

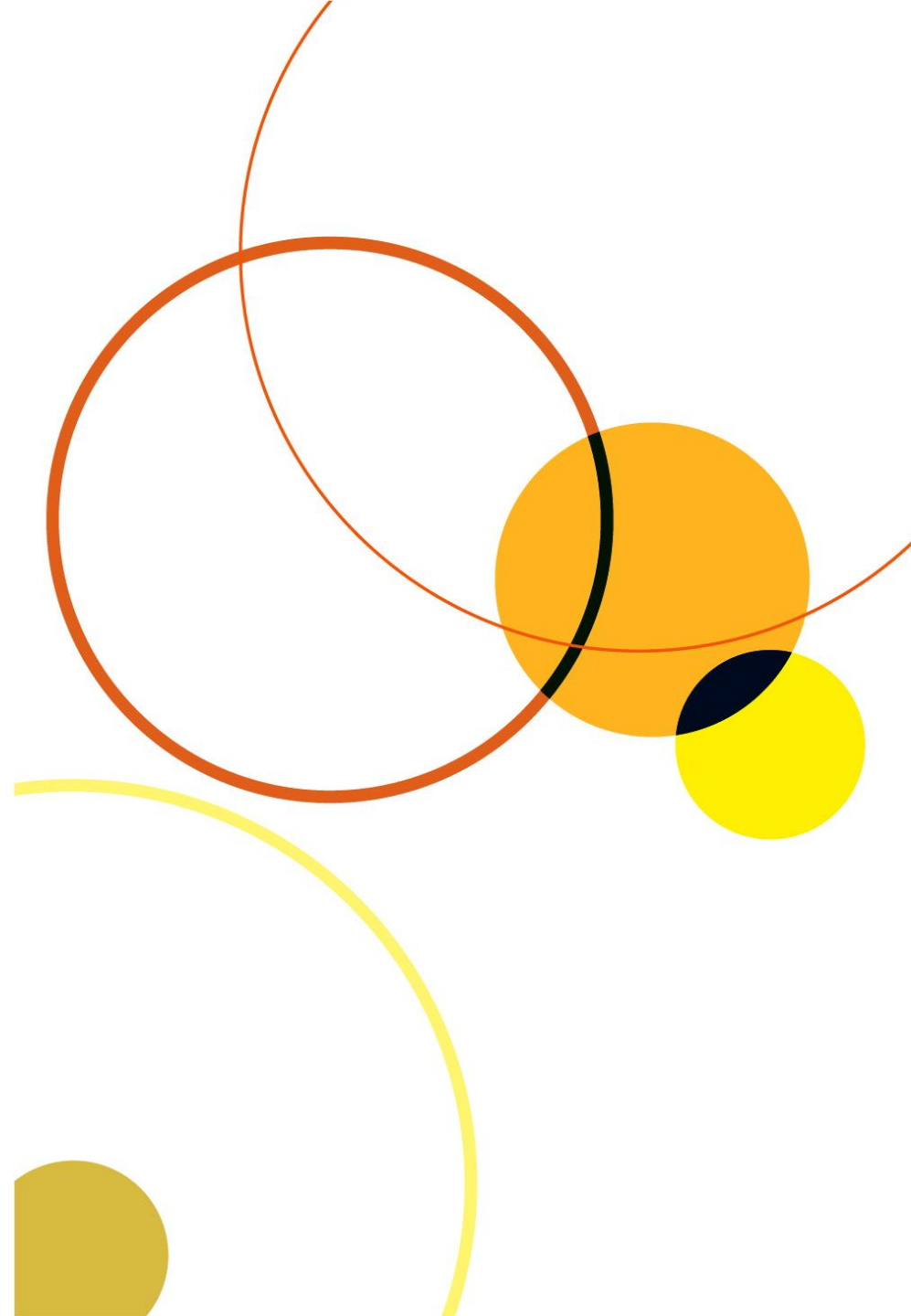
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# Environmental fiscal reforms for budget consolidation

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**Presentation prepared for meeting at  
University of Ljubljana**

September 2012



# Do we make enough use of energy and carbon as a tax base?

## Why tax energy?

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The taxation of energy use can address associated externalities

- Most important externality is CO<sub>2</sub> emissions from fossil-fuel combustion;
- Transport fuel use leads to further externalities, including congestion, accidents and health impacts

Other reasons for taxing energy are weaker

- Tax theory discourages the taxation of production inputs aside from externalities
- The 'green paradox', that energy taxes encourage resource owners to bring forward extraction, has not been empirically tested and relies on some crucial assumptions
- The Porter hypothesis that taxes are more than offset by increased innovation is not supported empirically

Hence, with the exception of transport, the most efficient energy tax system is a single and universal rate per tonne of CO<sub>2</sub> across the economy

# The study compares energy taxes both between countries and within countries

## **There are large variations in both**

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The study looked in detail at energy taxation in nine European countries

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

We found variations between countries

- Highest rate in Portugal (87 €/tCO<sub>2</sub> at PPP exchange rates)
- Lowest rate in Poland and France (both 58 €/tCO<sub>2</sub> at PPP exchange rates)
- At market exchange rates, Italy highest (78 €/tCO<sub>2</sub>), Poland lowest (35 €/tCO<sub>2</sub>), and France in midfield (66 €/tCO<sub>2</sub>)

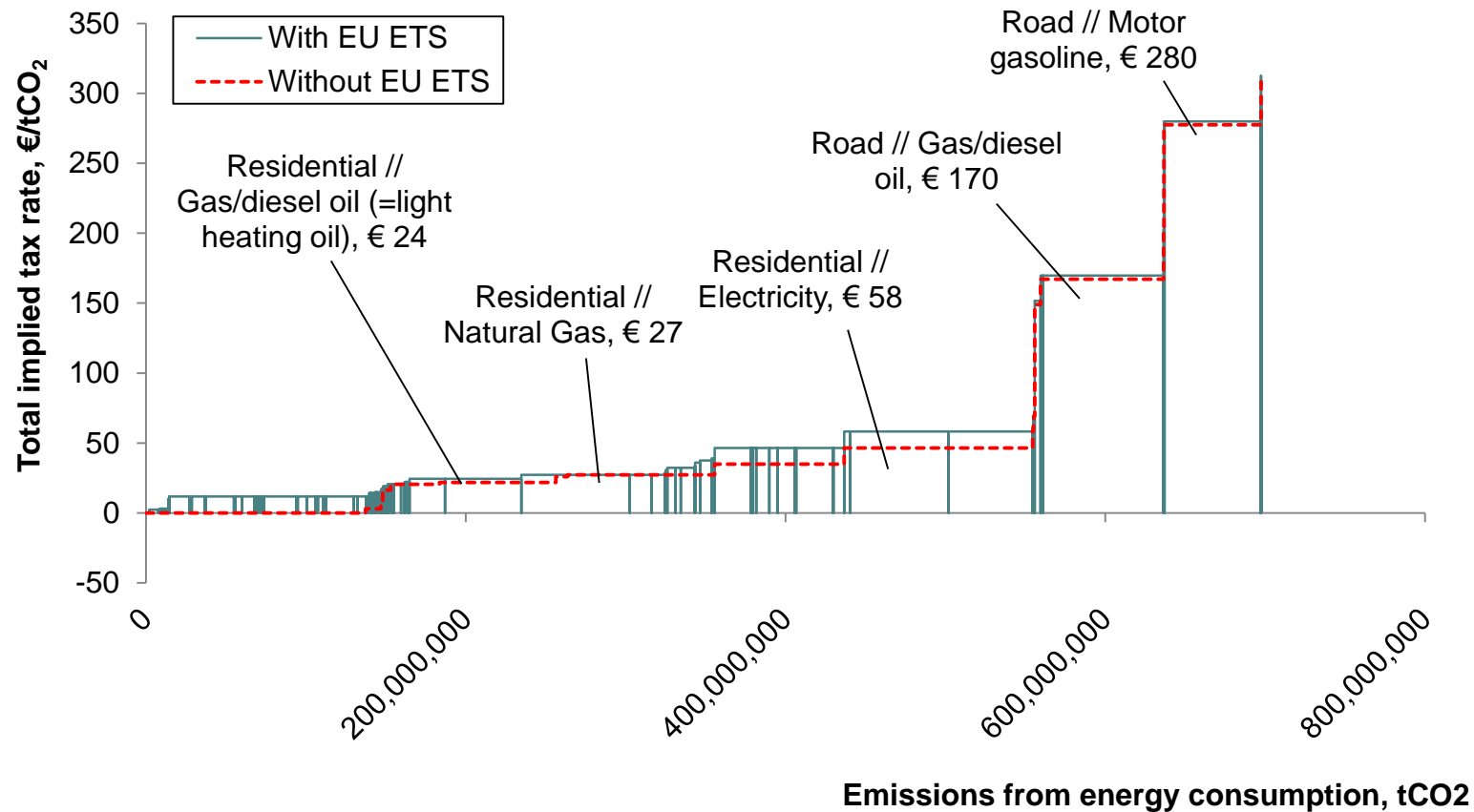
We also found variations within countries

- Within France, some energy use is excise tax free (e.g. natural gas used at home), while others is taxed at 35 €/tCO<sub>2</sub> (diesel used in industrial factories that are covered by the EU ETS), or 270 €/tCO<sub>2</sub> (petrol)
- We show this variation as energy tax curves

# Marginal energy tax curve - Germany

**A large amount of (mostly industrial/manufacturing) emissions is covered only by the EU ETS**

Figure 1. Scope for taxing under-taxed energy use in Germany



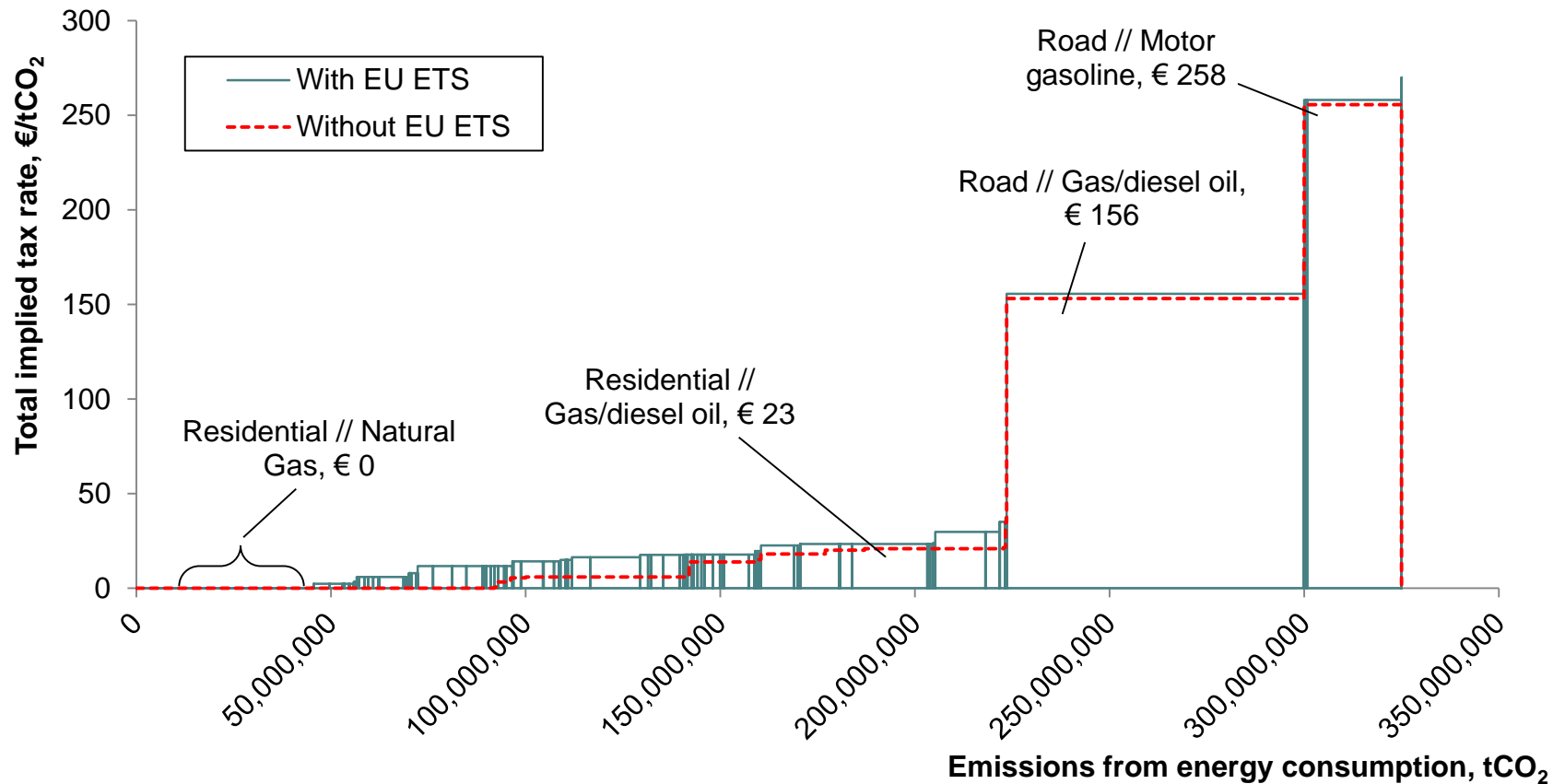
Source: Vivid Economics

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# Energy tax curve - France

## The importance of diesel in France's transport fuel mix is visible

Figure 2. **A large gasoline-diesel gap and more than 10 per cent untaxed emissions suggest room for tax increases**



Motivated by different tax rates within and between countries, we have explored the macroeconomic impacts of energy taxes

**These have been compared with direct and indirect tax packages that raise the same revenues**

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 around **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

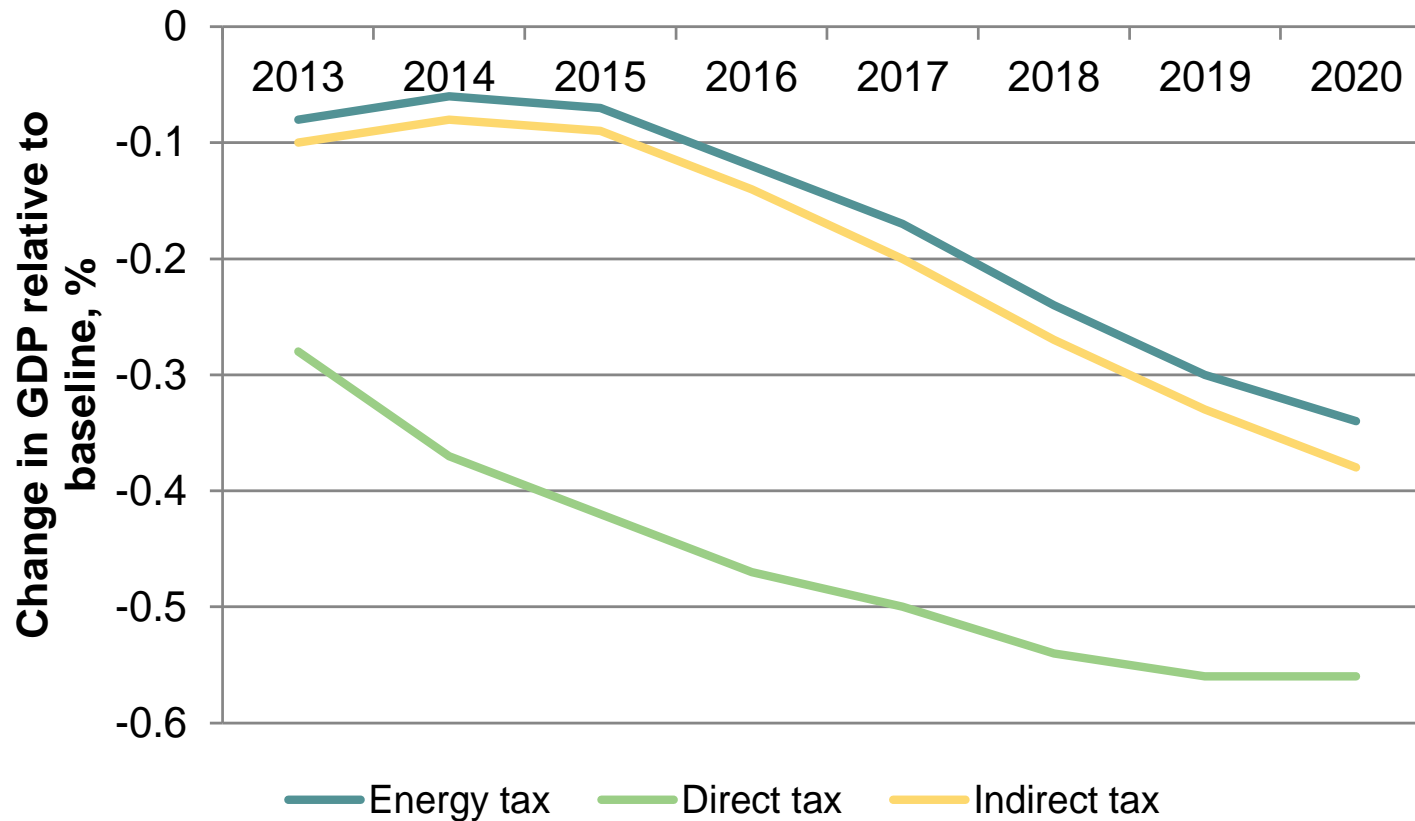
Economic costs of energy taxes and/or of auctioning EUAs **may be better and are certainly no worse** than labour or value added taxes

- energy taxes reduce consumption of energy-intensive goods and fuels, shifting part of the tax burden onto energy exporting countries
- 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

# Example results from Spain show that energy taxes are expected to have a smaller impact on GDP than other taxes

**This is partly because energy taxes encourage a reduction in energy imports**

Figure 4. The GDP impact from the Spanish energy tax package is smaller than for the other taxes

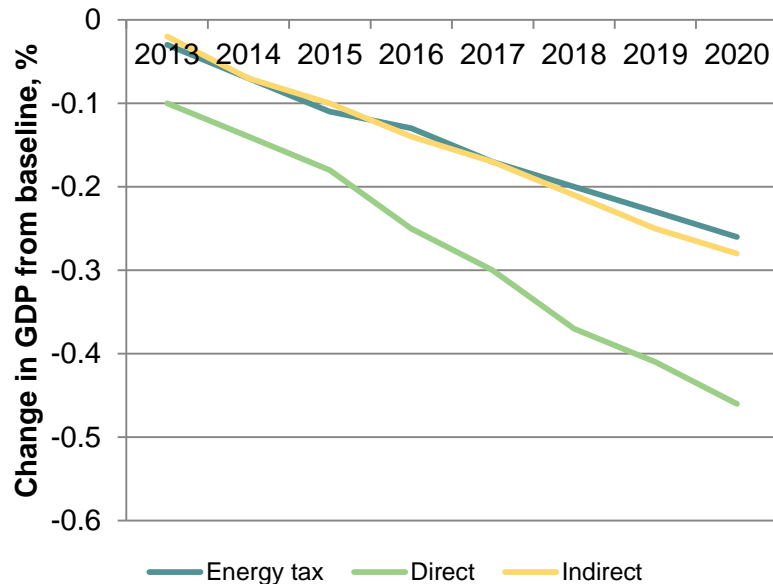


Source: Cambridge Econometrics E3ME model

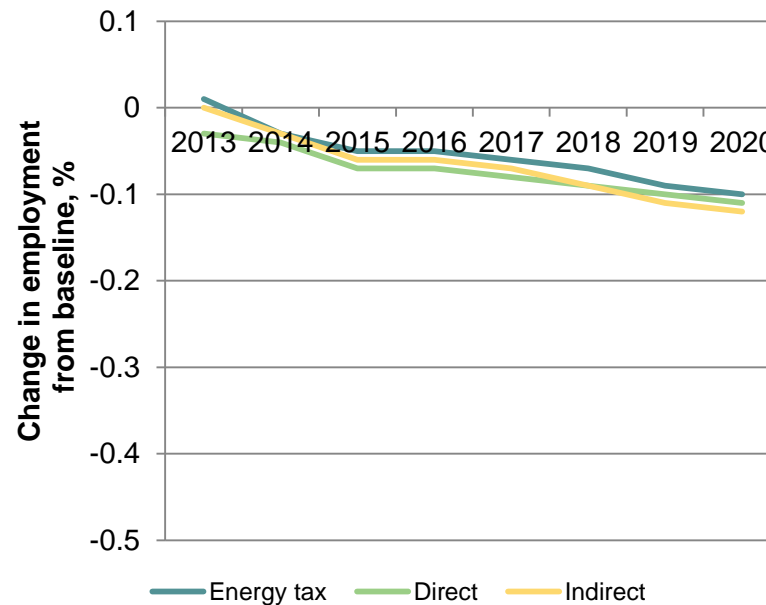
The same is also true of Poland, without the imports benefit

**Energy tax reform also delivers abatement (not shown here), unlike the two alternatives**

**Figure 3. Energy tax reform cap has a smaller negative impact on GDP than a direct tax**



**Figure 4. And no worse employment impact**



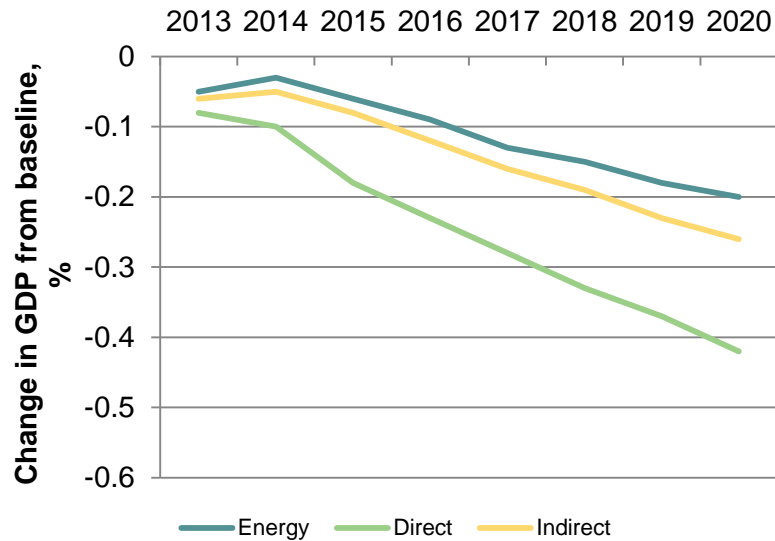
Source: Cambridge Econometrics E3ME model



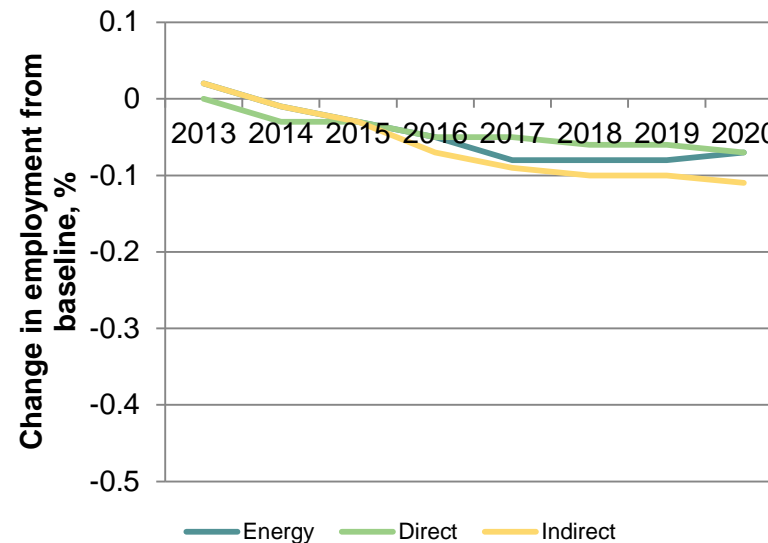
## ...and for Hungary, a persistent pattern emerges

**Energy tax reform also delivers abatement (not shown here), unlike the two alternatives**

**Figure 5. Energy tax reform cap has a smaller negative impact on GDP**



**Figure 6. And no worse employment impact**

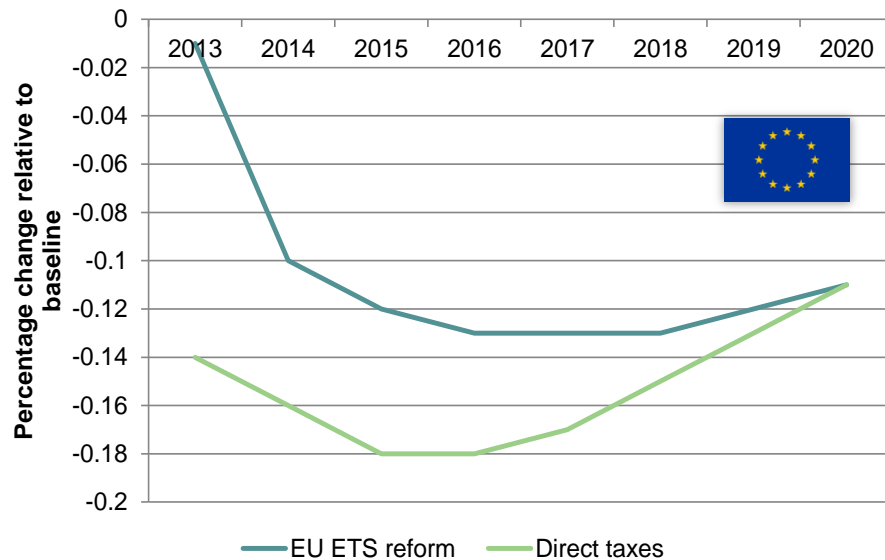


Source: Cambridge Econometrics E3ME model

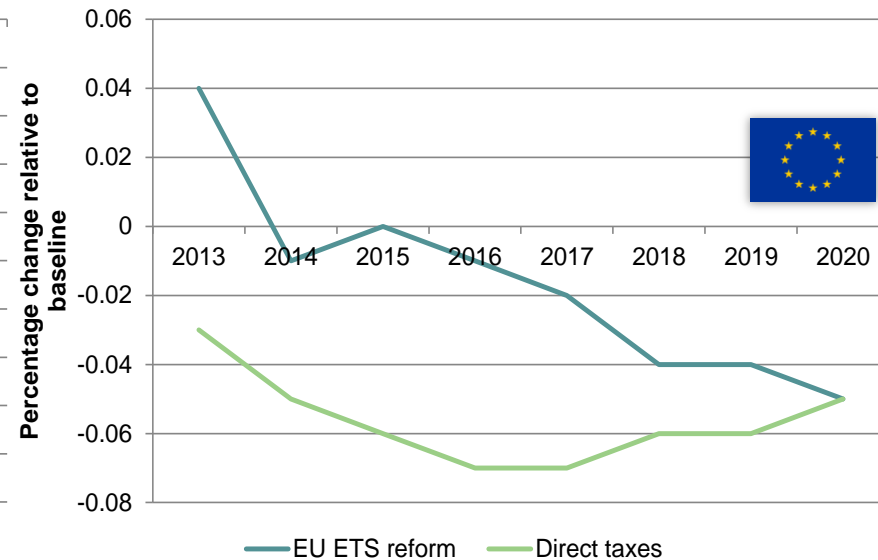
# The study also compares the impact of EU ETS tightening with other taxes

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

**Figure 7. Tightening the EU ETS cap has a smaller negative impact on EU GDP than raising the same revenues from direct taxes**



**Figure 8. And a less detrimental impact on employment**

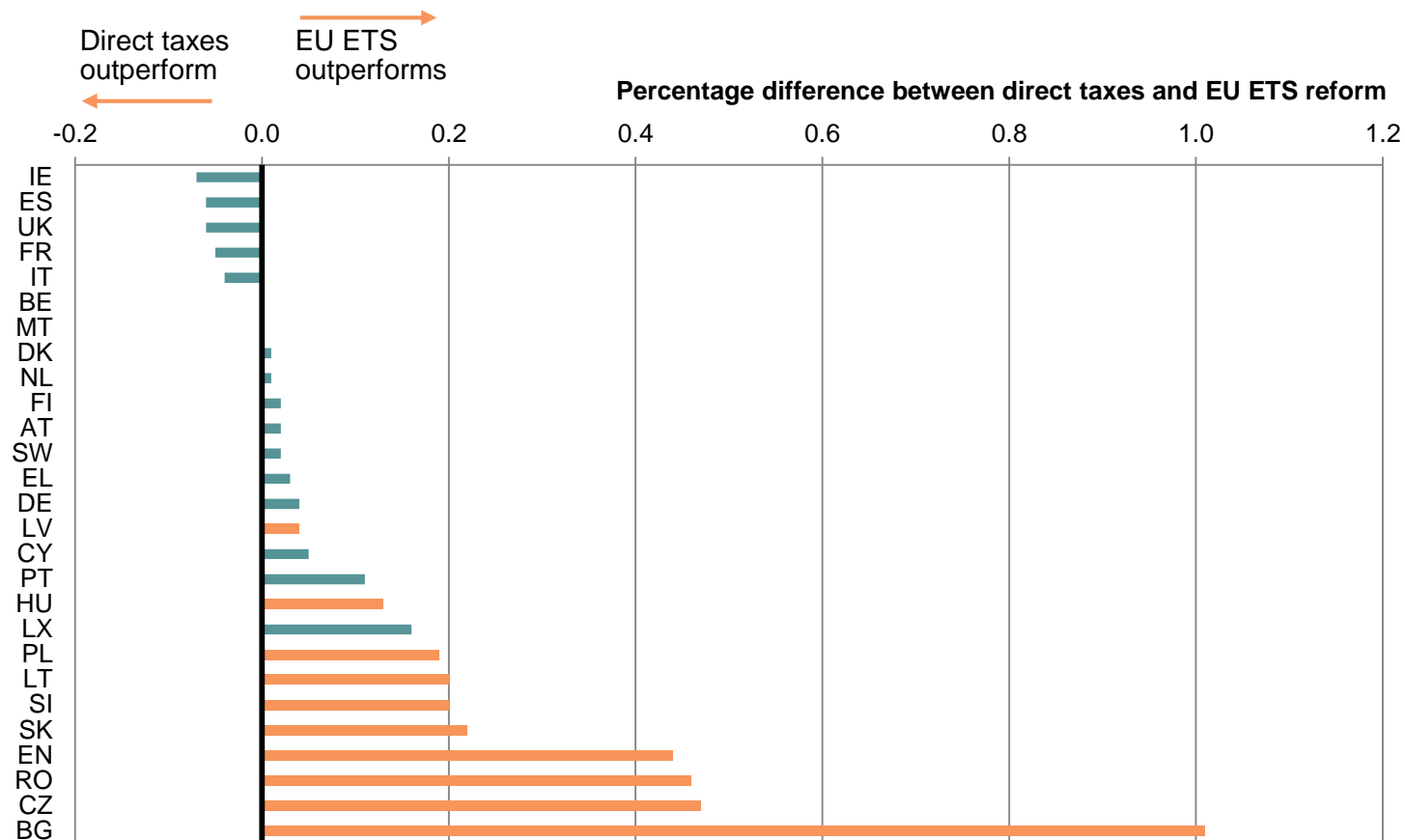


Source: Cambridge Econometrics E3ME model

# EU ETS tightening outperforms direct taxes in 20 member states of the EU

**With full auctioning and no redistribution, it would outperform in all member states**

**Figure 9. In many countries direct taxes reduce GDP by more than 0.2 per cent more than EU ETS reform**



Source: Cambridge Econometrics E3ME model

Note: New member states are shaded orange

# Two challenges have historically held back energy taxes

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

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## 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 morally difficult to deprive the poor of basic necessities like heating

# Both challenges can be addressed in the most part

## **Distributional impacts are relatively regressive, BCAs are a long run option**

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### EU ETS and business energy taxes: two options

- free allowances
  - increases profit, does not restore prices or output
- smart BCAs
  - can reflect principle of common but differentiated responsibility
  - adjust BCAs by country action and income group benchmark
  - limit BCAs to basic products where carbon cost is a substantial proportion of GVA

### Household energy taxes

- even if regressive, may not have as negative an impact on disadvantaged households as other taxes
- compensation
  - depending on pre-existing national institutions and data, distributional concerns can be addressed to a reasonable degree

# What are the approximate costs of compensation policy?

**For the three countries studied costs are in the region of 10 per cent of the new tax revenues**

The table below shows the compensation necessary to leave the poorest quintile in Hungary, Poland and Spain just as well off after the proposed reforms as before

This gives an indication of the **minimum** cost of alleviation policies; actual costs are likely to be higher, as the numbers below do not include administrative costs or provisions for support policies beyond the poorest 20 per cent

*Table 1. Income losses as percentage of new revenue are less than 10% in the three countries*

Income losses of poorest quintile due to respective energy tax reform packages (= amount of compensation necessary), relative to baseline scenario		
Country	€m	As per cent of country-specific ETR revenues
Hungary	60	6%
Poland	430	8%
Spain	715	7%

*Note: Actual alleviation policy may wish to target a group other than the poorest 20 per cent by income; these numbers are indicative*

*Source: Cambridge Econometrics E3ME model and Vivid Economics*

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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.

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