Tariff Binding Overhang: Theory and Evidence

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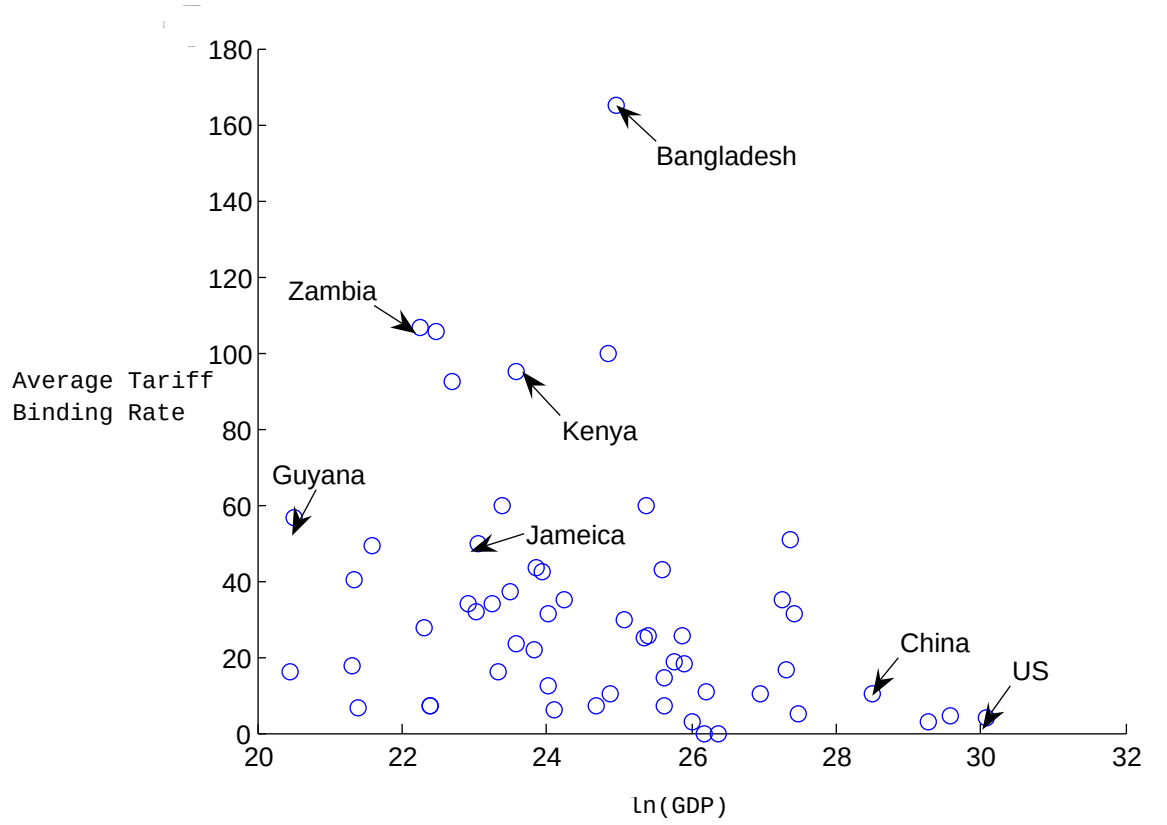
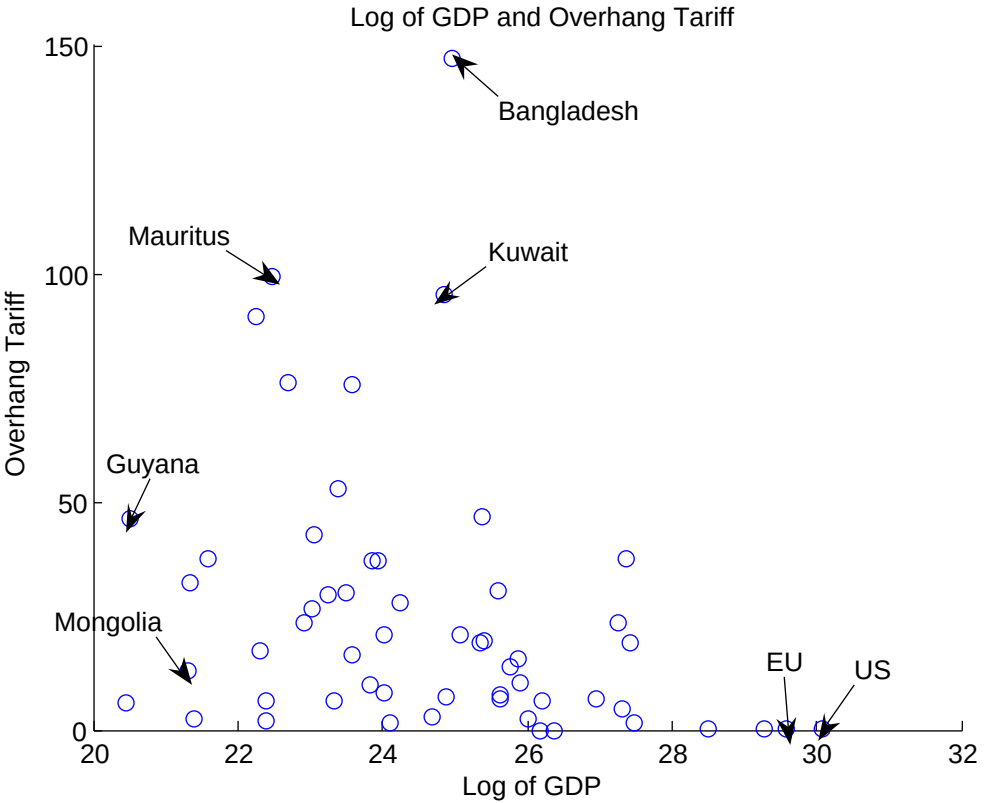
Applied Tariff below Binding	117,258	64.7	1.36e+12	23.8
Strong Binding	29,197	16.1	3.72e+12	65.0
Unbound	34,810	19.2	6.40e+11	11.2
Total	181,265	100	7.062+12	100


Average Tariff
Binding Rate
180
160
140
120
100
80
60
40
20
0
20
22
24
26
28
30
32
ln(GDP)
Bangladesh
Zambia
Kenya
Guyana
Jameica
China
US


Log of GDP and Overhang Tariff
Overhang Tariff
Log of GDP
150
100
50
0
20
22
24
26
28
30
32
Bangladesh
Mauritus
Kuwait
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- WTO members have retained substantial flexibility in choosing their import tariffs.

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  - Liability System (break and compensate; e.g.: GATT escape clause)

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- Asymmetric Tariff Commitments:
  - Global efficiency requires lower tariff bindings in countries with larger import markets.

Literature on Flexible Trade Agreements

- **Tariff bindings:**
  - Bagwell (2009)
  - Amador and Bagwell (2010)
- **Contingent Protection:**
  - Beshkar (2008, 2010 EER, 2010 JIE)
  - Maggi and Staiger (2011 QJE)
- **Bindings and contingent protection:**
  - Bagwell and Staiger (2005 JLS)
- **Transaction costs:**
  - Horn, Maggi and Staiger (2010 AER)
  - Beshkar and Bond (2010)

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- Ad Valorem Import Tariffs, t: $p = p^*(1+t)$.

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where, C: consumers' surplus, π: producers' surplus, m: import demand.

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- θ is distributed according to pdf $f(\theta)$ with a compact support of $[\underline{\theta}, \bar{\theta}]$. We assume uniform distribution.

Cooperation vs. Non-Cooperation

- Joint welfare:

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- Non-cooperative vs. Cooperative tariffs:

$$\begin{aligned} t^N(\theta) &= \arg\max_t V(t;\theta), \\ t^E(\theta) &= \arg\max_t W(t;\theta), \\ t^N(\theta) &> t^E(\theta). \end{aligned}$$

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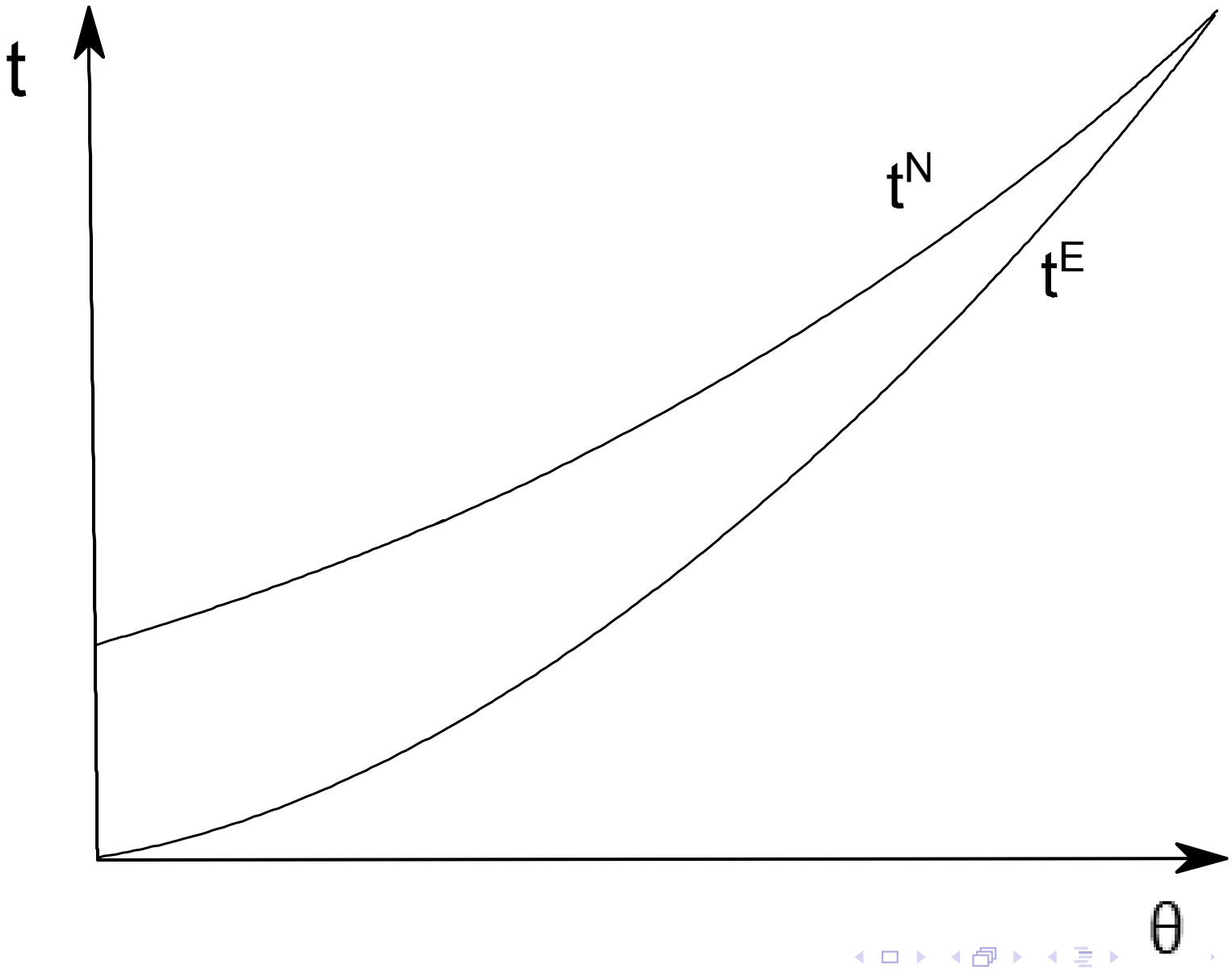
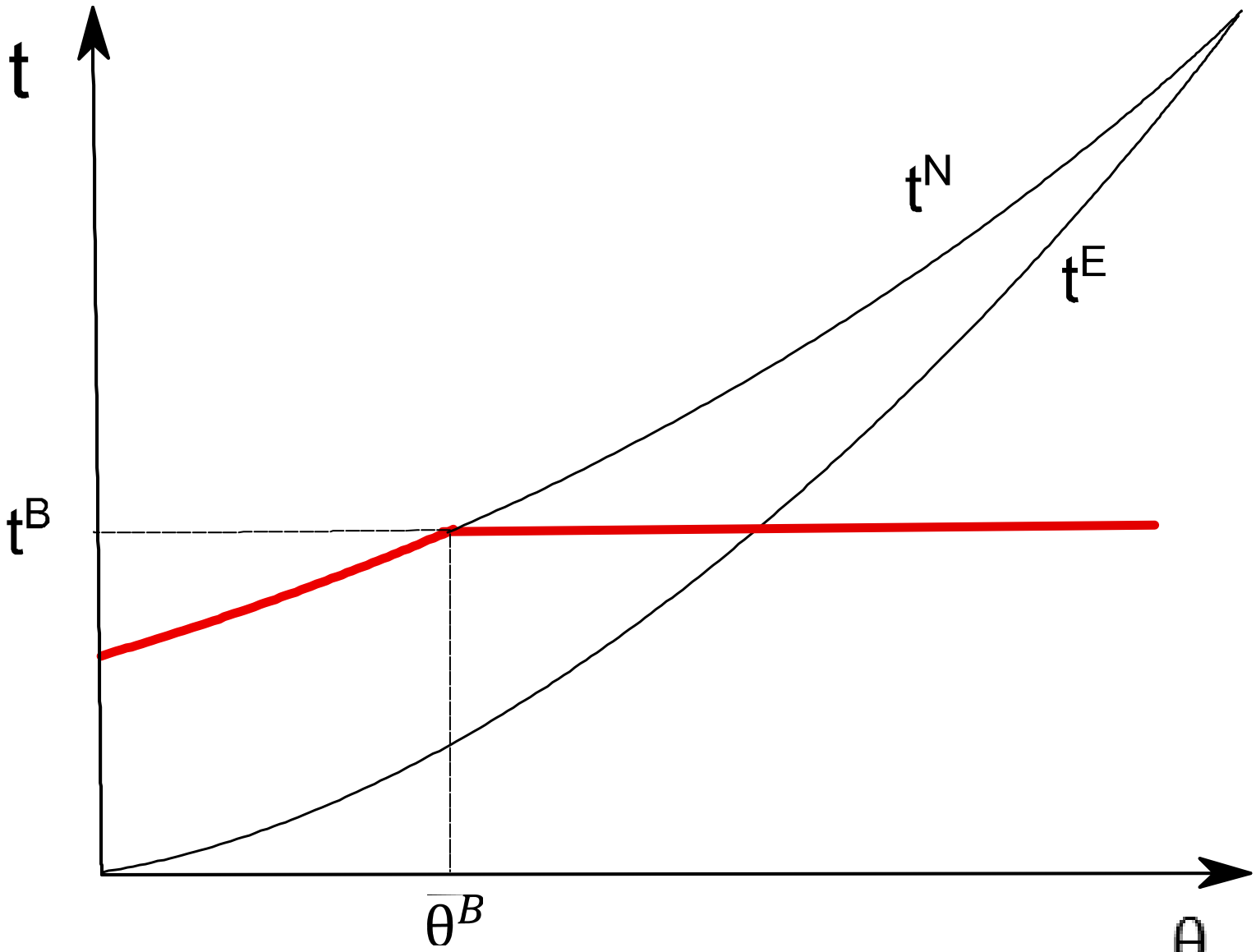
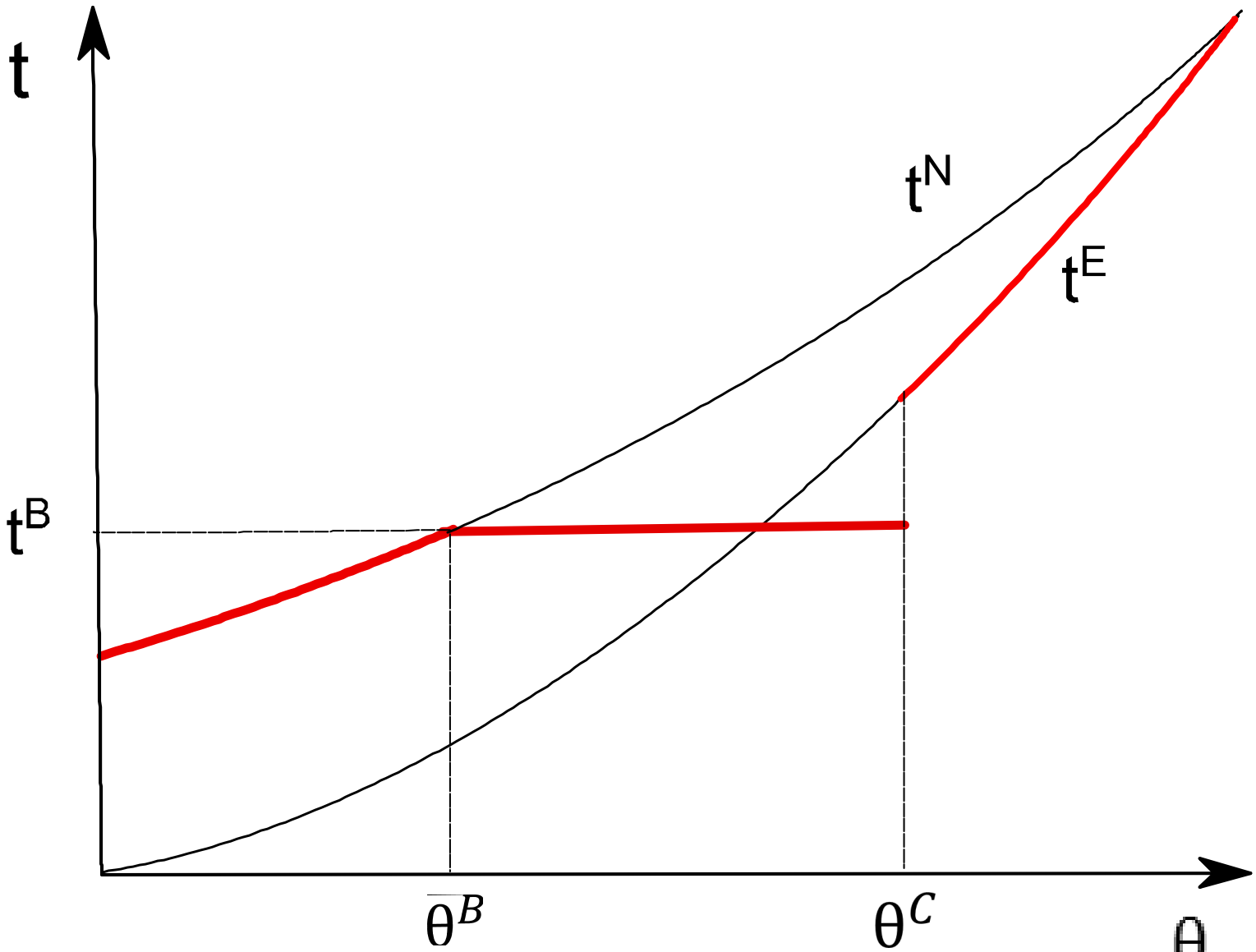


Binding vs. Applied Tariffs



Cap-and-Escape (Beshkar and Bond 2010)



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- Joint-welfare maximization problem:

$$\max_{t^B} \int_{\underline{\theta}}^{\theta^B} W(t^N(\theta);\theta) f(\theta) d\theta + \int_{\theta^B}^{\bar{\theta}} W(t^B;\theta) f(\theta) d\theta$$

where θ^B is implicitly defined by

$$\begin{aligned} t^N\left(\theta^B\right) &= t^B \text{ if } t^B \geq t^N\left(\underline{\theta}\right), \\ \theta^B &= \underline{\theta} \text{ otherwise.} \end{aligned}$$

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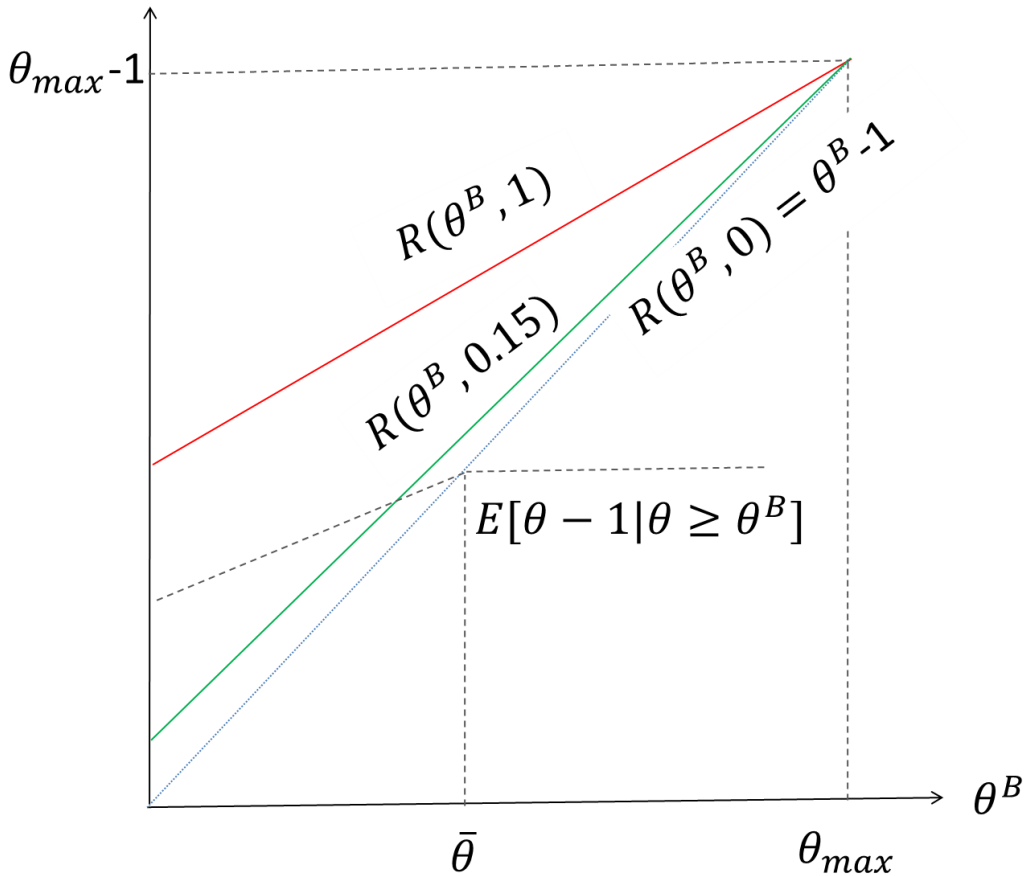
- FOC:

$$\underbrace{E[\theta - 1 | \theta \geq \theta^B]}_{\text{marginal expected political gain}} = \underbrace{-\frac{W_t(t^B, 1)}{\pi_t(t^B)}}_{\text{marginal welfare cost}},$$

Optimal Tariff Binding

$$R(\theta^B, \lambda) \equiv -\frac{W_t(t^B,1)}{\pi_t(t^B)} = \frac{1}{1+\lambda}\theta^B + \left(\frac{\lambda\theta^{\max}}{1+\lambda} - 1\right)$$



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  - Countries with more market power should be given less flexibility to set their trade policy.

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  - Importer's market power may be measured by $\frac{1}{\varepsilon_{ij}^W}$, the inverse of the elasticity of export faced by the importer.
  - Relationship between export elasticity and import share (assuming constant import demand elasticities across countries):

$$\varepsilon_{ij}^W = \left(\varepsilon_j^X + (1 - W_{ij})\varepsilon_j\right) / W_{ij},$$

ε_j^X: supply elasticity of the exporting country.
ε_{ij}^W only varies across countries within a given sector due to differences in import shares:

$$\frac{\partial \varepsilon_{ij}^W}{\partial W_{ij}} < 0.$$

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  - OLS and Tobit.

Data

# of Countries	40
# of Sectors	5224 (HS06)
Year	2007
Tariff Data	Bound and MFN Applied Tariff
Economic Data	Import, GDP, per capita GDP
Political Data	Democracy Index
Data Source	WTO, World Bank, UN, EIU
Total Obs.	249,282

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OLS Regression: Optimal Tariff Binding

Variable		
Import ratio (OLS fitted values)	$-.28$	
	(0.07)	
Import ratio (Tobit fitted values)		-1.31
		(0.12)
Pseudo R-square	0.7325	0.7328
Observations	141,716	141,716

Probit Model: Likelihood of Strong Binding

Variable		
Import ratio (OLS fitted values)	0.31 (0.002)	
Import ratio (Tobit fitted values)		0.51 (0.004)
Pseudo R-square	0.4406	0.4477
Observations	176,526	176,526

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- Complementary Work. Cap-and-Escape Arrangement (Beshkar and Bond 2010)

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- If the process is not invoked, t cannot be greater than t^B.

General demand and supply functions

- The marginal deadweight loss for a general supply and demand functions:

$$R(\theta^B) \equiv -\frac{W_t(t^N(\theta^B),1)}{\pi_t(t^N(\theta^B))} = (\theta^B - 1)(1 + \frac{1}{(1+\varepsilon^W)\, t^E\left(\theta^B\right)}),$$

where,

$$\frac{t^E(\theta)}{1+t^E(\theta)} = \left(\frac{(\theta-1)s(p(t))}{m(p(t))\varepsilon}\right),$$

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- t^B is increasing in ε^W and $\frac{s}{m}$, and decreasing in ε.