

# **WTO-Compatible Border Tax Adjustments to Mitigate Climate Change: One Price for Carbon?**

**Ian Sheldon  
(The Ohio State University)**

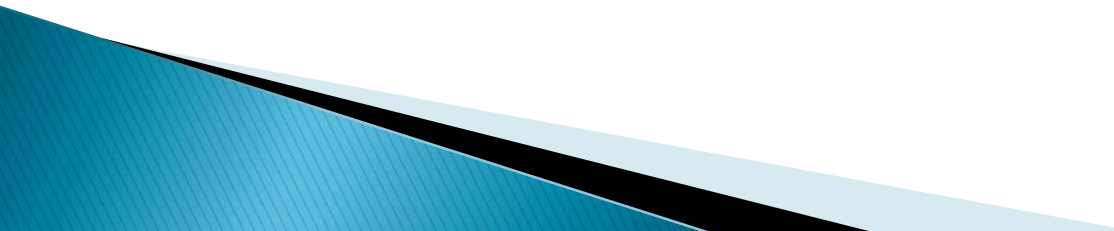
**Presentation prepared for Track Session, “One Price for Carbon? International Coordination of Climate Change Policies”, AAEA Annual Meetings, Pittsburgh, PA, July 24-26, 2011**



DEPARTMENT OF  
AGRICULTURAL, ENVIRONMENTAL,  
AND DEVELOPMENT ECONOMICS

[aede.osu.edu](http://aede.osu.edu)

# Climate Policy and Free-Riding

- Literature on climate agreement outlines conditions for self-enforcing coalition, e.g., Barrett (1994), Dutta and Radner (2007), Mason et al. (2010)
  - However, incomplete participation in any international climate agreement likely to continue
  - Without legal enforcement, incentive to free-ride on reduction in emissions by coalition – *carbon leakage*
  - In presence of free-riding, what might efficient climate policy look like?
- 

# Efficient Climate Policy and Free-Riding

- Focus on interaction between carbon taxes and trade policy instruments, e.g., Hoel (1996)
- First-best: combination of uniform carbon tax, and import tariffs/export subsidies on energy-intensive traded goods
- Trade policy arguments could be made against use of import tariffs and export subsidies to offset carbon tax
- Ignores old discussion about *destination vs. origin* systems of taxation and use of border tax adjustments (BTAs) (Lockwood and Whalley, 2010)

# Equivalence of Taxation Systems

- **Destination principle of taxation requires BTAs, i.e., offsetting tax on imports and rebate of taxes on exports, while origin principle requires no BTAs**
- **Equivalence of taxation systems analyzed by: Johnson and Krauss (1970), Whalley (1979), Grossman (1980), and Lockwood et al. (1994), and Hufbauer (1996)**
- **No real effects if: uniform tax, flexible prices/exchange rates, and inelastic/immobile factor supplies**
- **Analysis has informed legal status of BTAs under GATT/WTO rules – GATT Articles II, III, VI and XVI**

# Equivalence of Taxation Systems


## Origin vs. Destination Principles of Taxation

	Destination Principle (b=t)		Origin Principle (b=0)	
	Import	Export	Import	Export
Home consumer price	$P_1^*(1+t)$	$P_2^*(1+t)$	$P_1^*$	$P_2^*$
Home producer price	$P_1^*$	$P_2^*$	$P_1^*/(1+t)$	$P_2^*/(1+t)$

$P_i^*$  = foreign price;  $P_i^p$  = home net-of-tax producer price, and  $P_i^c$  = home consumer price; if domestic  $t$  is applied, and  $b=BTA$ , where  $b=0$  under *origin* basis and  $b=t$  under *destination* basis:

- (i) Domestic consumer prices:  $P_1^c = P_1^*(1+b)$ ;  $P_2^c = P_2^*(1+t)/(1+t-b)$
- (ii) Domestic producer prices:  $P_1^p = P_1^*(1+b)/(1+t)$ ;  $P_2^p = P_2^*/(1+t-b)$

# Carbon Taxes and BTAs – Efficient?

- Literatures on climate policy, and taxation imply combination of uniform carbon tax and BTAs on traded energy-intensive goods will be efficient
  - Unlikely conditions for first-best will be met:
    - BTAs on imports targeted only at sub-set of industries
    - BTAs on exports not included in proposed legislation
    - basis for calculating BTAs may be non-neutral
  - As a consequence, equivalence results from taxation literature may be violated (Lockwood and Whalley)
- 

# Conclusions

- **In principle, taxation can be designed to address public bad in presence of free-riders with no real effects, but actual application unlikely to be neutral**
  - **CGE modeling: both Dong and Whalley (2009) and Mattoo et al. (2009) find real effects**
  - **Even if BTAs for domestic carbon taxes are WTO-consistent, strong potential for trade-distortion**
  - **Reinforces need for inclusive, binding international climate agreement to create one price for carbon**
- 