Choked By Red Tape? The Political Economy of Wasteful Trade Barriers

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Yale, Geneva and Oxford

Research Workshop on the Economics of International Trade Agreements

February 9, 2017

Motivation

- Red Tape Barriers (RTBs): policies that increase trade costs without generating revenue

- RTBs can take different forms:
  - "Procedural obstacles" in the clearing of customs or in the application of a Non Tariff Barrier (NTB)
    - Most common procedural obstacle: "time constraints", e.g. delays in the clearing of customs and short deadlines for submitting documentation (WTO World Trade Report, 2012)
  - Regulations and product standards themselves if they impose costs on exporters without health/environment justification.

- Increasing evidence that RTBs are an important source of trade costs
- But trade literature has paid little attention to the topic so far

Preview of Model

Here we take a first step toward a theory of RTBs. Main features of our model:

- Available trade policies: RTBs and tariffs
  - Even if a gov is politically motivated, it would never use RTBs if tariffs are unconstrained. But if a trade agreement constrains tariffs, RTBs may emerge.
- Natural trade costs
- Trade agreement is incomplete in two dimensions:
  - It leaves RTBs to govs' discretion (e.g. because they are hard to describe/verify)
  - It cannot specify fully contingent tariffs
- The model is an otherwise standard partial-equilibrium model – yet it delivers subtle results.

Key Questions

- Will RTBs emerge in equilibrium after a trade agreement, even if govs anticipate this possibility when negotiating the agreement?
- If so, how do equilibrium RTBs depend on the economic-political environment, e.g. domestic producers' political power, or natural trade costs?
- As natural trade costs fall ("globalization"), how do equilibrium RTBs change?
- How does globalization impact tariff liberalization over time?
- Does the answer to the above questions depend on the motive for a trade agreement, e.g. terms-of-trade vs. domestic-commitment motives?

Preview of results

- Constraining tariffs may trigger RTBs, but RTBs can be prevented if tariff cuts are not too deep
  - Fully contingent tariffs:
    - Optimal tariff cuts *just* prevent RTBs (RTBs off equilibrium)
    - Optimal tariff cuts are smaller than if RTBs were not available
  - Non-contingent tariffs: RTBs can emerge *in equilibrium* because of political pressures
- When RTBs are used, they are likely to "choke" trade $\Rightarrow$ "extensive margin" is important for RTBs
  - But non-prohibitive RTBs can arise if import demand is sufficiently concave
- As natural trade costs fall ("globalization"), RTBs tend to decline
  - ... but if import demand sufficiently concave, RTBs at some point start to increase

Related Literature

- Many papers on quantitative restrictions, such as import quotas and VERs
  - These generate rents/revenue, while RTBs do not.
- Some papers on production subsidies and behind-the-border measures as protectionistic tools (e.g. Copeland 1990, Bagwell and Staiger, 2001, Horn, Maggi and Staiger, 2010)
  - Implications of these measures are quite different from RTBs.
- Limao and Tovar (2011): non-tariff barriers with partial waste of revenue.
- Staiger (2015): NTBs and trade facilitation
- Motives for trade agreements:
  - Maggi and Rodriguez-Clare (1998)
  - Bagwell and Staiger (1999).

Outline of the Talk

Outline of the Talk

A Small Country Setting

- A small country (Home) and a large ROW (*)
- Partial equilibrium, focus on a good imported by Home
- Home price of imported good: $p = p^* + \tau + \theta + \delta$
  - τ: Home tariff
  - θ: Home red-tape barrier (RTB)
  - δ: Natural trade cost
- Tariff revenue rebated in non-distortionary way
- No lump sum transfers to specific groups

Domestic Commitment Motives

A simple way to model domestic-commitment motives:

- Ex ante:
  - Gov maximizes welfare

$$W = CS(p) + PS(p) + \tau m(p)$$

  - and can commit to a tariff agreement

- Ex post:
  - Gov is subject to political pressures
  - It chooses unconstrained policies to maximize its payoff

$$V = CS(p) + (1 + \gamma)PS(p) + \tau m(p)$$

    - $\gamma > 0$: political influence of domestic producers

Outline of the Talk

Benchmark 1: No Agreement

- Suppose there is no agreement, with gov maximizing

$$V = CS(p) + (1+\gamma)PS(p) + \tau m(p)$$

- Both τ and θ protect home firms; but only τ raises revenue...

$\rightarrow$ Optimal no-agreement policies:

$$\begin{cases} \theta^N = 0 \\ \tau^N = \frac{\gamma y}{-m'} \end{cases} \quad \text{from} \quad V_\tau = \gamma y + \tau m' = 0 \quad \text{(where } y \text{ is output)}$$

  - $\tau^N \uparrow$ with γ. $V_{\tau\tau} < 0$ and τ^N non-prohibitive requires $\gamma < \gamma^A$

Benchmark 2: RTB only

- Using RTB ($\theta > 0$) *might* be optimal if τ constrained or unavailable.
- Suppose the only available policy is θ (e.g. a trade agreement imposes $\tau = 0$).
- If $\tau = 0$, then V is convex in θ (because CS and PS are convex in p)
  - $V_\theta = \gamma y - m$
  - $V_{\theta\theta} = \gamma y' - m' > 0$
  - $\Rightarrow$ corner solution: θ is either zero or it chokes trade
- Optimal θ prohibitive iff

$$V^A > V^{FT} \Leftrightarrow \gamma > \bar{\gamma} \equiv \frac{CS^{FT} - CS^A}{PS^A - PS^{FT}} - 1$$

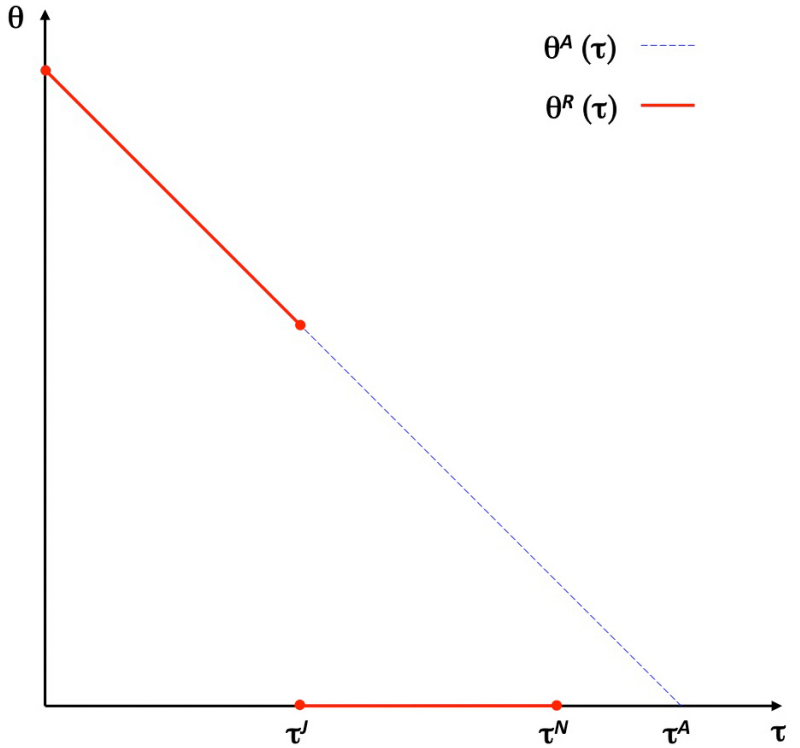
where $\bar{\gamma} < \gamma^A$.

Benchmark 3: RTB with an exogenously constrained tariff

- Suppose τ is constrained at some exogenous level $0 < \tau < \tau^N$, and examine the RTB "response function" $\theta^R(\tau)$
- Revisit V_θ and $V_{\theta\theta}$ allowing for $\tau > 0$:
  - New effect of $\theta \uparrow$: reduces tariff revenue
  - $V_\theta = \gamma y - m + \tau m'$
  - $V_{\theta\theta} = \gamma y' - m' + \tau m''$
- Is V concave or convex in θ?
  - V is convex in θ for all τ if $m'' \geq 0$
  - But V is concave for a range of τ if m is sufficiently concave
- We will focus first on the case $V_{\theta\theta} > 0$ for all τ.

RTB Response Function

- If $V_{\theta\theta} > 0$ for all $\tau \Rightarrow$ optimal θ is a corner solution for all τ $\Rightarrow \theta^R(\tau)$ is "bang-bang"

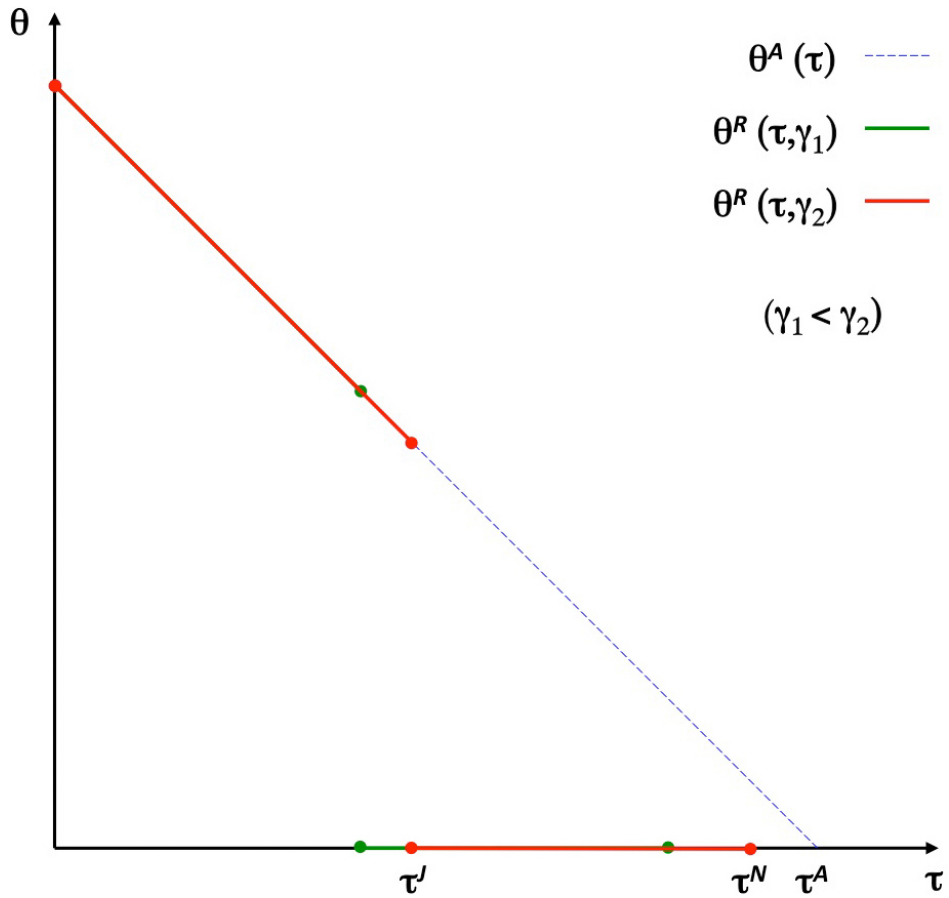


- If $\tau \downarrow$ exogenously, θ is initially zero but at some point it chokes off trade.
- Intuitive "policy substitution" effect, except that RTB response is bang-bang.

Proposition 1: If $\gamma \in (\bar{\gamma}, \gamma^A)$, then there exists $\tau^J \in (0, \tau^N)$ such that $\theta^R(\tau)$ is prohibitive for $\tau \in (0, \tau^J)$ and zero for $\tau \in (\tau^J, \tau^N)$.
If $\gamma < \bar{\gamma}$, then $\theta^R(\tau)$ is zero for all τ.

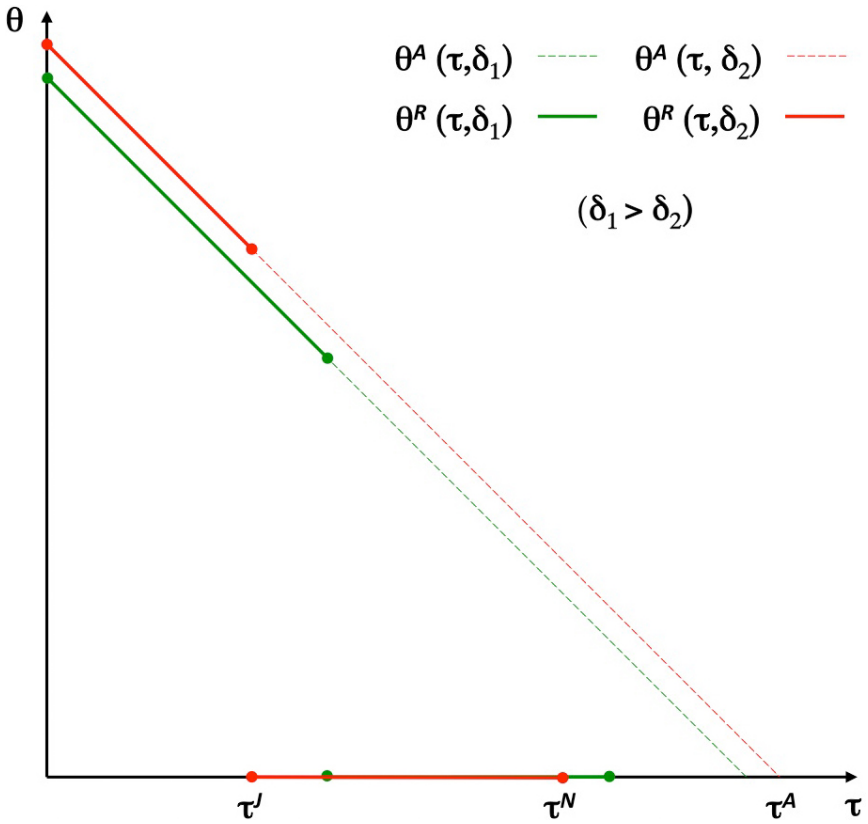
How does γ affect $\theta^R(\tau)$?

Intuitively, τ^J increases with γ: more political pressure $\rightarrow$ more RTBs.



How does δ affect $\theta^R(\tau)$?

Recall substitution effect between τ and θ. Intuition might suggest similar substitution between δ and θ, BUT interestingly, $\tau^J \downarrow$ when $\delta \downarrow$:



- At the indifference margin, $V(\cdot)|_{\theta=0} = V^A$
- $V_{\theta\theta} > 0 \Rightarrow$ increasing θ from zero reduces V
- $\delta \uparrow$ has same effect on V as $\theta \uparrow$ (but no impact on V^A)
- Hence $\delta \uparrow$ favors $\theta = \theta^A$ over $\theta = 0$.
- The standard intuition applies to a world of interior solutions, but fails here because it's all about corner solutions

Benchmark 4: the Bespoke Tariff

- Let us now optimize the tariff commitment, taking into account the RTB response function $\theta^R(\tau)$.
- Start by considering a fully contingent tariff agreement, i.e. τ can be tailored to γ and δ (or equivalently, γ and δ are fixed).
- The Bespoke Tariff τ^B:

$$\tau^B \equiv \arg\max_{\tau} W[\tau, \theta^R(\tau), \delta] \quad \text{with} \quad \theta^R(\tau) \equiv \arg\max_{\theta} V(\tau, \theta, \delta, \gamma)$$

- Note, if θ were not available, $\tau^B = 0$
- Given that $\theta^R(\tau)$ is bang-bang, τ^B is the lowest tariff that does not trigger RTBs, therefore $\tau^B = \tau^J$.

Comparative Statics of the Bespoke Tariff

- Recall τ^J is increasing in γ and δ. Therefore:

Proposition 2: The Bespoke Tariff τ^B is the lowest tariff that does not trigger choking by red tape. It is increasing in δ and γ.

- Here globalization induces tariff liberalization: as $\delta \downarrow$, there is less temptation to use RTBs for given τ, so less need to keep τ high to prevent RTBs.

- In this benchmark case, no RTBs emerge in equilibrium.

Outline of the Talk

The Choking Margin: Definition

- Consider a continuum of imported products that differ by γ: same partial equilibrium model as above, but now applied to each product separately
  - $G(\gamma)$ cumulative dist of γ with density $g(\gamma)$ and support $[\gamma_{min}, \gamma_{max}]$
- Same tariff τ applied to all (non-contingency on γ), but RTBs may differ across products
- Given τ, the fraction of products choked by red tape is

$$F^{choke} \equiv \int_{\gamma^J(\delta;\tau)}^{\gamma_{\max}} g(\gamma)\,\mathrm{d}\gamma = 1 - \int_{\gamma_{min}}^{\gamma^J(\delta,\tau)} g(\gamma)\,\mathrm{d}\gamma = 1 - G(\gamma^J(\delta,\tau))$$

where $\gamma^J(\delta,\tau)$ is the inverse of $\tau = \tau^J(\gamma,\delta)$: the threshold γ above which RTBs are triggered given τ and δ

Globalization and RTBs in the Short Run

- Recall $\tau^J(\gamma, \delta) \nearrow$ in γ and δ. Therefore, holding τ constant, $\gamma^J(\delta; \tau) \nearrow$ in δ.

Proposition 3: Holding τ constant, the fraction of products choked by red tape, F^{choke}, goes down as the natural trade cost δ falls.

- This echoes our earlier finding: $\delta \downarrow$ does not induce the gov to substitute with $\theta \uparrow$, just the opposite.

The Optimal Non-Contingent Tariff

- Now assume that the one-size-fits-all tariff (non-contingent on γ) is chosen optimally in a trade agreement.
- The optimal $\bar{\tau}$ maximizes aggregate welfare $\bar{W}$

$$\bar{\tau} \equiv \arg\max_{\tau} \bar{W} \quad \text{where} \quad \bar{W} \equiv \int_{\gamma_{min}}^{\gamma_{max}} W(\tau, \theta^R(\tau, \delta, \gamma), \delta)\, \mathrm{d}\gamma$$

Globalization and the Optimal Non-Contingent Tariff

How does $\bar{\tau}$ change with a decrease in δ?

- If the support of G is sufficiently small, $\bar{\tau} \downarrow$ as δ falls
  - In this case, the optimal non-contingent tariff is close to the bespoke tariff for each product.

- If the support of G is large, $\bar{\tau}$ may increase as δ falls
  - Linear demand, fixed supply and uniform distribution with large support
  - Linear demand, fixed supply and Pareto distribution with large dispersion

Globalization and RTBs in the Long Run

How do RTBs change with a decrease in δ?

- Recall the choking margin: $F^{choke} = 1 - G\left(\gamma^J\left(\delta, \bar{\tau}\left(\delta\right)\right)\right)$
- A fall in δ has two effects:
  - Direct effect: $\delta \downarrow \rightarrow \gamma^J \uparrow \rightarrow G \uparrow \rightarrow F^{choke} \downarrow$
  - Indirect effect: $\delta \downarrow \rightarrow \bar{\tau}? \rightarrow \gamma^J? \rightarrow G? \rightarrow F^{choke}?$
- With linear demand and fixed supply, the direct effect dominates: F^{choke} goes down as the natural trade cost δ falls.

Outline of the Talk

Non-Choking RTBs

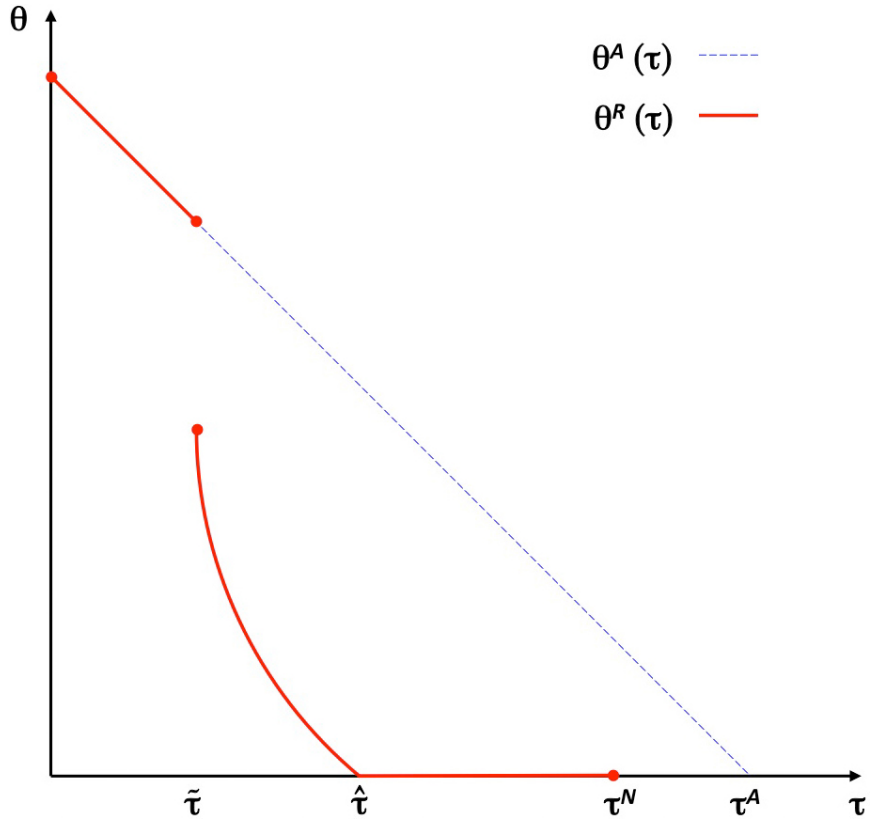
- Thus far, RTBs were all about the extensive margin. But under some conditions the intensive margin matters too.

- If $m(p)$ sufficiently concave, $\theta^R(\tau)$ non-prohibitive for a range of τ.
  - Recall $V_{\theta\theta} = -m' + \gamma y' + \tau m''$. If $m'' < 0$, increasing θ reduces tariff revenue at increasing rate. If this effect is dominates, $V_{\theta\theta} < 0$.

- Example where $\theta^R(\tau)$ is interior for a range of τ: $y(p) = \bar{y}$ and $x(p) = \alpha - \beta p^\sigma$ (Pollak demand) with σ sufficiently large.

RTB Response Function

- If $\tau \downarrow$ exogenously, RTBs emerge and gradually increase in intensity, and at some point they choke off trade.
- Why RTBs can be non-prohibitive only for intermediate τ?
  - If τ close to zero, revenue effect of θ is small, hence $V_{\theta\theta} > 0$
  - If τ close to τ^N, gov is close to its bliss point, and no incentive to use θ b/c it's discretely worse than τ
- If $\tilde{\tau} = \hat{\tau} \rightarrow$ bang-bang scenario.

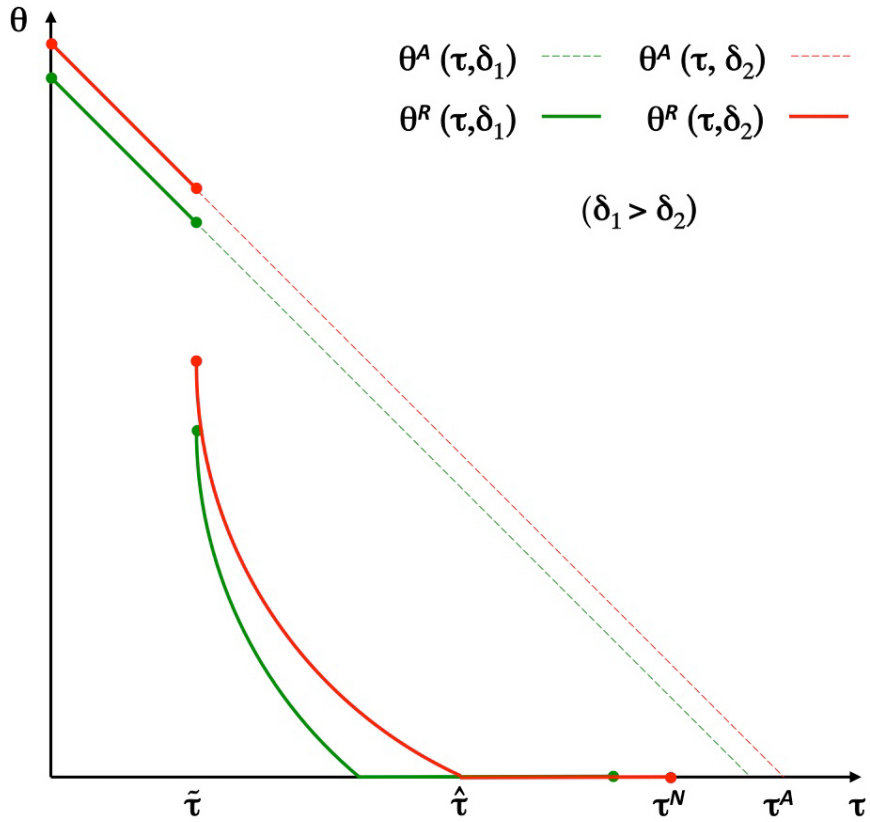


Proposition 4: (i) $\exists\ (\tilde{\tau}, \hat{\tau})$ with $0 \leq \tilde{\tau} \leq \hat{\tau} < \tau^N$, s.t. $\theta^R(\tau)$ is prohibitive for $\tau \in (0, \tilde{\tau})$, non-prohibitive for $\tau \in (\tilde{\tau}, \hat{\tau})$, and zero for $\tau \in (\hat{\tau}, \tau^N)$. (ii) $\theta^R(\tau)$ is strictly decreasing for $\tau < \hat{\tau}$; (iii) $\theta^R(\tau)$ must be continuous except at $\tilde{\tau}$.

How does δ affect $\theta^R(\tau)$?

Suppose we are in the "non-choking" regime ($\tilde{\tau} < \hat{\tau}$):

- if θ^R is non-prohibitive, $\frac{\partial \theta^R}{\partial \delta} < 0$ (intuitive substitution effect)
- threshold $\tilde{\tau}$ independent of δ (can be shown)
- so RTBs tend to increase as $\delta \downarrow$



- As $\delta \downarrow$ we can go from bang-bang regime ($\tilde{\tau} = \hat{\tau}$) to non-choking regime ($\tilde{\tau} < \hat{\tau}$), but not vice-versa
  - Recall, in bang-bang regime RTBs tend to decline as $\delta \downarrow$.

Globalization and RTBs in the Short Run

Proposition 5: Holding τ constant, as δ falls: (i) initially the choking frequency goes down, then it stabilizes; (ii) as the choking frequency stabilizes, non-choking RTBs emerge and their frequency grows over time.

- Thus $\delta \downarrow$ first leads to a decrease and then to an increase in RTBs.
- In the first phase only the extensive margin matters, in the second phase only the intensive margin matters.

Outline of the Talk

Terms of Trade Motives for Trade Agreements

- Consider a two-country model where the purpose of a trade agreement is to prevent terms of trade (TOT) manipulation.
  - Govs may be politically motivated, but no domestic-commitment issues.
- Partial equilibrium model, Home the natural importer.
- Home gov chooses τ and θ to maximize $V = CS + (1+\gamma)PS + \tau m$
- Foreign gov passive, maximizes $V^* = CS^* + (1+\gamma^*)PS^*$
- Politically efficient policies (max $V + V^*$): $\theta^{eff} = 0$, $\tau^{eff} \lesseqgtr 0$
- Unilateral policies (no agreement): $\theta = 0$ and $\tau^N > \tau^{eff}$ (because of TOT manipulation).

Terms of Trade Motives for Trade Agreements

- As before, agreement specifies a rigid τ and leaves discretion over θ
- The agreement τ maximizes $V + V^*$
- Qualitative results are similar to the domestic-commitment model, except:
  - At τ^{eff}, the RTB response $\theta^R(\tau^{eff})$ may be zero, in which case RTBs do not pose any issues
  - $\theta^R(\tau^{eff}) = 0$ more likely when trade volume is small, so that $\tau^N - \tau^{eff}$ (scope for cooperation) is small
  - $\theta^R(\tau^{eff}) > 0$ more likely when trade volume is large, so that $\tau^N - \tau^{eff}$ is large. In this case, same qualitative results as in previous model.

Partially Wasteful Non-Tariff Barriers

- Suppose a fraction $\phi > 0$ of the rents associated with the non-tariff barrier is wasted (model above is the special case $\phi = 1$)
  - As in Limao and Tovar (2011)

- Reducing ϕ makes it more likely that the optimal θ is interior, but our qualitative results above hold
  - Still true that $\frac{d\theta^R}{d\tau} < -1$ and $\theta^R(\tau) = 0$ for τ sufficiently close to τ^N, so the bespoke tariff is still the minimum τ that does not trigger any θ.

  - The lower ϕ, the higher the bespoke tariff τ^B, so reducing the inefficiency of NTBs reduces welfare!
    - Intuitively, if $\phi \approx 0 \Longrightarrow$ NTB close substitute for $\tau \Longrightarrow$ undermines ability of agreement to effectively constrain govs.
    - But revenue-generating NTBs (e.g. quotas, AD duties) are more likely to be negotiable/verifiable, in which case the issues above do not apply.

Globalization and Partially Wasteful Non-Tariff Barriers

$V_{\theta\delta} = V_{\theta\theta} - (1-\phi)m'$ hence $V_{\theta\delta} \geq V_{\theta\theta}$

- If $V_{\theta\delta} \geq V_{\theta\theta} > 0$, bang-bang scenario: $\delta \downarrow \Rightarrow \tau^B \downarrow$
- If $0 > V_{\theta\delta} \geq V_{\theta\theta}$, non-choking NTBs, substitutability of θ and δ
- If $\phi < 1$, possibly $V_{\theta\delta} > 0 > V_{\theta\theta}$, non-choking NTBs and complementarity of θ and δ
- The lower ϕ, the more likely that globalization leads to less NTBs

Outline of the Talk

Conclusion

- Red tape barriers have very distinct implications from more traditional trade barriers. We have taken a first step in exploring these implications.
- Next steps:
  - Imperfect competition with firm-specific RTBs and firm-specific political pressures?
  - Trade facilitation: what if govs can reduce δ by making costly investments?
  - Empirical investigation?

Conclusion

Thank you for listening. Comments welcome!

Peter Neary's research has received funding from the European Research Council under the European Union's Seventh Framework Programme (FP7/2007-2013), ERC grant agreement no. 295669. The contents reflect only the authors' views and not the views of the ERC or the European Commission, and the European Union is not liable for any use that may be made of the information contained therein. Monika Mrázová's research has received funding from the Fondation de Famille Sandoz under the "Sandoz Family Foundation - Monique de Meuron" Programme for Academic Promotion.