Carbon Taxes and Fiscal Deficits

Chapter 13

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Outline of the presentation

• Background
• Previous analysis in Europe and the US
• Scenarios
• Model results
• Conclusions
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

What happened next… crisis!

% of GDP

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

- 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.
A major study in the US

- 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

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
In East Asia…

Source: IMF
## Scenarios

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Revenues raised (% GDP, 2020)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reference case</td>
<td>CH 0.0</td>
<td>JA 0.0</td>
</tr>
<tr>
<td>S1</td>
<td>2.1</td>
<td>6.4</td>
</tr>
<tr>
<td>S2</td>
<td>2.1</td>
<td>6.4</td>
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<tr>
<td>S3</td>
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</tr>
<tr>
<td>S4</td>
<td>2.1</td>
<td>6.4</td>
</tr>
</tbody>
</table>
Results – China, GDP

carbon tax
labour tax
VAT
income tax
Results – Japan, GDP

carbon tax
labour tax
VAT
income tax
Results – Korea, GDP

carbon tax
labour tax
VAT
income tax
Results – Taiwan, GDP

carbon tax
labour tax
VAT
income tax
Conclusions

• There are some quite large national differences, particularly relating to labour markets and price movements

• Carbon taxes appear to come out quite favourably in most cases

• Remaining tasks:
  – a few results need to be checked further
  – consistency with other chapters (notably 10) needs checked