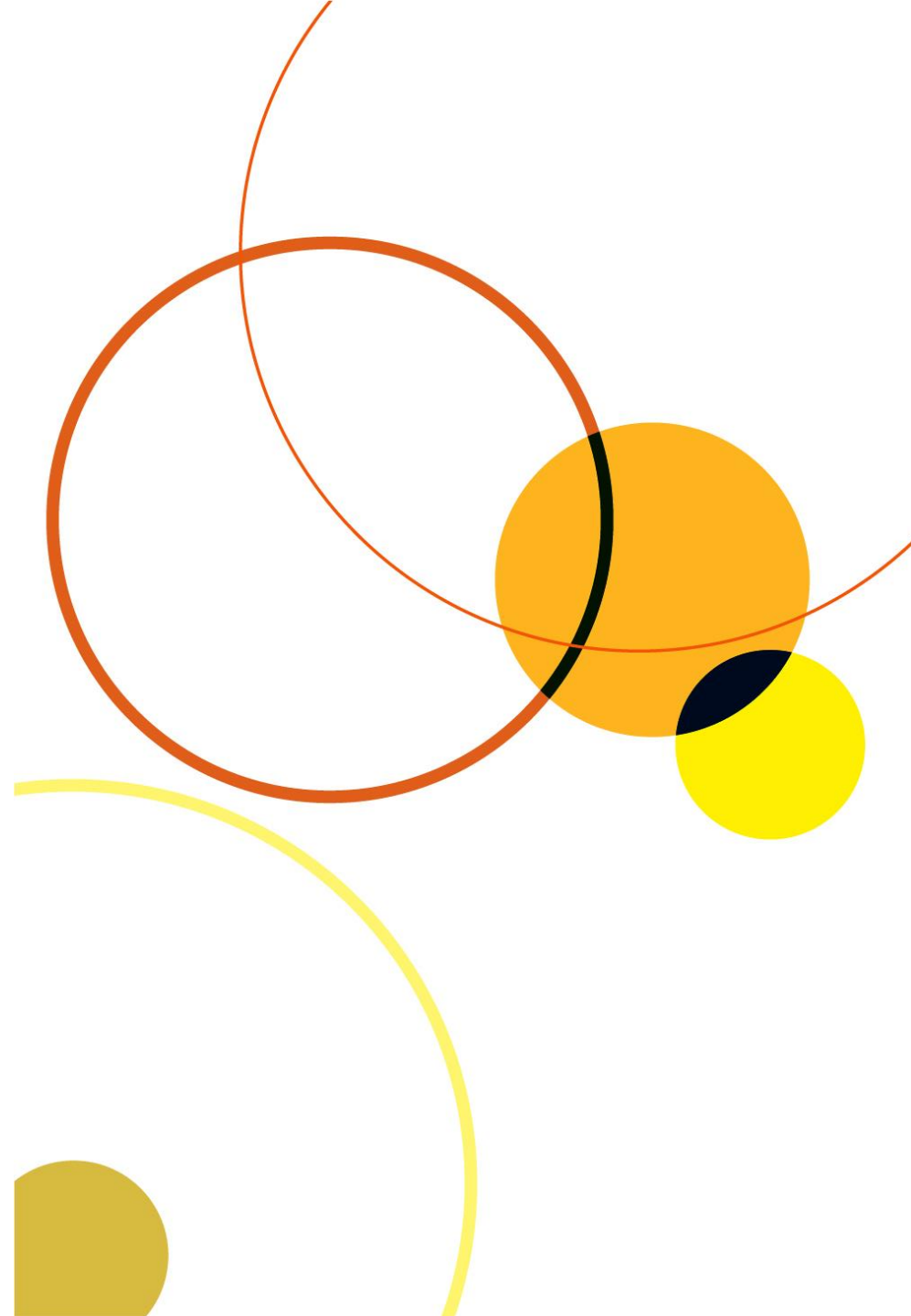


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Green fiscal reform as a stimulus for recovery and job creation

**Presentation at the Green Budget Europe
Annual Conference**

November 2014



Overview

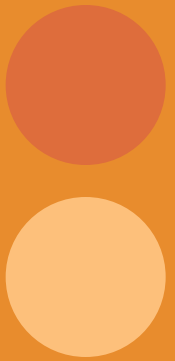
Green fiscal reform as a stimulus for recovery and job creation

Green growth and fiscal reform

- The green growth narrative

Green fiscal reform in practice

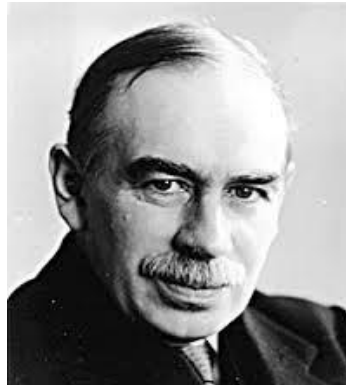
- Taxes, jobs and policies



Green growth: The Keynesian story

With implications on the expenditure side of fiscal management

In the short term green investment can help to kick-start a sluggish European economy (Green Fiscal Stimulus)



John Maynard Keynes

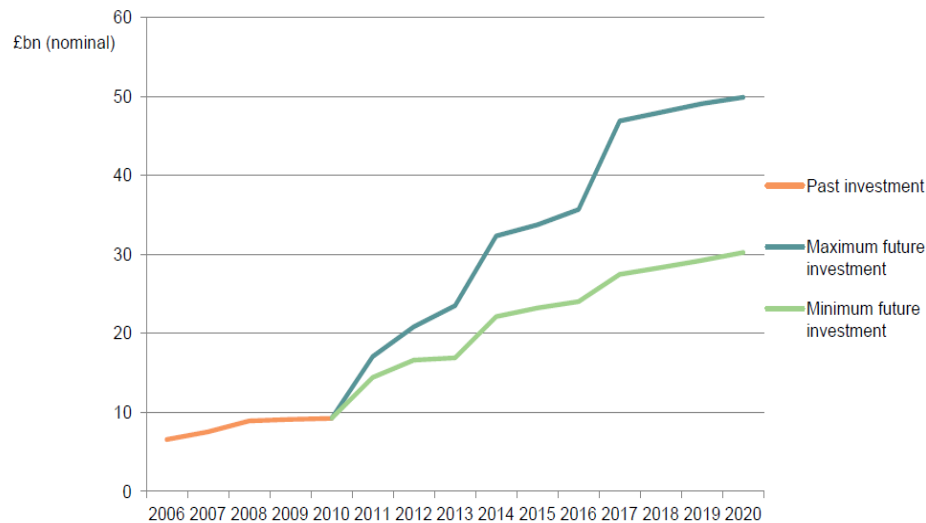
Source: Bowen and Fankhauser, Global Environmental Change, 2011

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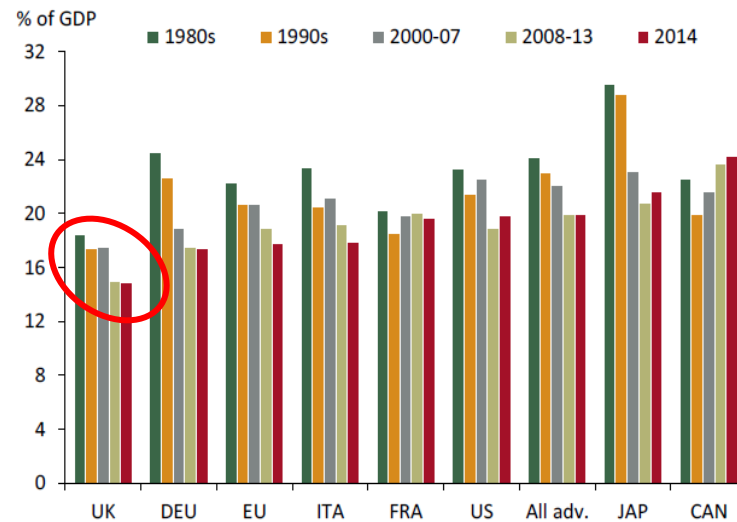
Green investment could boost weak aggregate demand

Large green investment needs are in contrast to low aggregate investment rates

UK needs a 3-5 fold increase in green investment...



...while investment / GDP is at a 30-year low



Source: Vivid Economics (left panel) and Llewellyn and Combes (right panel)

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Green growth: The Pigouvian story

With implications on the revenue side of fiscal management

In the medium term green policies can help to overcome existing market failures that hold back growth (e.g. pollution)



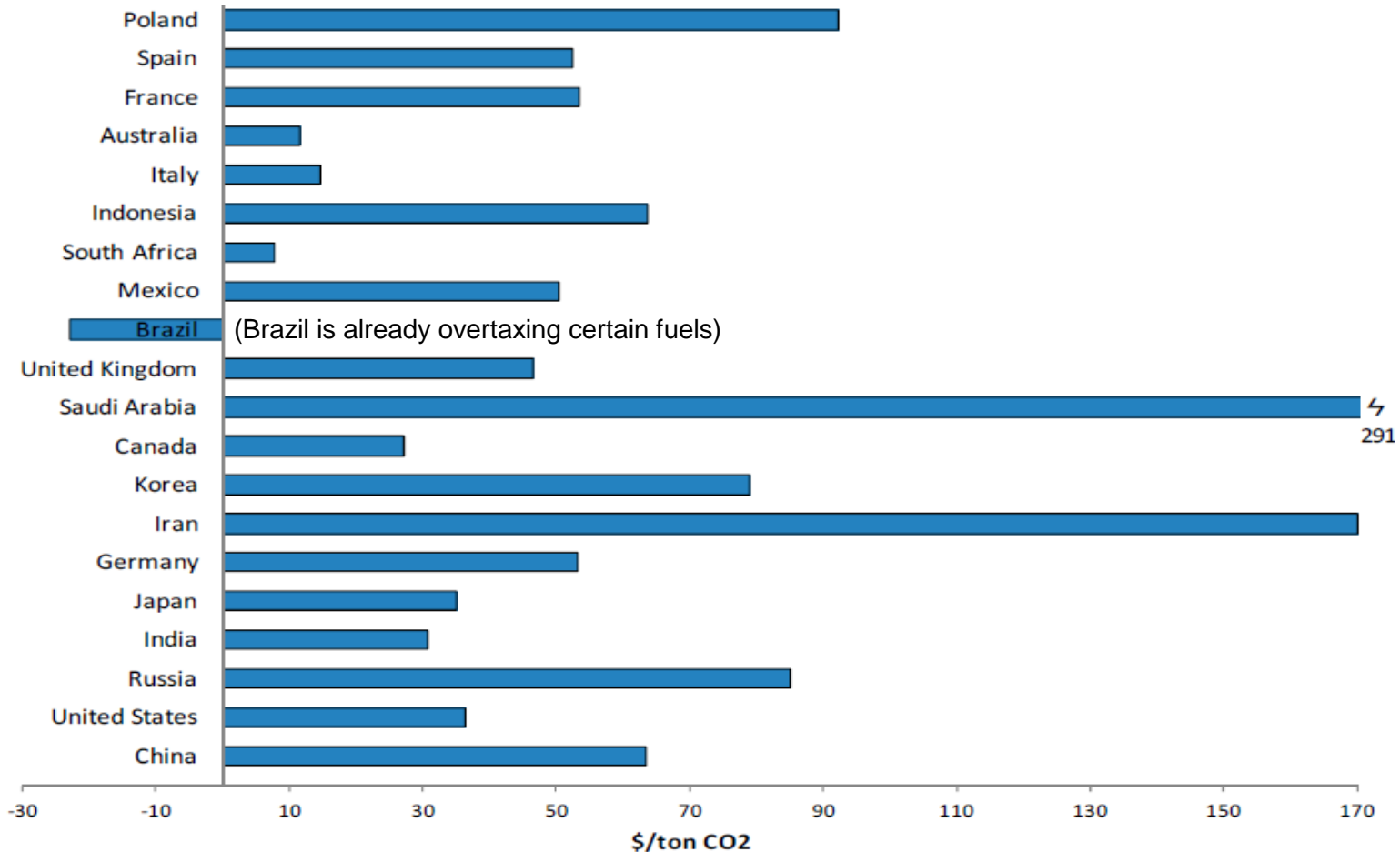
Arthur Cecil Pigou

Source: Bowen and Fankhauser, Global Environmental Change, 2011

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Existing market distortions give rise to substantial co-benefits

The level of carbon taxation justified by domestic co-benefits



Green growth: The Schumpeterian story

With implications on the long-term fiscal balance

In the long term green innovation may trigger a virtuous cycle of “creative destruction”, productivity improvements and growth



Joseph Schumpeter

Source: Bowen and Fankhauser, Global Environmental Change, 2011

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In search of a green industrial revolution

Some evidence of dynamic benefits, but good data is still scarce

Green innovation has higher social benefits than dirty innovation

- Clean patents have higher spillovers (similar to IT patents) and have more general applications

(Dechezleprêtre et al., *Knowledge spillovers from clean and dirty technologies*, 2013)

Energy efficiency investment stimulates growth

- Energy efficiency improvements contributed positively to economic growth in OECD countries over the last 30 years

(Vivid Economics, *Energy efficiency and economic growth*, 2013)

Overview

Green fiscal reform as a stimulus for recovery and job creation

Green growth and fiscal reform

- The green growth narrative

Green fiscal reform in practice

- Taxes, jobs and policies

Large EU-wide variations in energy-related taxes

Variations exist both between and within countries

A 2012 Vivid study looked in detail at energy taxation in 9 European countries

— France, Germany, UK, Italy, Spain, Portugal, Poland, Hungary, Greece

The study found large variations between countries

— Highest implicit carbon tax rate in Portugal (87 €/tCO₂)

— Lowest implicit carbon tax rates in Poland and France (both 58 €/tCO₂)

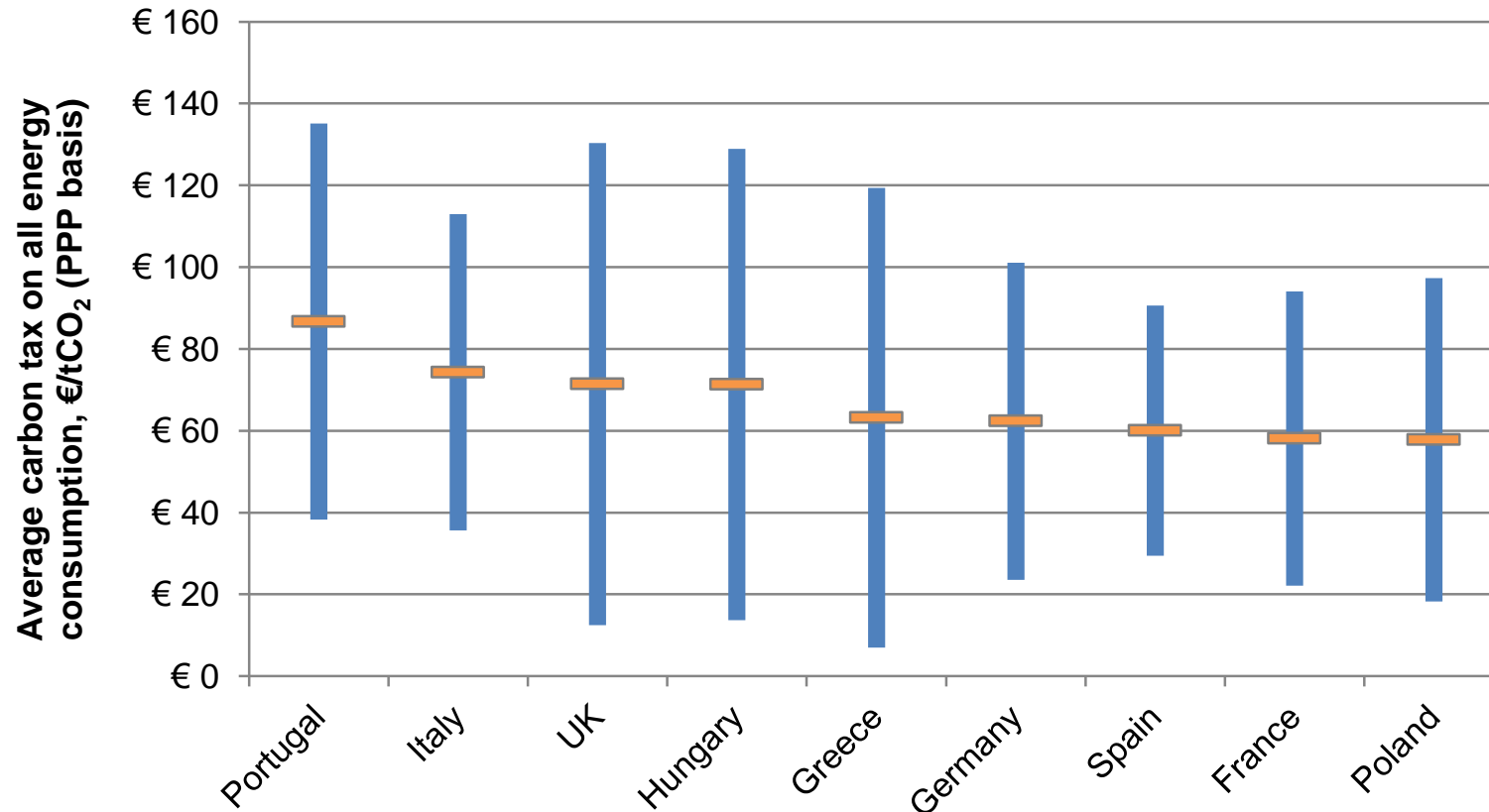
The study also found large variations within countries

— In France, some energy use is excise tax free (e.g. gas used at home), while other use is taxed up to 270 €/tCO₂ (petrol)

— In the UK electricity is taxed 3-4 times more heavily than either coal or gas; households are taxed less than business

There is considerable variation in EU carbon pricing

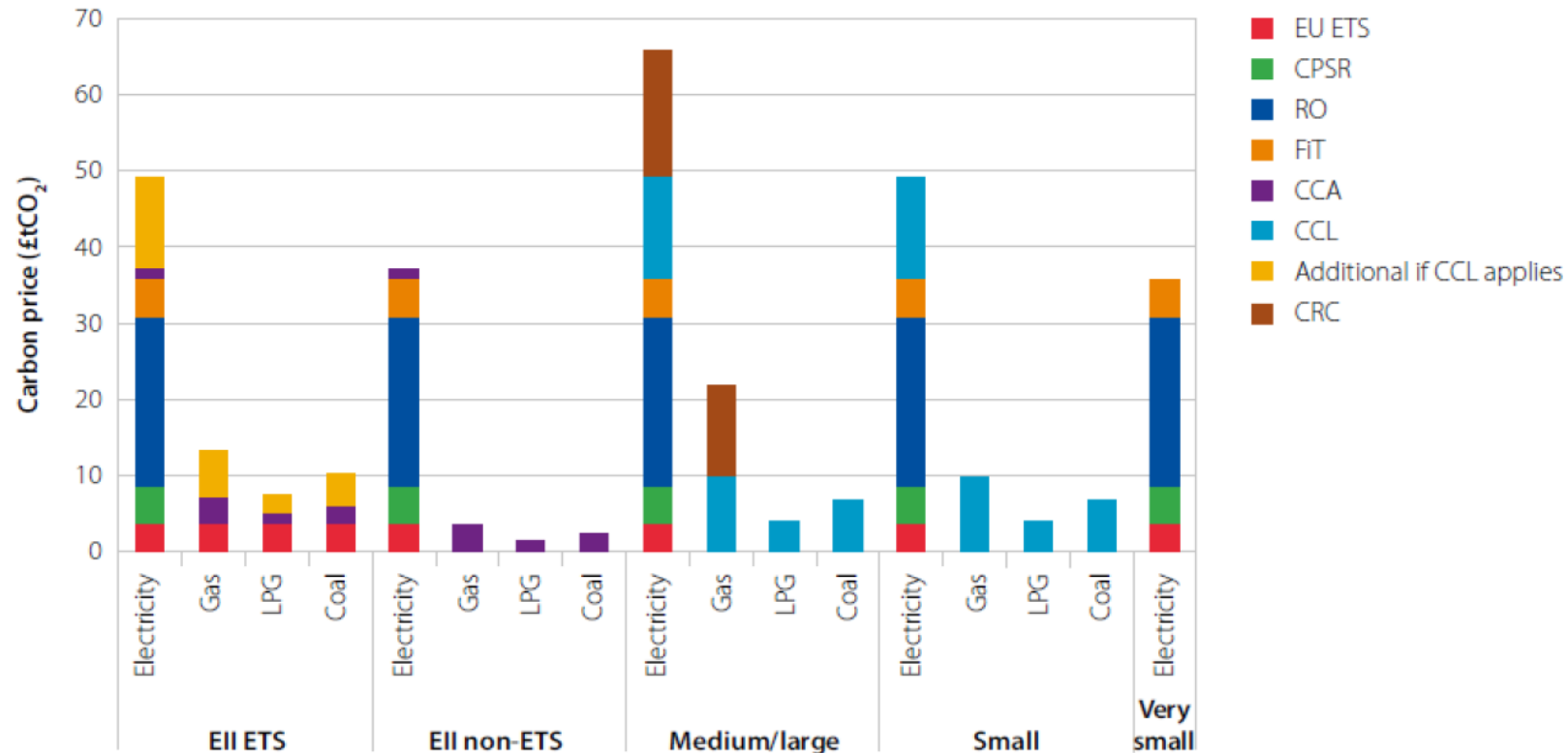
Implicit tax rates are much higher than the EU Allowance price



Note: Blue bars show the size of one standard deviation, **not** highest and lowest tax rates
Source: Vivid Economics (2012).

UK firms are subject to a multitude of energy taxes

A more uniform system would be more efficient and save administrative costs



Note: EII = electro-intensive industries; legend refers to different UK energy pricing policies
 Source: Bassi et al (2013).

Different tax rates give rise to beneficial tax reform

Energy taxes can be compared with direct and indirect tax packages to raise the same revenue

Improved energy taxes have significant revenue-raising potential

- energy tax reform to harmonise rates and reflect externalities might increase total tax revenues in Spain, Hungary and Poland by 1.0-1.3 per cent of GDP by 2020
- a tighter EU ETS cap might raise revenues of around 0.2 per cent of EU GDP

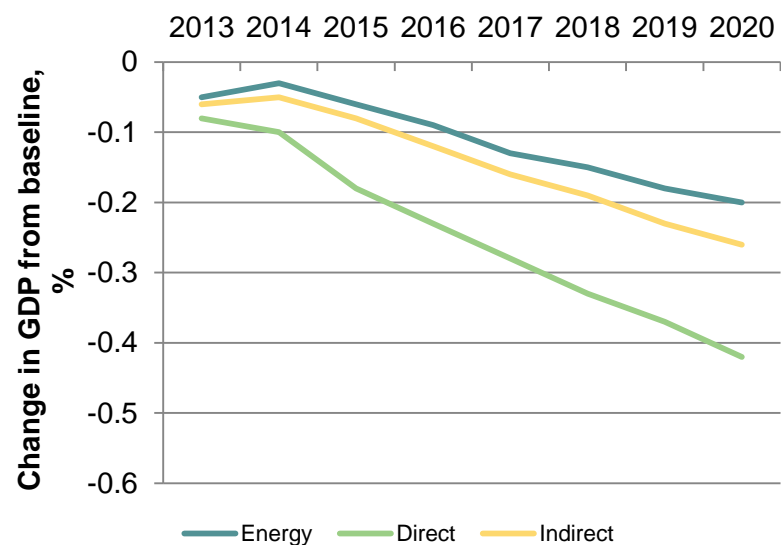
Economic costs of energy taxes and/or auctioning EUAs may be better and are certainly no worse than labour or value added taxes

- energy taxes may affect consumption less and certainly no more than labour taxes
- energy taxes affect consumption similarly to value added tax
- higher ETS allowance prices can be as efficient in raising revenue as taxes provided a sufficient proportion of allowances is auctioned

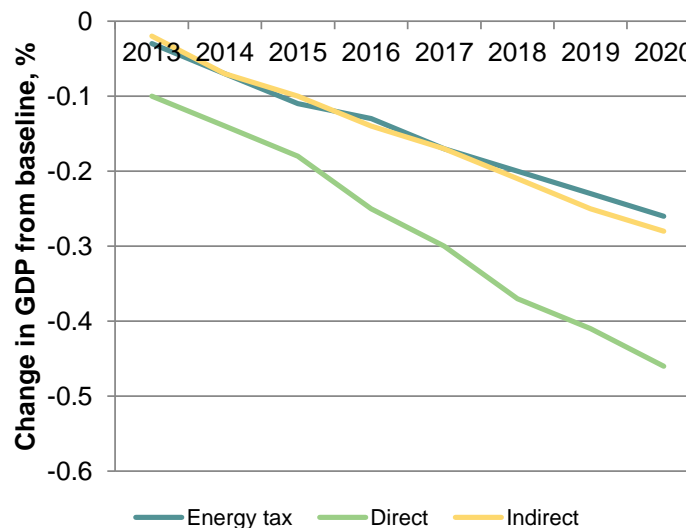
Energy tax reform is at least as efficient as other taxes

And offers additional emission reduction benefits

Deadweight loss of different taxes in Hungary



Deadweight loss of different taxes in Poland

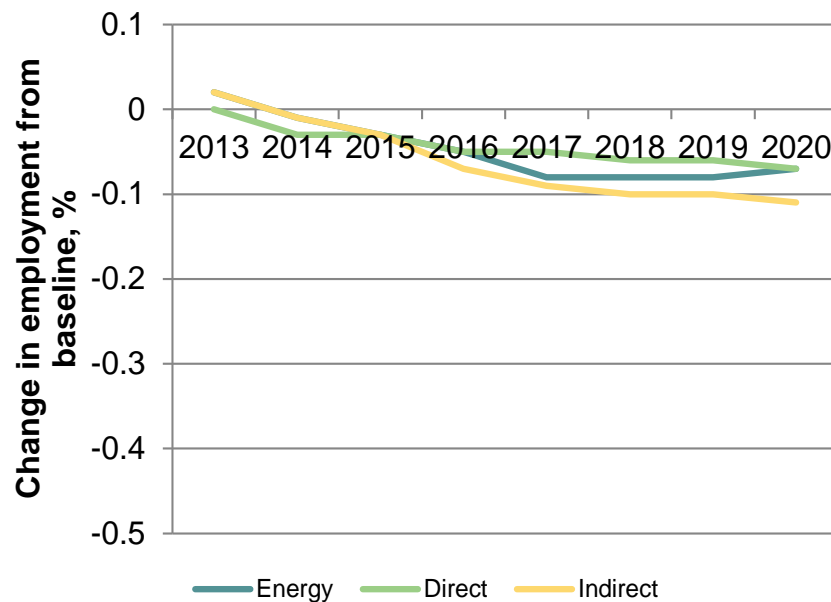


Source: Vivid Economics based on Cambridge Econometrics E3ME model

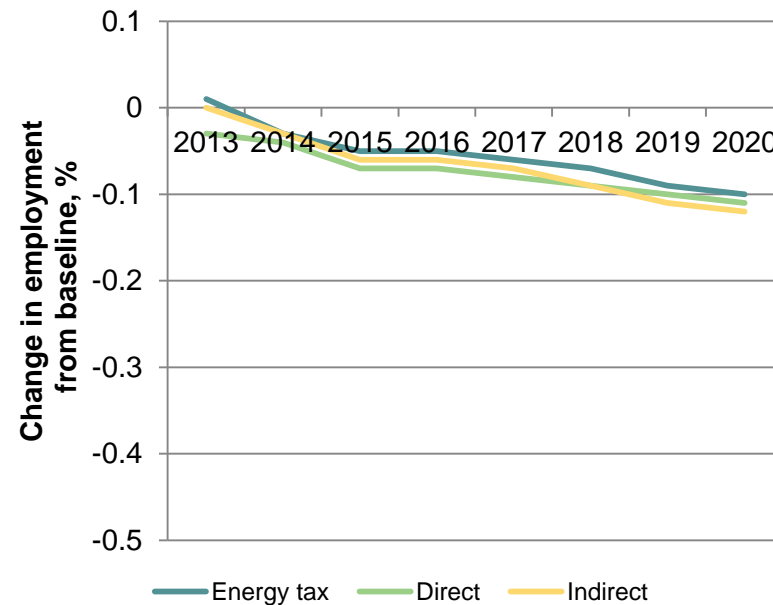
Energy tax reform has similar employment effect as other taxes

And offers additional emission reduction benefits

Employment effect of different taxes in Hungary



Employment effect of different taxes in Poland



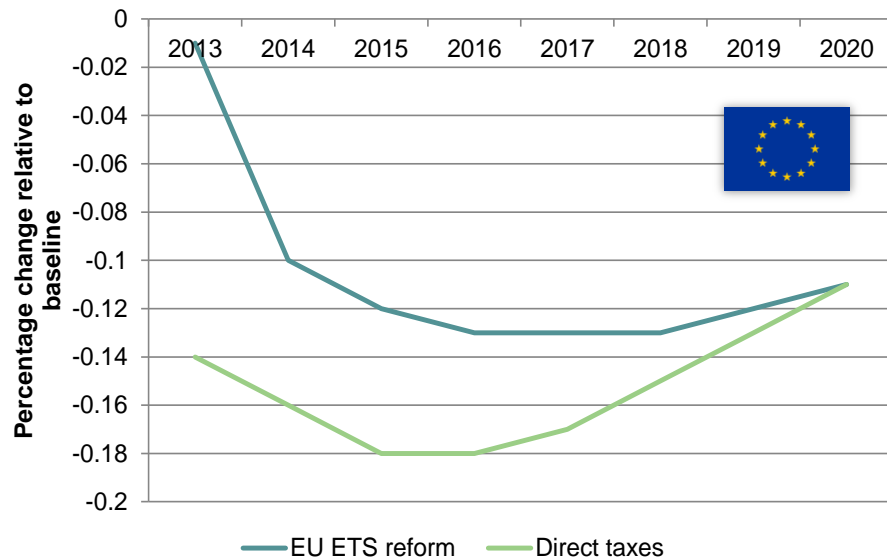
Source: Vivid Economics based on Cambridge Econometrics E3ME model

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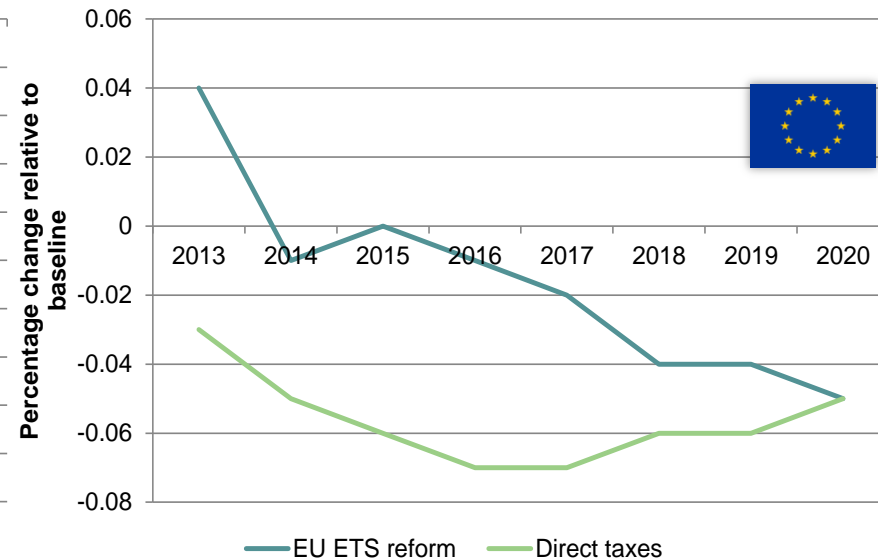
The impact of EU ETS tightening relative to other taxes

EU ETS tightening raises tax revenues in a less damaging way than direct taxes

Tightening the EU ETS cap has a smaller negative impact on EU GDP than raising the same revenues from direct taxes



And a less detrimental impact on employment



Source: Vivid Economics based on Cambridge Econometrics E3ME model

Two challenges have historically held back energy tax reform

Both challenges are politically powerful as well as based on legitimate concerns

Competitiveness

- energy taxes and carbon prices impose costs solely on domestic producers
- competitive disadvantage for domestic producers vis-à-vis other European and non-European producers

Distributional concerns

- poor households spend a larger proportion of income on energy
- therefore energy taxes can be particularly harmful on the poor
- it is politically and ethically difficult to tax basic necessities like heating

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Company Profile

Vivid Economics is a leading strategic economics consultancy with global reach. We strive to create lasting value for our clients, both in government and the private sector, and for society at large.

We are a premier consultant in the policy-commerce interface and resource and environment-intensive sectors, where we advise on the most critical and complex policy and commercial questions facing clients around the world. The success we bring to our clients reflects a strong partnership culture, solid foundation of skills and analytical assets, and close cooperation with a large network of contacts across key organisations.

Practice areas

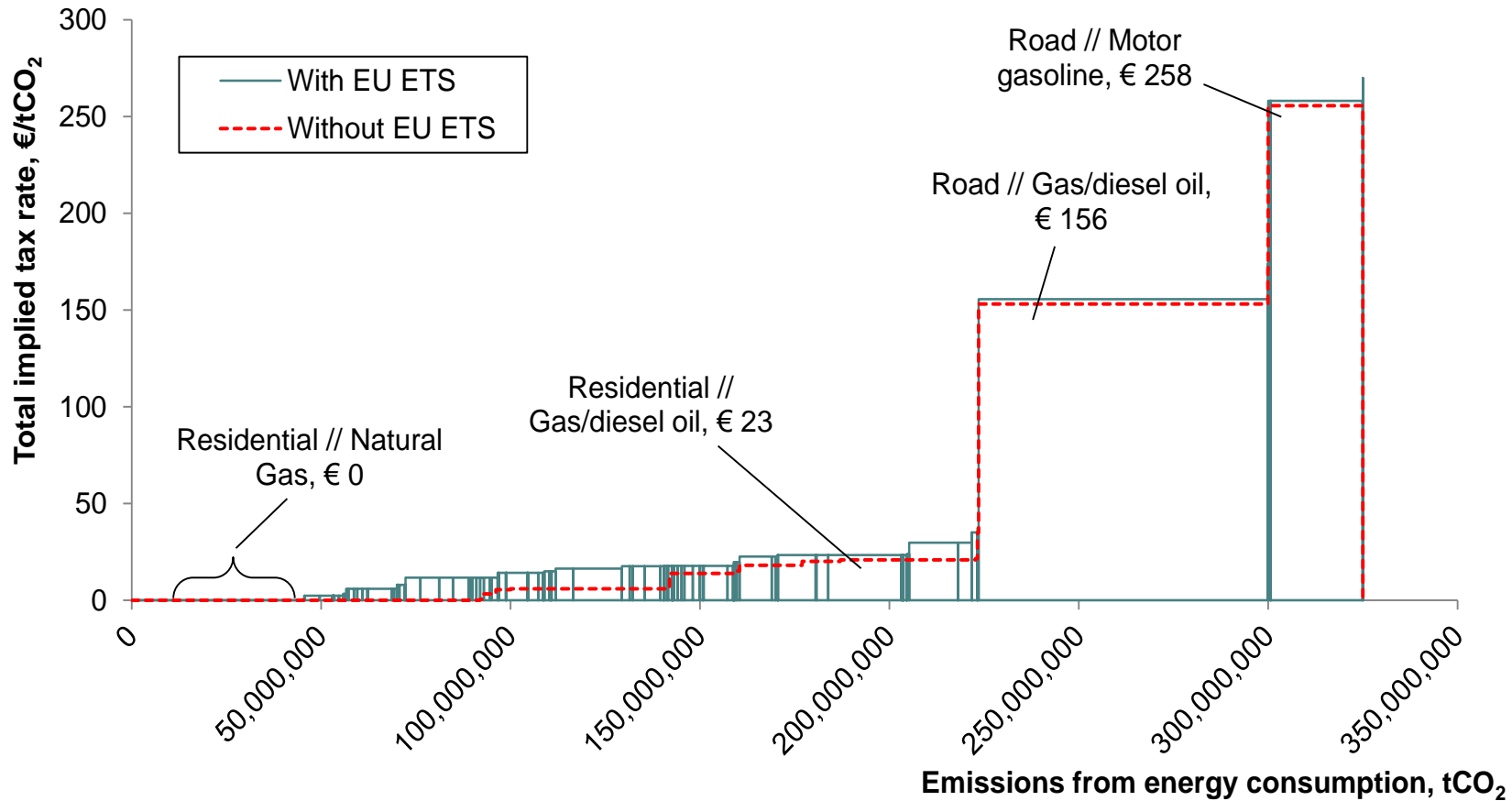
Energy & climate change
Competition & strategy
Infrastructure & resources

Development economics & finance
Innovative policy

Annex slides

France has a very steep “energy tax curve”

Large variations suggest there is scope to improve the efficiency of the tax system



Do green policies affect competitiveness?

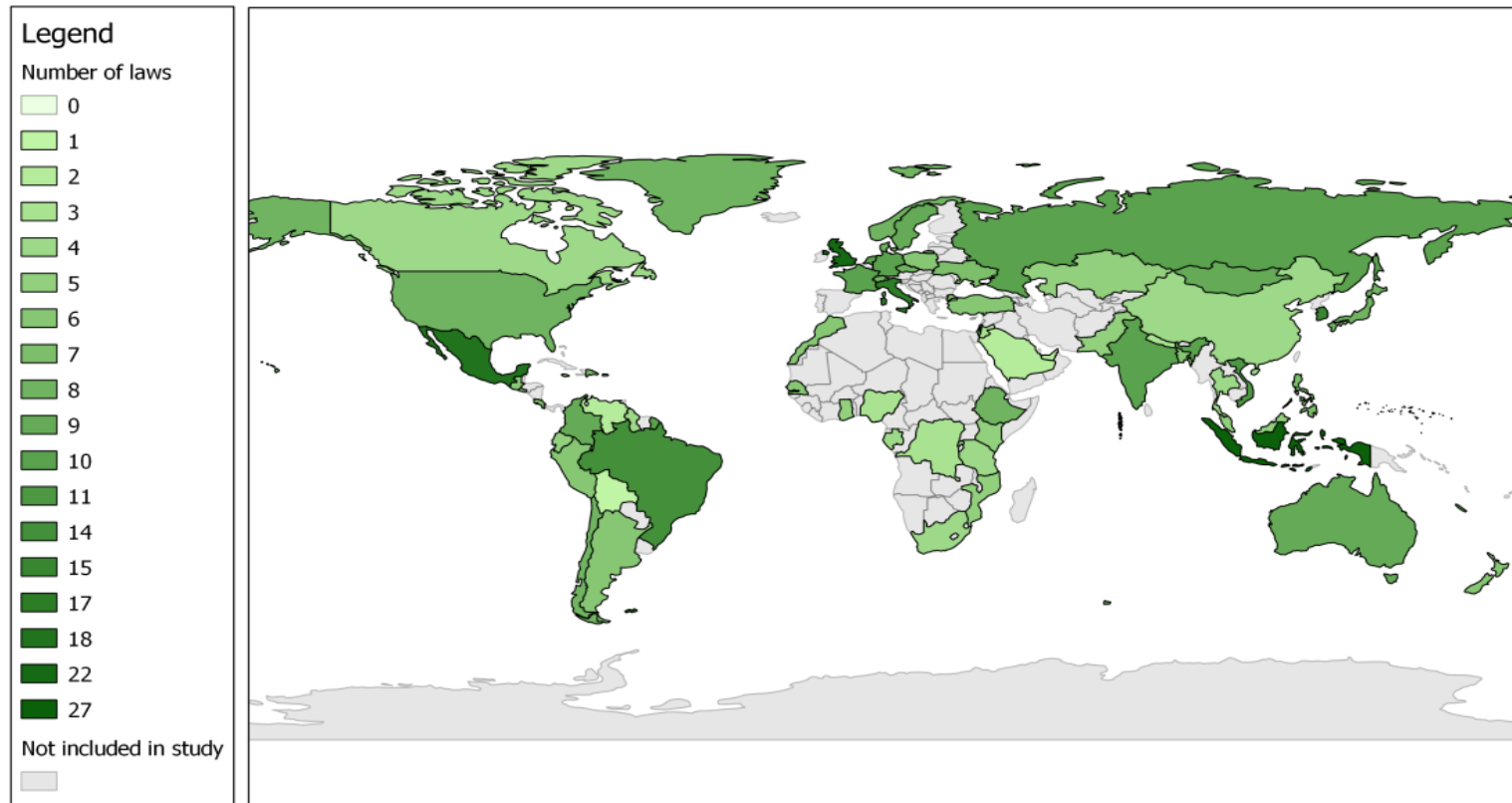
No evidence so far that existing taxes have been detrimental

Vivid in its recent work for the UK DECC performed detailed modelling of the extent of possible carbon leakage scenarios in the EU under different future carbon prices

- ‘Carbon leakage’ refers to the effect in which carbon prices drive up relative costs and reduce the competitiveness of EU firms such that their output falls
- Empirical studies of carbon leakage in the EU Emissions Trading System fail to find convincing evidence of substantial leakage
- Theoretical studies suggest that leakage rates could be fairly substantial, albeit with substantial differences in predictions between general equilibrium and partial equilibrium models

Growing global action reduces competitiveness concerns

Survey found ca. 500 climate-related laws in 66 jurisdictions

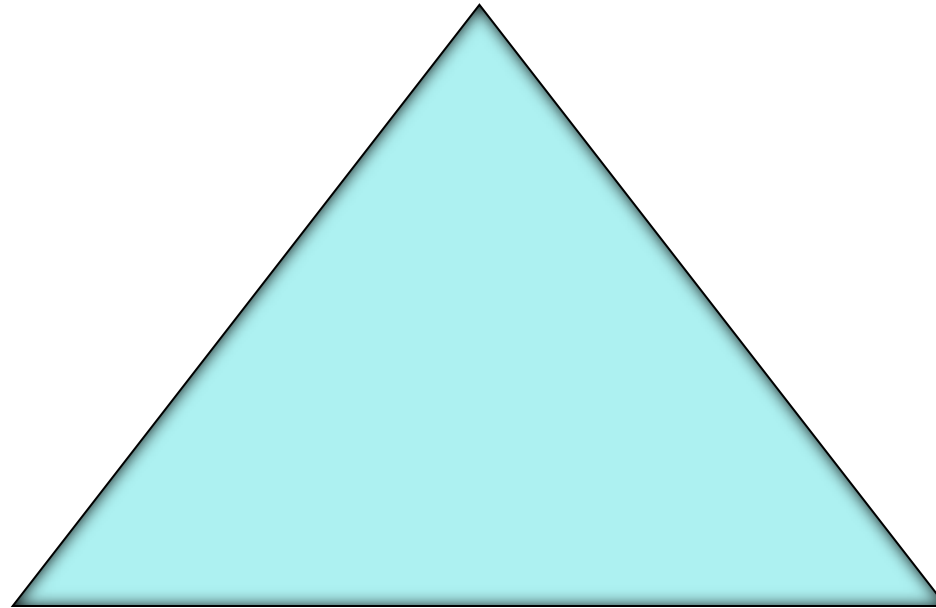


Source: Nachmany, Fankhauser et al. (2014)

Policies to tackle fuel poverty are well-known

Energy efficiency programmes in particular can alleviate fuel poverty

Targeted energy efficiency support
(e.g. UK Community Energy Savings Programme)



Income support
(e.g. winter fuel payments)

Tariff structure
(e.g. block tariffs)