Carbon Taxes

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Carbon Pricing Instruments

- Carbon Pricing Instruments (CPIs) are policy instruments that use markets, taxes and/or other economic variables to price carbon emissions.
- CPIs affect the relative cost of the decisions made by economic agents by putting an explicit or implicit price on carbon and forcing economic agents to internalize their external social cost.

- Eliminate fossil fuel subsidies
- Social Cost of Carbon in investment projects
- Internal carbon price in companies
- Emissions Trading Systems
- Carbon Taxation
Theory: Efficient level of carbon emissions

Efficient carbon price = optimum tax \( (t^*) \)

Price or Marginal Benefit/Cost

Marginal Benefit of emissions or the marginal cost of abatement

Efficient carbon emissions = \( (e^*) \)

Marginal cost of emissions or the marginal benefit of abatement

CO2 emissions
Theory: Efficient level of carbon emissions

Price or Marginal Benefit/Cost

Optimum Price?

Paris Targets

CO2 emissions

Theory: Efficient level of carbon emissions
Evolution of Carbon Pricing Instruments across the world
<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>US$/ton CO2e</th>
<th>Jurisdiction</th>
<th>US$/ton CO2e</th>
</tr>
</thead>
<tbody>
<tr>
<td>British Columbia</td>
<td>24</td>
<td>Japan</td>
<td>3</td>
</tr>
<tr>
<td>Chile</td>
<td>5</td>
<td>Mexico</td>
<td>1-3</td>
</tr>
<tr>
<td>Denmark</td>
<td>27</td>
<td>Norway</td>
<td>3-56</td>
</tr>
<tr>
<td>Finland</td>
<td>69-73</td>
<td>Portugal</td>
<td>8</td>
</tr>
<tr>
<td>France</td>
<td>36</td>
<td>UK</td>
<td>24</td>
</tr>
<tr>
<td>Iceland</td>
<td>12</td>
<td>South África</td>
<td>8,5</td>
</tr>
<tr>
<td>India</td>
<td>6</td>
<td>Sweden</td>
<td>132</td>
</tr>
<tr>
<td>Ireland</td>
<td>24</td>
<td>Switzerland</td>
<td>87</td>
</tr>
</tbody>
</table>
## Comparative advantages of carbon pricing instruments

<table>
<thead>
<tr>
<th></th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
</table>
| **Taxes** | • Easy to implement  
• Regulatory institutions already exist  
• MRV relatively simple  
• Immediately generates revenues  
• Everyone understands  
• Applicable to small facilities  
• Coherent with other policies e.g. more revenue, taxes of local pollutants | • Uncertainty in mitigation  
• Not flexible as a mechanisms of mitigation  
• More difficult to link  
• Politically difficult for private sector. |
| **ETS**  | • Clarity with respect to mitigation.  
• Allows for allowance trade, reduces mitigation costs.  
• Possible to link  
• Coherent with climate policies (inventories, registries) | • Difficult to implement  
• Requires more sophisticated MRV  
• High level of security in MRV  
• Requires new institutions  
• New regulatory entity  
• Distribution of allowances complex  
• Uncertainty in price. |
Comparison between Carbon Pricing Systems

CO2 Tax

ETS with strict property rights
Comparison between Carbon Pricing Systems

Actually a mechanism that fixes price and lets emissions adjust

CO2 Tax

ETS with strict property rights

Actually a mechanism that fixes emissions and lets price adjust
Specific design elements determine the nature of the CPI

- CO2 Tax
- CO2 tax with earmarking
- Revenue neutral CO2 tax
- CO2 taxes with offsets
- ETS with strict property rights

Countries: Chile, Mexico, Argentina, Colombia, B.C.

• The Subcommittee on Environmental Taxation issues is mandated to:

  • Assist developing countries in the area of environmental tax issues.
  • Pay particular attention to the application of carbon taxes.
  • Report current country practices, policy considerations and administrative issues.
The Handbook on Carbon Taxation

• Aimed to provide practical guidance on how to design and implement a carbon tax;
• Specific guidance for government officials of developing countries;
• Present (in a non-prescriptive way) why countries may choose carbon taxation among other instruments, and what are the options available;
• Intended also to provide a framework for policy makers of countries that are considering to implement fiscal measures for environmental protection.
Special characteristics of CO2

1. It’s a gas!: Emissions factors are accurate, no technical need for emissions measurement and control.
2. But also abatement (at least now) is not possible. CO2 must be reduced by changing processes or fuels.
3. Damage is global – Reduction in a ton of CO2 anywhere is beneficial to all.
4. Abatement/Reduction costs vary widely across jurisdictions
**Design Choices (Measurement)**

**Tax Base**
- **Approach**
  - Emissions
  - Fuels
- **Measure**
  - GHG
  - CO2
  - Fuels

**Advantages**
- Strengthen MRV system.
- Regulate sources.
- Facilitates move to ETS.
- Simple to implement
- No need for complex institutional infrastructure

**Disadvantages**
- Complex
- Need MRV
- More difficult to move to market instruments.
- No Reporting at source
Design Choices (Revenues)

Advantages
- Reduces costs to agents
- Promotes their environmental activities.
- Politically more feasible.
- Increase revenue for other development objectives

Disadvantages
- Less Revenue
- More complex
- Generates private interests
- Not understandable for stakeholders. Maybe less politically viable
Design Choices (Markets)

- Market mechanisms:
  - Let market determine price.
  - Reduce costs to economic agents.
  - Allow compliance flexibility.
  - Support other sustainable activities
Issues of concern

• Administration and implementation
• Equity
• Competitiveness
• Carbon Leakage
• Broader markets and trading?

• However you can start low, develop institutional infrastructure and move on
Institutional Infrastructure for more complex CPI

Institutions, Rules, Regulatory Frameworks and Practices that implement the CPI

Registry
• Registry of Facility potentially affected
• Establish reporting requirements
• Determine necessary information

Measurement
• Measurement methodologies protocols
• Eg. CEMS, Emission factors
• Base Lines (in the case of reductions)

Report
• Structure of Report
• Eg. Requires information, dates

Verification
• Verification System
• Standards required for verifiers

Trade/Offset
• System of Trades
• Emissions Registry
• Allowance registry
• Reduction Registry
• Establish reporting
Advantages of Broader Market

• Basic premise: Marginal damage is the same across jurisdictions, marginal abatement costs differ widely.
• Broader market will:
  • Reduces marginal costs of climate mitigation
  • Compliance flexibility
  • Facilitates spillovers and innovation across jurisdictions
  • Reduces leakage
  • Reduces administrative costs
# Taxes in America

<table>
<thead>
<tr>
<th>Jurisdictions</th>
<th>Carbon Taxes in America</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tax Charact.</td>
</tr>
<tr>
<td>Argentina</td>
<td>Part of fuels tax administration</td>
</tr>
<tr>
<td>Colombia</td>
<td>With earmarking and offsets</td>
</tr>
<tr>
<td>Chile</td>
<td>Based on technology and with local tax</td>
</tr>
<tr>
<td>México</td>
<td>Part of a broader reform commitment to move to ETS</td>
</tr>
<tr>
<td>British Columbia</td>
<td>Recycle revenues</td>
</tr>
</tbody>
</table>
Steps to move forward with CPI

• Reduce/Eliminate fossil fuel subsidies
• Introduce the social cost of carbon
• Introduce a carbon tax/ETS
  • Start low
  • Develop institutional infrastructure
  • Explore more complex market instruments
    • Offsets, compensations, etc.
• Explore broader markets
  • Common MRV systems
  • Converge carbon price eg. US$30/30 rule, or US$50/50
In Sum

• Carbon taxes are an essential policy instrument for climate change.
• Many advantages that go beyond price incentive.
• Varied design choices from simple to complex.
• Can start with low prices and move on from there.
• A broader market has significant advantages in reducing costs and reducing emissions.
• This is an essential policy instrument to comply with Paris Targets and beyond.
Thank you

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