Empirical uncertainties in climate policy implementation

*International Climate Policy for the Long Term*

CCEP and CAMA Workshop

ANU

14 March 2012

David Pearce
‘Empirical Uncertainties in Climate Policy Implementation’
*The Australian Economic Review*
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In the long term..

- And on average…
- Policies are more successful when they have a very clear articulation of costs and benefits
- Policies falter particularly where benefits are not well articulated or costs are unanticipated
- Therefore…
- …worth exploring empirical uncertainties and their resolution
Research agenda…

- “…using a suite of models provides a natural hedge against the inherent uncertainty of economic modelling” (Treasury, Australia’s Low Pollution Future 2008)
- Analysing a wide range of scenarios provides a means of stress testing a policy proposition
- How can models help (hinder) with institutional development?
Empirical issues

- Understanding marginal cost of abatement
- ‘Model’ sensitivity
- Supply side sensitivity
- Demand side sensitivity
- Understanding adjustment mechanisms
- Non-price policies, policy interaction and optimal timing
- Understanding other country policies
Understanding Australia’s MCA
‘Model’ sensitivity

Different models produce different results because they focus on different mechanisms.
Investment as the major adjustment mechanism

Ratio: investment reduction to GDP reduction

GDP loss (relative to baseline)
Supply side sensitivity

What happens if not as many low cost permits are available on the international market?

Magnitude of sensitivity worth thinking about
Demand side sensitivity

What happens if world price remains lower than Australian administered prices?

Magnitude of foregone income worth thinking about
Adjustment and compensation

- Focus on effect of price increases on household budget.
- What about real wages effect?
- CGE versus I-O pricing model
- GE price effects smaller, but wage effects bigger. Which matters most?
### R&D and Investment Measures

How will these change optimal timing of abatement?

Successful investment will lower future MCA and lower optimal starting price

1% reduction in global MCA lowers optimal starting price by 30%

<table>
<thead>
<tr>
<th>Program/Merit</th>
<th>Amount ($m per year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean Energy Finance Corporation</td>
<td>1000</td>
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<tr>
<td>Australian Renewable Energy Agency</td>
<td>356</td>
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<td>Information grants</td>
<td>10</td>
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<td>Clean Technology Program</td>
<td>114</td>
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<tr>
<td>Small business asset write off</td>
<td>50</td>
</tr>
<tr>
<td>R&amp;D and investment measures</td>
<td>8</td>
</tr>
<tr>
<td>Food processing</td>
<td>25</td>
</tr>
</tbody>
</table>

**Figure:**

- **Clean Energy Finance Corporation**
  - **Renewable**
  - **General**

- **Australian Renewable Energy Agency**
  - Competitive grant funding for R,D,D and C

- **Small business asset write off**

- **Information grants**
  - Business and community groups

- **Clean Technology Program**
  - Investment grants to low emission capital equipment
  - Metal forging
  - Food processing
  - R&D in renewable and low emission technology
The cart before the horse?

Complementary measures already in place before we know the effect of the carbon price

<table>
<thead>
<tr>
<th>Measure</th>
<th>Number of Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy efficiency regulation</td>
<td>22</td>
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<tr>
<td>Government procurement</td>
<td>17</td>
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<tr>
<td>Information provision</td>
<td>17</td>
</tr>
<tr>
<td>Other subsidy</td>
<td>15</td>
</tr>
<tr>
<td>R&amp;D support</td>
<td>14</td>
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<tr>
<td>Government investment</td>
<td>11</td>
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<tr>
<td>Capital subsidy</td>
<td>9</td>
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<tr>
<td>Feed in tariff</td>
<td>6</td>
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<tr>
<td>Other regulation</td>
<td>6</td>
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<tr>
<td>Tax rebate</td>
<td>3</td>
</tr>
<tr>
<td>Electricity supply regulation</td>
<td>3</td>
</tr>
</tbody>
</table>

Number of measures in place
Understanding other countries

- World price most sensitive to the cost of abatement of the lowest-cost-abating country
- Australian outcomes may be more sensitive to costs in China, India and SEA than they are to the Australia cost of abatement
- Obvious where to focus empirical effort
Getting to the empirics

- There is a substantive empirical task ahead for the agencies in charge of implementation and review
- Enormous scope for useful data collection in the next few years
- Crucial that empirics is taken seriously
Thank you

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