Options for Mitigating Adverse Carbon Tax Impacts on EITE Industries

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What is Competitiveness?

• Increase in production costs of domestic firms from carbon tax, likely affecting industrial prices, profits, output and employment

• Recent modeling suggests impacts up to 3-4% for particular industries for $15 tax, although average EITE is 0.5% in short run and 1% in long run (sensitive to size of coalition.
What is Leakage?

• Shift in economic activity to nations with weak or no comparable carbon tax.

• Two principal avenues:
  ▪ Reduction in net exports
  ▪ Increases in foreign carbon intensity via fuel price changes

• Recent modeling finds leakage rates 5-20%, although sensitive to size of coalition
What is EITE?

- H.R. 2454 definition focused on manufacturing industries:
  - At least 5% energy or CO$_2$ intensive and 15% trade intensive or
  - At least 20% trade intensive
  - Petroleum refining excluded from definition but receives comparable benefits
- EPA has identified 43 presumptively eligible industries
- Petition process also to be established
Options for Mitigating Impacts Under Carbon Tax

• Strong international action best way to address both competitiveness and leakage

• Other options considered
  ▪ Partial or full exemption from tax
  ▪ Some form of output based rebates
  ▪ Border carbon adjustments
Partial or full exemption from tax

- Mechanics of exemption straightforward for both upstream and downstream tax schemes
- Principal advantage is protection of vulnerable industries
- Principal disadvantage is inefficiency and cost of higher carbon tax needed to achieve given revenue or emissions goal
- Likely to involve cross industry equity issues
- Clinton Btu tax offers lessons of political hazards of exemptions
Output based rebates

• Key is that rebates are tied to firms’ domestic output
• Reduces competitiveness impacts but maintains incentives to reduce carbon intensity
• H.R. 2454 uses sector-wide carbon intensity as benchmark
• EU scheme less generous: based on top 10%
Output Effects on EITE Industries of a Unilateral $15/Ton Carbon Tax, with and without Rebates

% Change in Output

-4.50 -4.00 -3.50 -3.00 -2.50 -2.00 -1.50 -1.00 -0.50 0.00 0.50 1.00 1.50 2.00 2.50 3.00 3.50 4.00 4.50

Short-Run No Rebates
Short-Run Rebates
Long-Run No Rebates
Long-Run Rebates

Food, Beverages, and Tobacco
Textiles
Wood
Paper and Publishing
Petroleum and Coal Products
Chemicals, Rubber, and Plastics
Non-Metallic Mineral Products
Ferrous Metals
Nonferrous primary metals

RESOURCES
FOR THE FUTURE
WTO Subsidies Code limits design options for rebates

- Rebates directly tied to firm output and sector benchmark likely illegal WTO subsidy
- Embedding rebate in the determination of tax base for EITE sectors may be more WTO compatible. A too generous base may require tax refundability.
- Tax exemption combined with tradable performance standard for EITE industries is another option, possibly allowing sale of excess credits, or payment of tax as alternative compliance
Border carbon adjustments

• Most effective method of addressing leakage
• Import adjustments require importers to pay equivalent carbon tax
• Full border adjustment would add relief for exports, although H.R. 2454 did not include it
• Important design issues tied to WTO (and UNFCCC) focus on leakage, not competitiveness:
  ▪ Which products?
  ▪ Include embodied emissions?
  ▪ How to reflect local carbon regulations?
  ▪ Exemptions for some exporting countries?
Tuning the design of BCA

- Focus exclusively on qualified EITE sectors to ensure benefits of reduced leakage outweigh administrative costs
- Probably use default as opposed to actual measure of embodied emissions
  - Use of foreign benchmarks creates strongest incentives for efficiency, emission reductions
  - Domestic benchmark easiest to implement but also least stringent
- Need to account for output based rebates in calculating size of BCA
- Need strategy for exemptions compatible with UNFCCC goal of “common but differentiated responsibilities; trans-shipment of goods
Cross cutting observations

- Both exemptions and output based rebating reduce net revenue and increase overall costs.
- Exemption approach is clearly least efficient b/c it foregoes incentives for emission reduction in unregulated sectors. Yet, some studies find the costs of this strategy are small.
- Output based rebating retains incentive effects of carbon tax while keeping product prices low, thus reducing competitiveness losses.
  - B/c it discourages conservation of energy intensive goods, is most suitable for sectors sensitive to international trade.
  - Most appropriate for small coalition; efficiency costs grow with size of coalition.
Cross cutting observations (2)

- Full BCA (including exports) most effective for both competitiveness and leakage concerns
- Fischer and Fox (2012) find that OBR may be more effective in reducing leakage than BCA of imports only
- In terms of global welfare, import BCA achieves most of the benefits of full BCA. However, BCA in general involves most shifting of burdens to developing nations
- Especially with small coalition, OBR is a middle ground
Leakage rates by sector and policy option

Based on Fischer and Fox (2012 *JEEM*)
Conclusions

- Headlines say competitiveness or leakage impacts are huge; modeling suggests more modest effects
- Most promising alternatives are OBR and CBA
- Devil is largely in the details of the design, especially with respect to WTO issues
Thank you