Environmental taxes and fiscal deficits

Assessment with the E3ME-Asia model

Hector Pollitt, Cambridge Econometrics

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Overview

- Background to the policy situation
- Previous assessment
- Application for East Asia
- Conclusions

Introduction

- There is a consensus amongst policy makers that carbon pricing is a necessary but not sufficient condition for decarbonisation (e.g. Grubb, 2014)
- Around 60 countries have or are considering carbon pricing of some description
- Two principal mechanisms exist:
  - carbon tax
  - Emission Trading Scheme (ETS)
- This presentation discusses the revenues that these mechanisms may generate

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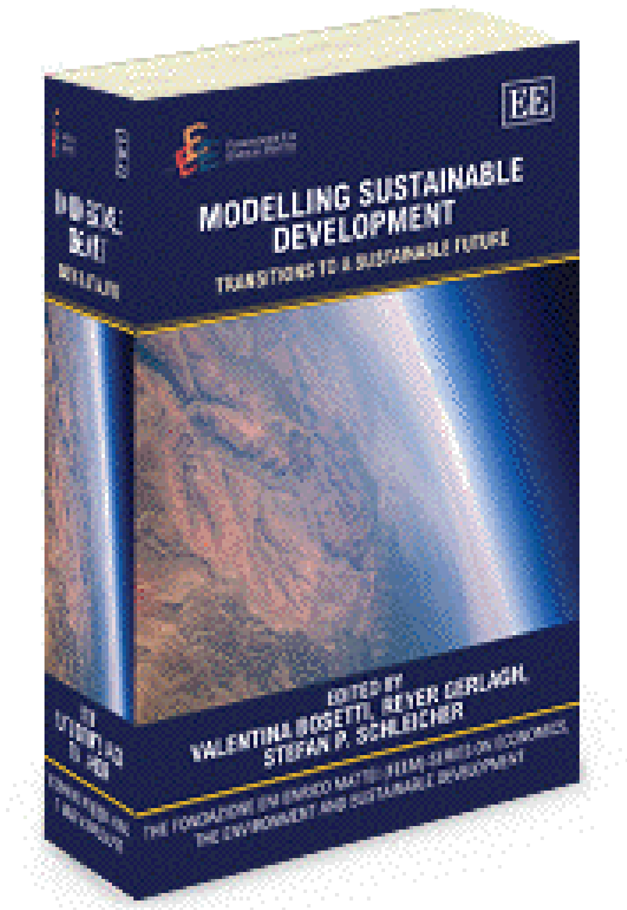
Environmental Tax Reform

- ETR is the introduction or increase of an environmental tax, compensated by a reduction in existing taxes
- Results from macroeconomic models show that the choice of which tax to reduce can have an important bearing on the overall results
- In particular, there has been a fierce debate over the existence of a possible ‘double dividend’

Environmental Tax Reform (cont)

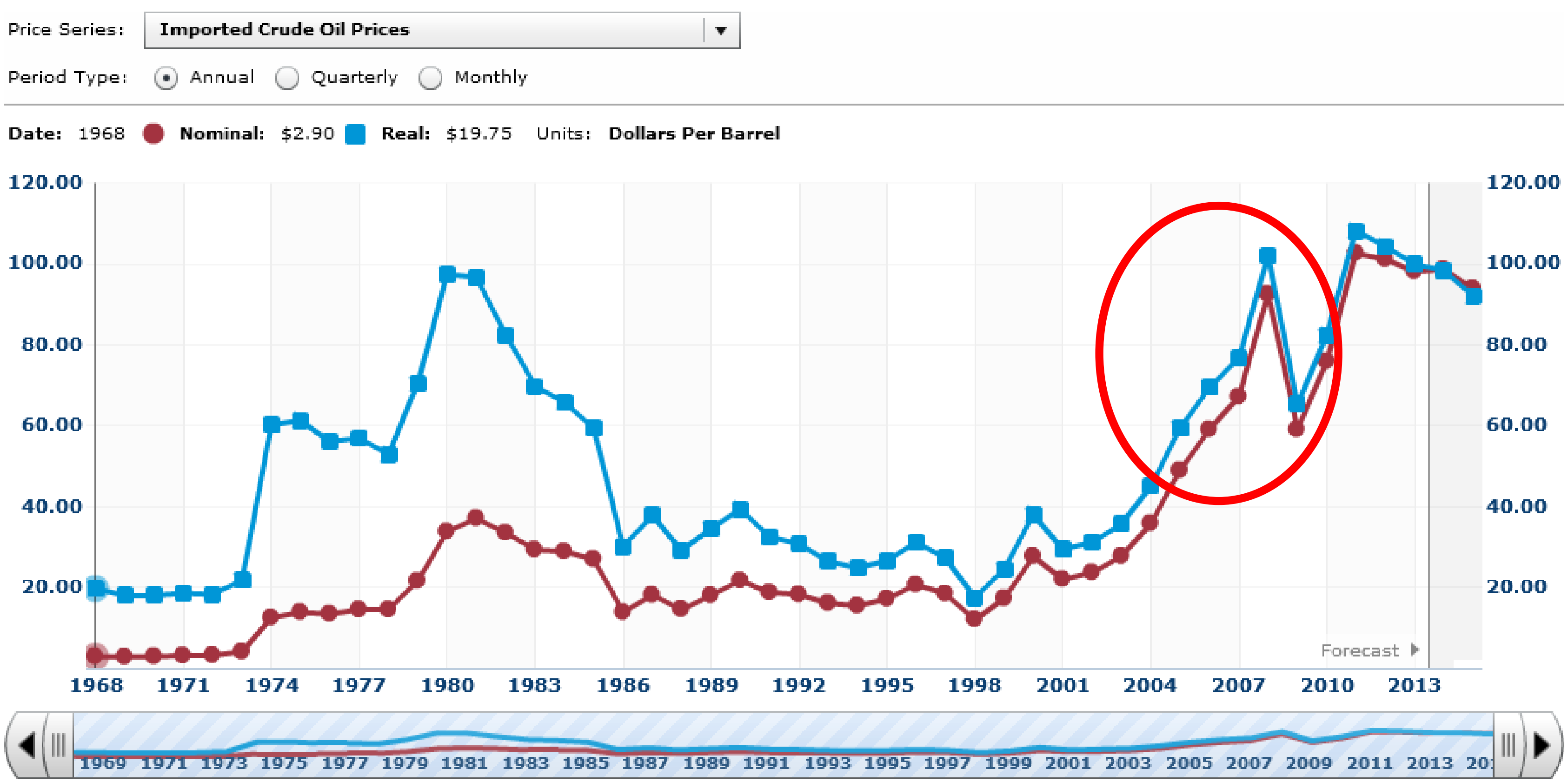


- Assessment with macroeconomic models (e.g. Chapter 7 here) has shown that the choice of tax to reduce can be a crucial determining factor of economic outcomes

Implementation of ETR

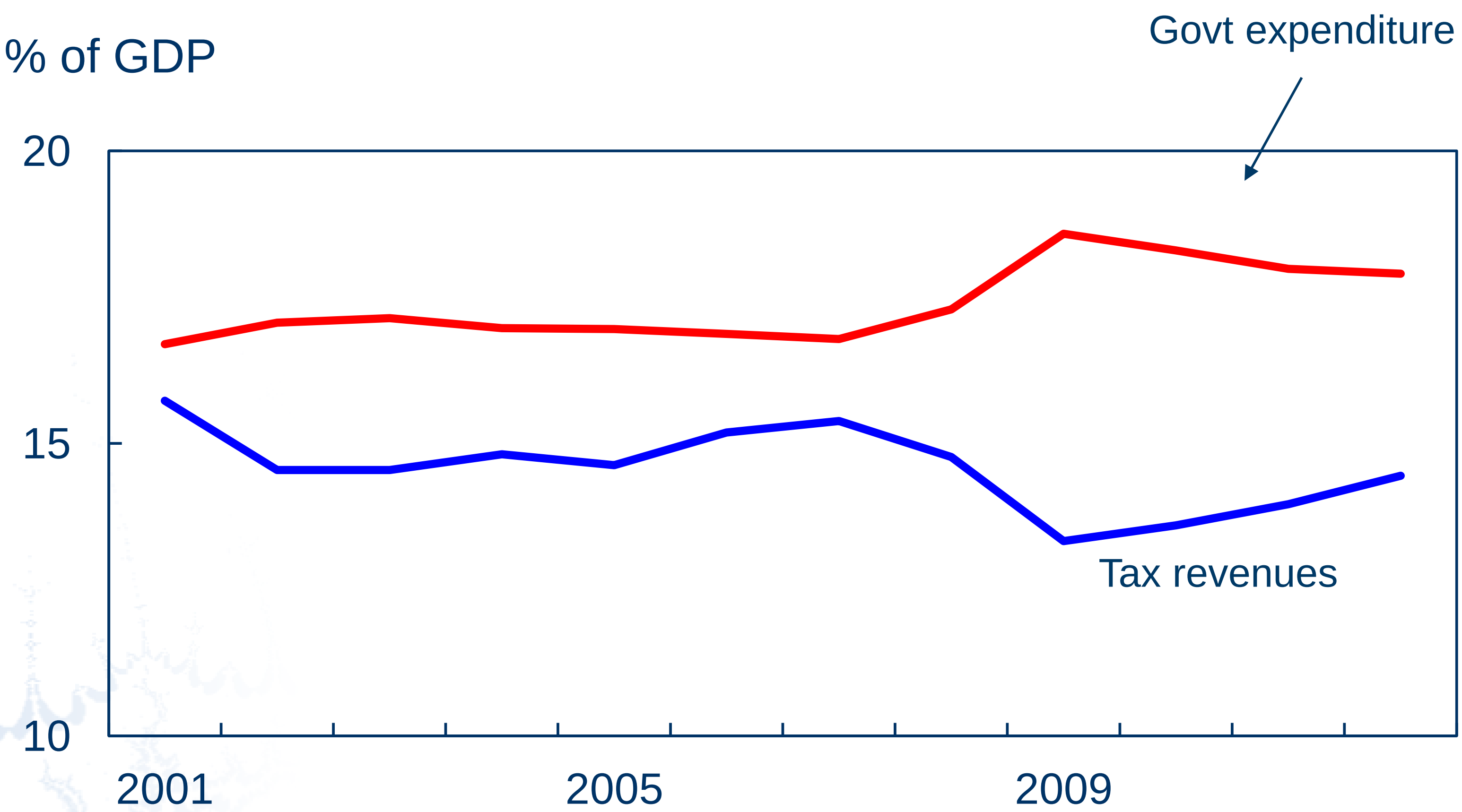
- A short history:
  - first introduced in Northern Europe in the early 1990s
  - never implemented at European level (ETS instead) but gradually grew in popularity at national level
  - many ETR's have exemptions for particular industries, showing the political nature of tax reform
  - revenues have been used for a variety of different purposes, including environmental measures (not strictly ETR) and many changes to general taxation
  - ETR can be complementary to renewables policy, energy efficiency standards and other environmental regulation

What happened next… energy prices



Source: US EIA, http://www.eia.gov/forecasts/steo/realprices/

What happened next… crisis!

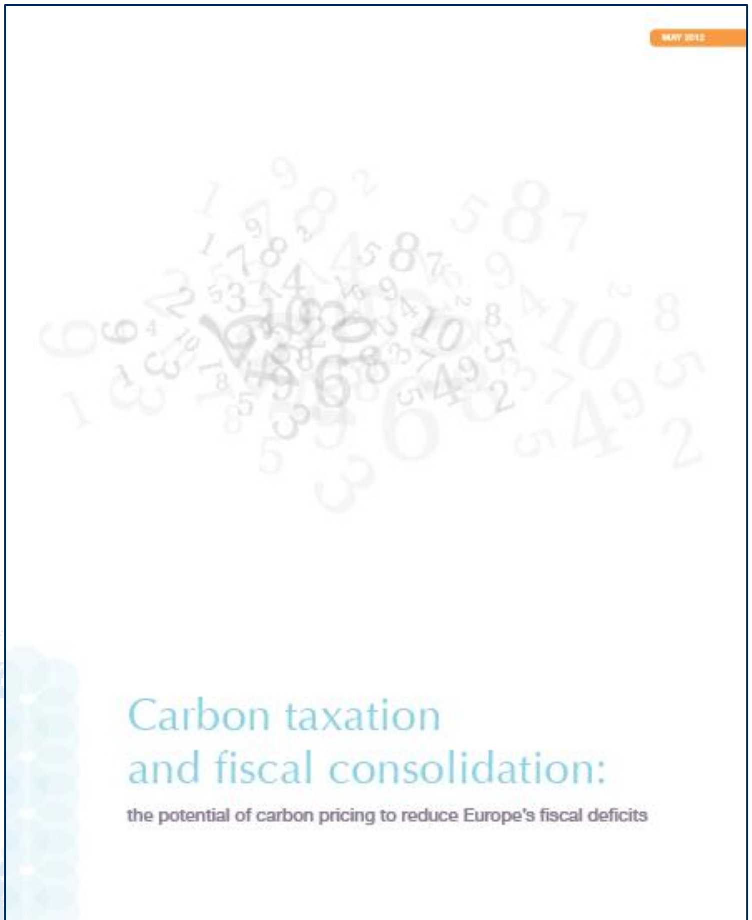


Source: World Development Indicators, World Bank

From ETR to ET…

- In 2009/10, many countries introduced fiscal stimulus packages to support their national economies
- But public deficits, which were widening anyway, meant many countries imposed austerity packages
- ETR was no longer feasible, the question became which tax to increase

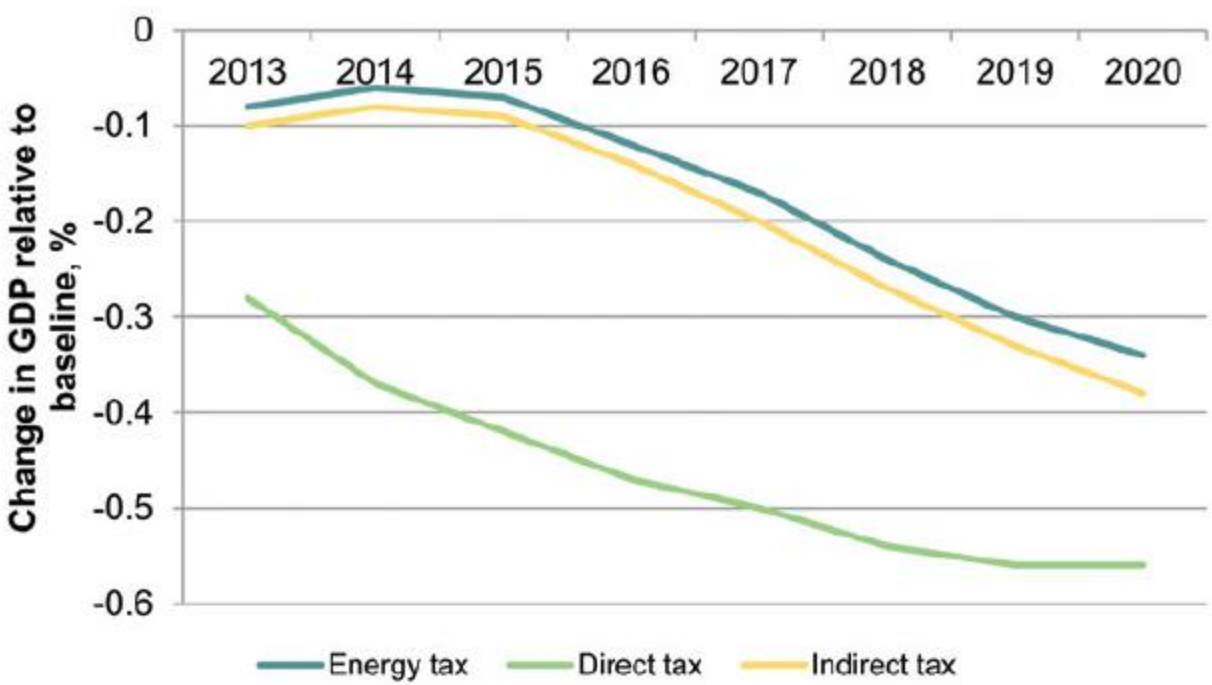
A major study in Europe


Carbon taxation
and fiscal consolidation:
the potential of carbon pricing to reduce Europe's fiscal deficits

- This report used the E3ME model to compare the effects of a carbon tax against alternative instruments
- Vivid Economics (2012)

Three Options were compared…

- The chart shows the impact on GDP in Spain for three different tax increases (same revenues)



Source: Vivid Economics (2012), using the E3ME model

Conclusions from the study

- Similar results were found for Poland and Hungary
  - all three countries benefit from reducing fossil fuel imports
- Employment follows a similar pattern
- The report concluded that:
  - *Carbon-energy taxes have generally been considered an instrument of environmental policy rather than fiscal policy, but it is time to reconsider that view.*

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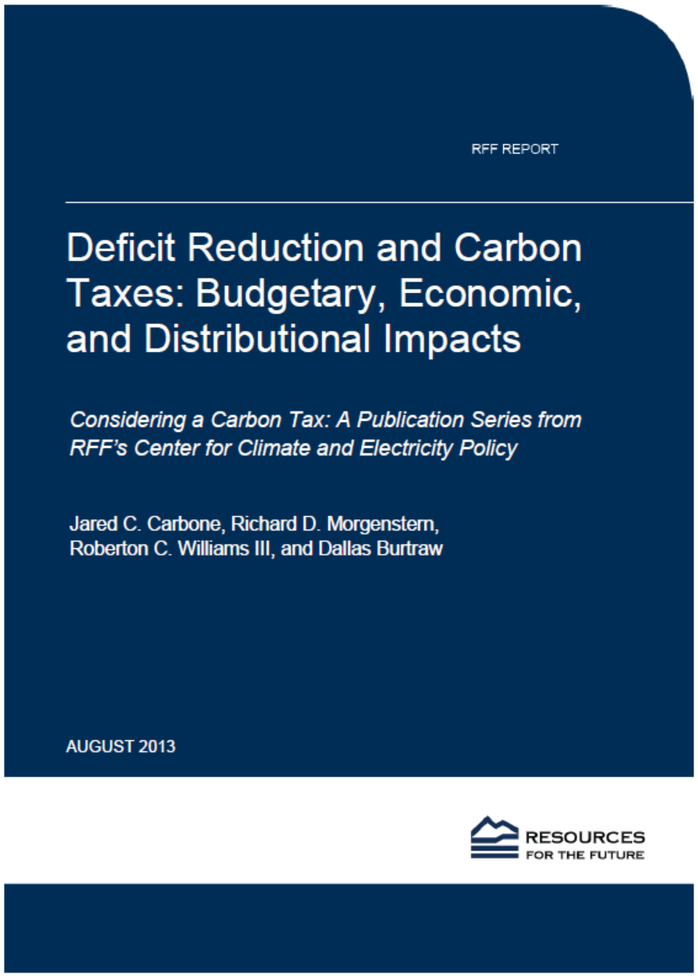
A major study in the US


RFF REPORT

Deficit Reduction and Carbon Taxes: Budgetary, Economic, and Distributional Impacts

Considering a Carbon Tax: A Publication Series from RFF's Center for Climate and Electricity Policy

Jared C. Carbone, Richard D. Morgenstern, Roberton C. Williams III, and Dallas Burtraw

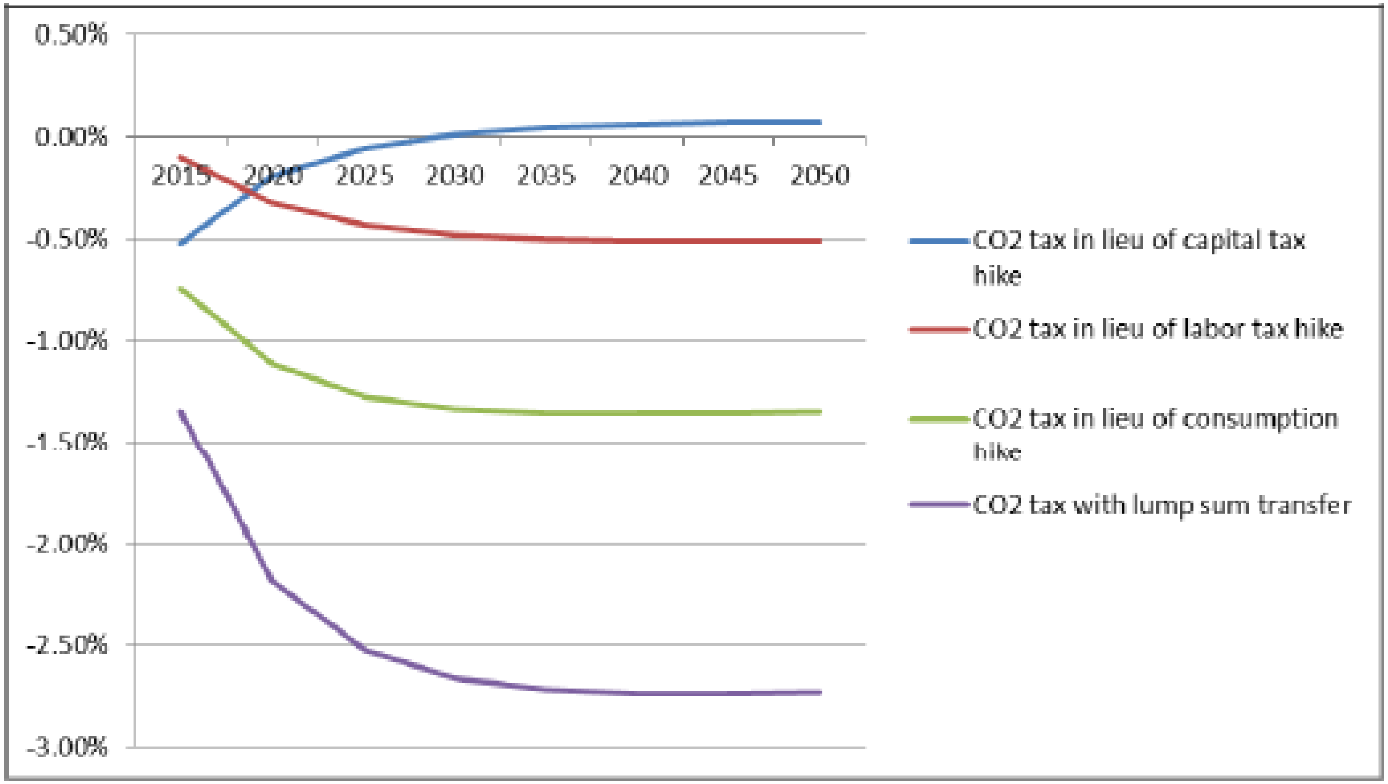
AUGUST 2013

RESOURCES FOR THE FUTURE

- This report used a CGE model to compare the effects of a carbon tax against alternative instruments
- By RFF in the US, Carbone et al (2013)

Carbon taxes and the US deficit

Figure 5. Percentage Difference in GDP of Debt-Reduction Scenarios with a \$30/ton CO_2 Tax Relative to Debt Reduction without a CO_2 Tax



Source: Carbone et al (2013)

Results from the study

- The CGE modelling found that a $30/tonne carbon tax has a slightly worse effect on GDP than increasing consumption or (especially) labour taxes, but the difference is very small out to 2050
- But emissions fall by around 16% with the carbon tax, compared to Business as Usual

Important differences in the studies

- The modelling approach was different:
  - the European study used a macro-econometric model, while the US study used a CGE model
- The US extracts energy so does not have the same benefits from reducing fuel imports
- The EU already has the ETS in place so there are some ‘rebound’ effects from reducing energy consumption in other ways

Turning to East Asia…

- Chapter 14 of E3 *Modeling for a Sustainable Low Carbon Economy in East Asia* will consider this issue for:
  - China
  - Japan
  - Korea
  - Taiwan

Source: Google Maps

Turning to East Asia… (cont)

- Each country has its own unique position regarding debts/deficits and the existing taxation system (including carbon pricing)
- A similar analysis will be carried out as for Europe, using the E3ME-Asia macro-econometric model
- The chapter will also draw on CGE model analysis
- Results will be available around September

Turning to East Asia… (cont)

- But we can draw some conclusions about expected results already:
  - carbon taxes have the potential to raise large amounts of revenues, at least at first
  - there could be net economic benefits to countries that are importers of fuels
  - overall the economic impact is likely to be not that much different to raising other taxes…
  - … but there are fairly large potential carbon savings, particularly in areas with high use of cheap coal

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