The Macroeconomics of Border Taxes

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Border Adjustment Taxes

Border Adjustment: tax imports and exempt exports

- Corporate Border Adjustment Tax (C-BAT)...Ryan-Brady proposal
  
  "While we have debated the pro-growth benefits of border adjustability, we appreciate that there are many unknowns associated with it…"

  Joint statement on tax reform, July 2017

- Value Added Tax (VAT)
Border Adjustment and Protectionism

- Border adjustment often perceived as protectionist
- Ironically, border adjustment *undoes* protectionism
- Consequence of Lerner symmetry (1936)
- VAT without export rebate = export tax = import tariff (inelastic labor)
- \( \text{C-BAT} = \text{corporate tax} \implies \text{C-BAT introduction is neutral} \)
Conditions for Lerner Symmetry

1. Flexible prices
2. Trade balance

- Skepticism about underlying price changes in GE
- Conditions violated in practice
- More general conditions for neutrality (no real effects)?
- Effects when neutrality violated?
Conditions for Neutrality in Open-Economy NK Model

- Conditions for neutrality of C-BAT:
  1. Symmetric pass-through for taxes and exchange rates
  2. All international assets in foreign currency
  3. Monetary policy targets inflation + output gap, not exchange rates
  4. Applies uniformly to all imports and exports.
  5. One-time unanticipated

- For VAT, more stringent condition: inelastic labor supply or fully rigid wages
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Conditions for C-BAT neutrality

1. Prices respond identically to border taxes and exchange rates
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**Producer Currency Pricing (PCP)**

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$\downarrow E$ means $\$ appreciation. Starred prices are expressed in foreign currency
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Complete appreciation: $E = (1-\tau)E_0 \Rightarrow$ consumer prices unchanged
# Conditions for C-BAT neutrality

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**Complete appreciation:** \(\mathcal{E} = (1-\tau)\mathcal{E}_0\) \(\implies\) consumer prices unchanged
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Dominant Currency Pricing (DCP)

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- 97% of US exports and 93% of US imports priced in dollars
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- 97% of US exports and 93% of US imports priced in dollars
2. All international assets and liabilities in foreign-currency bonds

\[ B_{t+1}^* - (1 + i_t^*)B_t^* = \frac{(1 - \tau)}{E_t} P_{x,t} X_t - P_{m,t}^* M_t \]

\( B^* \): Foreign denominated debt. \( E \): Dollars per foreign currency. \( X \): exports. \( M \): imports.
Conditions for C-BAT neutrality

2. All international assets and liabilities in foreign-currency bonds

\[
\frac{B_{t+1}}{E_t} - \frac{(1 + i_t)B_t}{E_t} + B^*_t - (1 + i^*_t)B^*_t = \frac{(1 - \tau)}{E_t} P_{x,t}X_t - P^*_{m,t}M_t
\]

- 82% of US liabilities are in dollars
- 32% of US assets are in dollars

Wealth Loss: \( \frac{B_0}{GDP} \cdot \frac{\Delta E}{E} \% = -1.09 \cdot \frac{\Delta E}{E} \% \)

\(B^*\): Foreign denominated debt. \(E\): Dollars per foreign currency. \(X\): exports. \(M\): imports.
Quantitative Effects of C-BAT

**Output**

- DCP
- PCP
- DCP with VE

**Exchange Rate ($ per foreign)**

- DCP
- PCP
- DCP with VE

**Exports**

- DCP
- PCP
- DCP with VE

**Imports**

- DCP
- PCP
- DCP with VE
Wealth and Revenues

Valuation Effect
- 16% of GDP wealth transfer from US to world (1.09 \cdot 0.15)

Fiscal Revenues
- Proportional to trade balance path
- Short-run: +0.4 p.p. of GDP
- Net Present Value: −15p.p. of GDP
Conditions for VAT neutrality

1. Complete pass-through of VAT into prices in the short-run

   **Import** vs. Domestic Price: \( \frac{P_{m,0}/(1-\tau)}{P_0/(1-\tau)} \)

   **Export** vs. Foreign Price: \( \frac{P_{x,0}}{\varepsilon_0 P^*_0} \)

2. **Inelastic labor supply or fully rigid wages**
   — Otherwise distortion of labor-leisure condition
Quantitative Effects of VAT

Output

Exchange Rate ($ per foreign)

Exports

Imports

DCP  PCP  Inelastic Labor
Conclusions

- **Neutrality** conditions for C-BAT and VAT **unrealistic**

First-quarter impact of 20% tax

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<th>VAT</th>
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<tr>
<td>Trade Volume</td>
<td>-30%</td>
<td>-4%</td>
</tr>
<tr>
<td>Output</td>
<td>+2%</td>
<td>-5%</td>
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<td>$ Appreciation</td>
<td>15%</td>
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- **C-BAT**
  - **Valuation effect** to world: 16% GDP
  - **Fiscal revenues**: short term +0.4p.p. GDP; in NPV -15p.p. GDP