Addressing Competitiveness Concerns from Carbon Pricing

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Free Rider Problem from Carbon Pricing Overstated
CO₂ Price Warranted by Domestic Environmental Co-Benefits, 2010

Source: Parry, Veung, and Heine (2014).
Leakage and Competitiveness: Some Basics

• Estimated leakage rates ≈ 5-20%
  • Mostly from changes in international fuel prices rather than firm migration
  • Helping vulnerable firms only addresses the latter effect

• But in principle leakage does not matter under Paris Agreement
  • If all countries were to meet their mitigation pledges

• Efficient resource allocation → closure of uncompetitive firms
  • But transitory assistance is needed
  • Political resistance
Industry Accounts for Modest Share of Emissions
Baseline projections of emissions by sector, 2030

Source: IMF staff estimates.
Burden of Carbon Taxation by Industry

$50/ton CO_2$ tax 2030

Source: IMF staff estimates.

The diagram illustrates the output-weighted average cost increase by quintile for different industries in various countries. The cost increase is shown for the most vulnerable 20%, 40%, 60%, 80%, and all industries combined. For example, industries such as cement and metals are listed as being among the most vulnerable.

Output-weighted average cost increase by quintile, percent:
- Most vulnerable 20% of industries
- Most vulnerable 40% of industries
- Most vulnerable 60% of industries
- Most vulnerable 80% of industries
- All industries

Countries included in the diagram are Canada, China, India, and the United States.

(For example, cement, metals)
International Carbon Price Floor

• Rationale
  • Complement to Paris Accord
  • Addresses competitiveness
  • Limited number of countries needed
  • Equitable (if developing countries have lower floor)
  • Flexible (could be met by tax, trading, regulations)
  • Effective
  • Trading provisions (“ITMOs”) may promote participation

Contribution to G20 CO₂ reduction in 2030 (from uniform carbon price)

G20 CO₂ reductions in 2030, alternative scenarios

Source: IMF staff estimates.
Operationalizing Price Floors

- Focus on ‘effective carbon price’
  - Accounts for incomplete coverage of pricing and energy taxes
  - Agree to increase effective price relative to baseline

Source: IMF staff estimates.
## Instruments for Offsetting Burdens on Trade-Exposed Firms

<table>
<thead>
<tr>
<th>Effectiveness at Addressing Competitiveness of Trade</th>
<th>Rebates for Direct/Indirect Emissions</th>
<th>Output-Based Rebate</th>
<th>Border Carbon Adjustments</th>
<th>General Corporate Tax Cut</th>
<th>International Carbon Price Floor</th>
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<tbody>
<tr>
<td>Compatible if carefully designed</td>
<td>Effective</td>
<td>Effective</td>
<td>Effective</td>
<td>Poorly targeted at exposed industries</td>
<td>Effective</td>
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<tr>
<td>Preserving Mitigation Incentives for Trade Exposed Industries</td>
<td>Removes all incentives</td>
<td>Maintains incentive for reducing emission intensity</td>
<td>Maintains all incentives</td>
<td>Maintains all incentives</td>
<td>Maintains all incentives</td>
</tr>
<tr>
<td>Revenue Loss from Instrument</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Increases revenue</td>
<td>Large cost</td>
<td>na</td>
</tr>
<tr>
<td>Added Administrative Burden</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Need to identify industries and monitor their output</td>
<td>Need to identify imported products and measure their embodied carbon</td>
<td>na</td>
</tr>
<tr>
<td>Compatibility with World Trade Organization Rules</td>
<td>Compatible if carefully designed</td>
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<tr>
<td>Compatibility with Paris Agreement</td>
<td>Compatible</td>
<td>Compatible</td>
<td>May penalize countries using indirect pricing</td>
<td>Compatible</td>
<td>Compatible</td>
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Carbon Pricing vs. Indirect Pricing

• If higher energy prices are difficult, indirect pricing may be preferred
  • No pass through of revenues in higher energy prices

• Regulations—energy efficiency, generation emission rates, etc.
  • Mimic many responses of pricing
  • But inflexible and difficult to coordinate across sectors

• Feebates more promising
  • Sliding scale of fees/rebates on activities/products with above/below average emission rates
  • E.g.: generators pay tax on \( (\text{CO}_2/\text{kWh} - \text{industry average CO}_2/\text{kWh}) \times \text{output} \)
Costs of Alternative Mitigation Instruments
$50 Carbon Tax, United States, 2030

• Productive revenue use contains costs of carbon pricing

Source: IMF staff estimates.
Assistance for Vulnerable Workers/Communities is Needed

• Workers
  • Unemployment benefits, retraining, relocation
  • Costs <2% of $50 carbon tax revenues (China, India, UK, US)

• Communities
  • Assistance for reclaiming abandoned mining/drilling sites
  • Temporary budget support for local job creation

Impact of Carbon Pricing on Coal Sector Employment, $50 tax in 2030

Source: IMF staff estimates.
Concluding: Role for Coalition

• Sharing experiences
  • Instruments for offsetting burdens on industry
  • Worker and community assistance programs

• Fleshing out practicalities of price floors