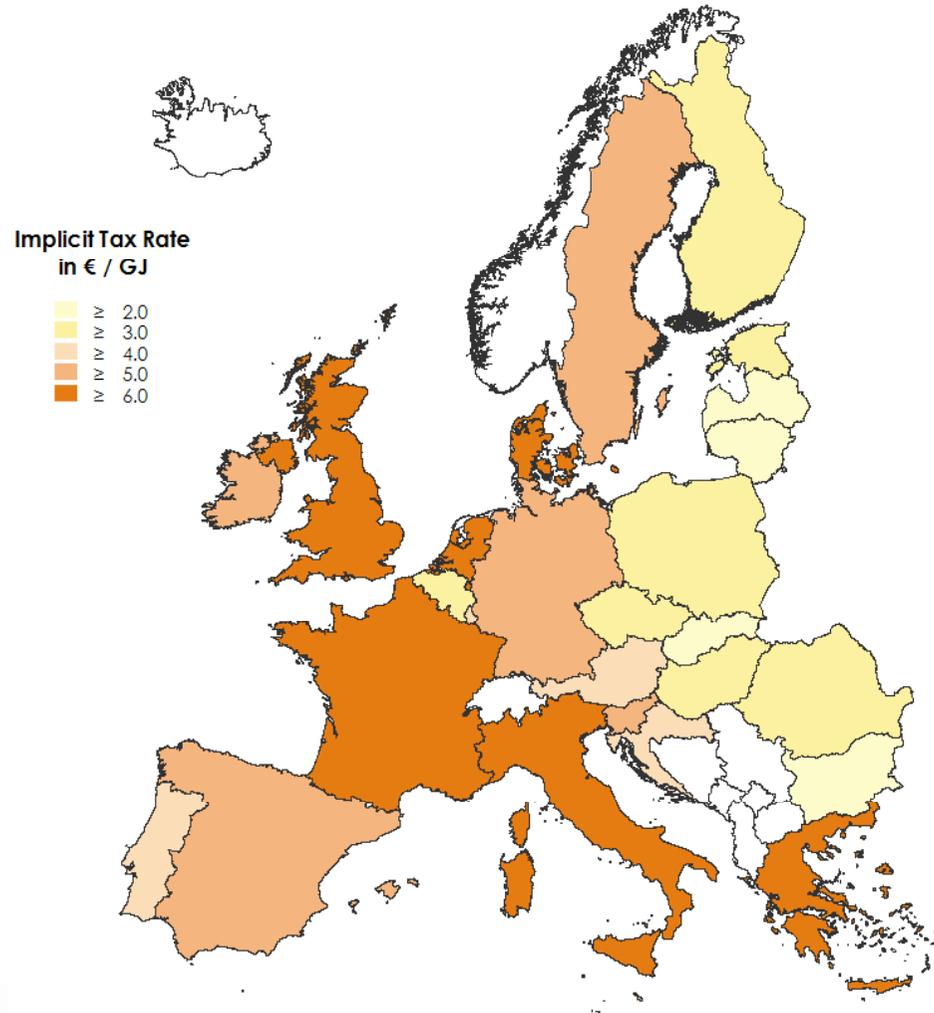
Bottom-up estimates exceed top-down calculations ...

Difference partly due to missing information on tax exemptions

Source: EC Excise Duty Tables January 2005, 2016; Eurostat

Implicit Energy Tax Rates in EU MS

2015 (II)

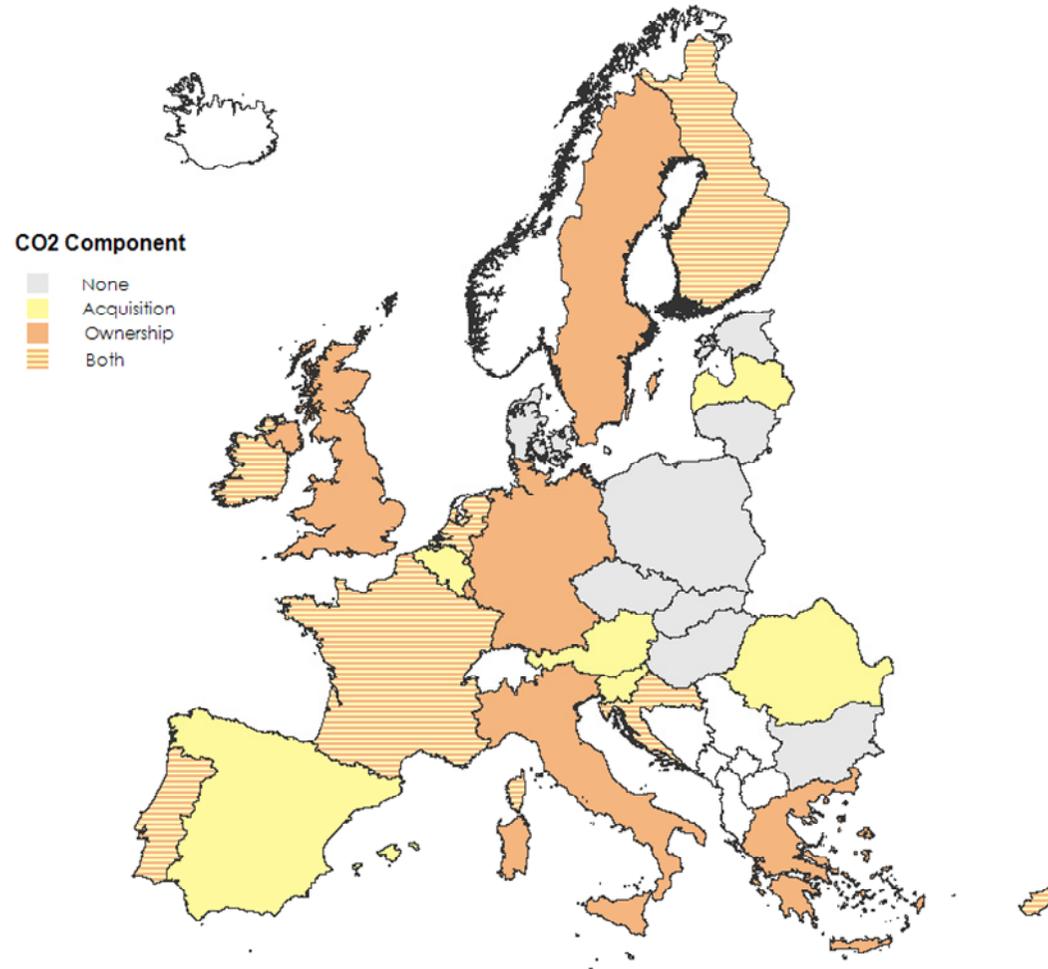


Source: Eurostat

- Direct taxation of CO₂ emissions is the optimal solution according to economic theory
- Purchase taxes and recurring taxes can help achieve GHG emissions reductions in practice
 - Consumers' myopia – Cars' fuel expenditures are considered only up to 5 years after purchase, but effective usage times are significantly longer
 - Purchase taxes can offset myopic purchase decisions

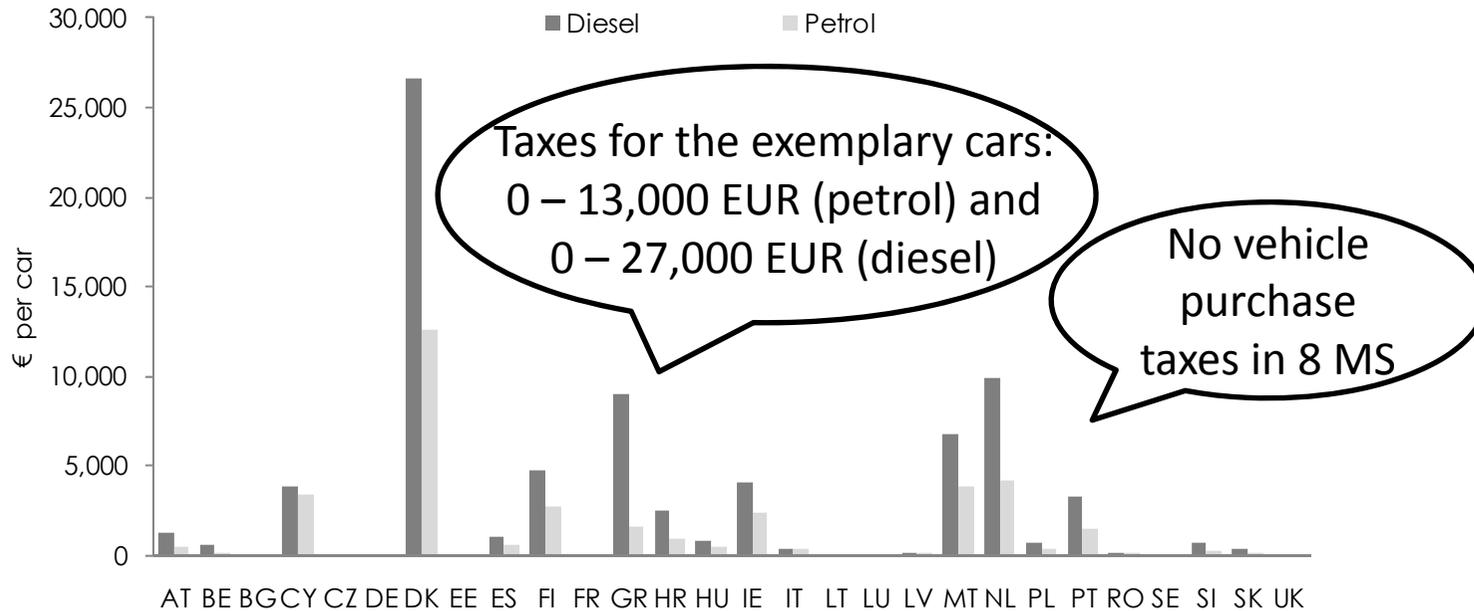
CO₂ components in vehicle taxation

2016



Source: Source: ACEA Tax Guide 2016

FR: no purchase taxes for cars with the assumed characteristics;
 BG, CZ, DE, EE, LT, LU, SE, UK : no purchase taxes (except VAT)

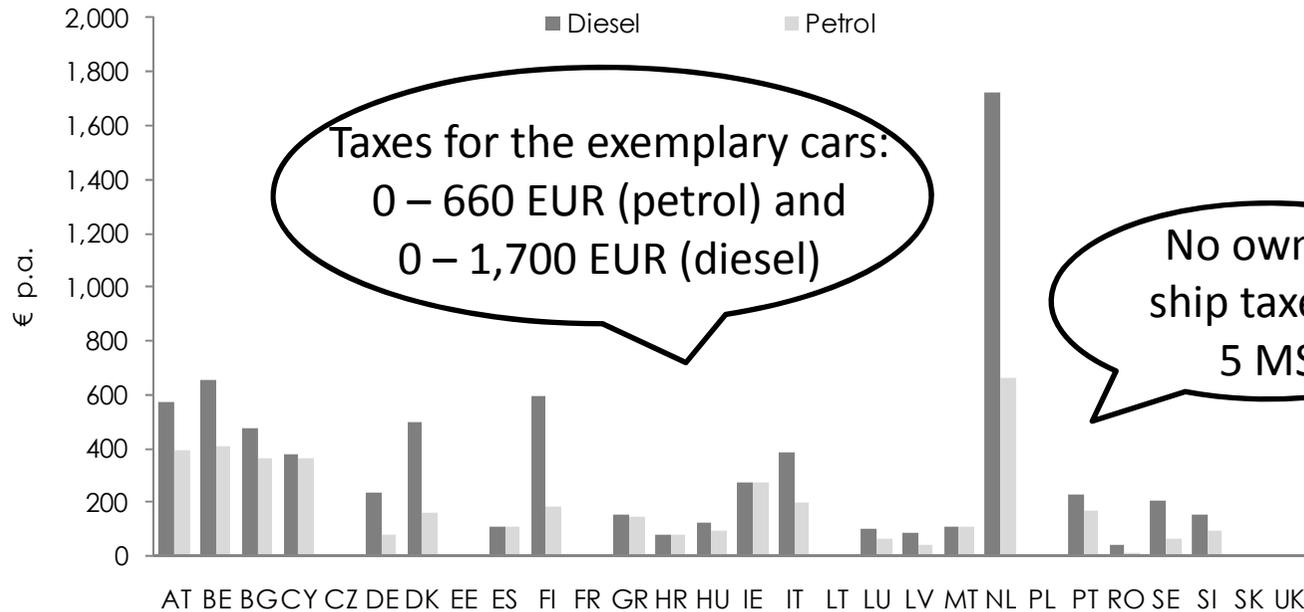


An average Austrian passenger car with the following characteristics is assumed:

	Spec. CO ₂ emissions (g/km)	Weight (kg)	Power (KW)	Capacity (cm ³)	Price (€)
Diesel	126	1.640	100	1.837	22.589
Petrol	122	1.261	77	1.323	13.176

Source: ACEA Tax Guide 2016

UK, FR: no ownership taxes for cars with the assumed characteristics;
 CZ, EE, LT, PL, SK (privately used cars): no ownership taxes



An average Austrian passenger car with the following characteristics is assumed:

	Specific CO ₂ emissions (g/km)	Mass (kg)	Engine power (KW)	Engine capacity (cm ³)
Diesel	126	1,640	100	1,837
Petrol	122	1,261	77	1,323

Source: ACEA Tax Guide 2016

- Commission Proposal for New Energy Taxation Directive (COM/2011/169) not adopted (requirement of unanimity)
- Energy (and carbon) tax rates differ pronouncedly between MS, energy sources and sectors
- Explicit carbon taxes exist only in one third of the EU MS
- Better alignment of energy taxes with carbon content advisable
- Interaction with EU ETS need to be considered



Thank you!

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Further information available at:

<http://cats.wifo.ac.at/>