Non-Tariff Measures and the WTO

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Introduction

- Originally a Background Study for the WTO *World Trade Report 2012* on NTMs

- A unified framework (slight generalization of Staiger and Sykes, 2011) to evaluate rationale for agreements about regulatory protectionism
  - from perspective of ToT theory
  - from perspective of Offshoring theory

Introduction

- Regulatory protectionism an important issue to developing countries:

    *"...A more systematic account of developing countries'
    perceptions of non-tariff barriers comes from the notification
    process established under the auspices of NAMA... TBTs
    represent the NTB category with the highest incidence of
    notifications with 530 entries, or almost half of the total,
    followed by Customs and Administrative Procedures (380 entries)
    and SPS measures (137 entries). Quantitative restrictions, trade
    remedies, government participation in trade, charges on imports,
    as well as other barriers amount to less than 5% of total NTB
    entries." (OECD 2005, pp. 230-234)."*

- Some behind-the-border regulatory measures, some border regulatory
  measures

Introduction

- So far, paper focuses on regulatory protectionism *behind* the border

- But WTO Trade Facilitation Agreement (TFA) is about regulatory protectionism *at* the border

- Currently extending paper to provide a ToT evaluation of TFA

- Motivated by recent draft of WTO *World Trade Report 2015* on TFA

    "...A trade agreement, according to the terms-of-trade theory, allows countries to derive benefits from reciprocally reducing their tariffs, thereby escaping the prisoners' dilemma. This rationale, however, is unlikely to play an important role in explaining an agreement on trade facilitation if trade facilitation is mostly about reducing trade costs."

- Review rationale for agreements about behind-the-border regulatory protectionism from perspective of ToT theory (Staiger and Sykes, 2011)

- Sketch rationale for TFA from perspective of ToT theory

- Review rationale for agreements about regulatory protectionism from perspective of Offshoring theory (Antràs and Staiger, 2012a,b)

Staiger and Sykes (2011): Introduction

- Existing models of trade and regulatory policy suggest potential for a regulatory race to the bottom: (e.g., Bagwell and Staiger 2002, ch 9)

- Once tariffs and other border instruments are "bound," countries might lower their regulatory standards to advantage their firms against foreign competitors

- Ederington (2009) surveys the recent body of empirical research that lends some support to the concerns emphasized by these models

- One sees some legal response in trade agreements, particularly the NAFTA side agreements

- WTO rules and disputes, however, center on complaints about excessively stringent regulations (e.g., Beef-Hormones, Asbestos, Shrimp-Turtle)
- Legal obligations that explicitly address national regulatory policies are limited to non-discrimination rules: GATT Article III, TBT, SPS
  - do not place legal constraints on countries that wish to lower domestic regulatory standards
  - rather, they restrict the ability of member governments to impose regulations on foreign suppliers
- Stricter regulation of foreign products appears to *worsen* ToT
  - seems at odds with ToT theory

Introduction (cont'd)

- Here we bridge the gap between the existing formal literature and the actual pattern of rules and disputes

- Key distinction:
  - Existing models focus on standards applicable to domestic production *processes* only
  - We focus on *product* standards, applicable to imported and domestic products alike

- We employ the ToT framework for the modeling of trade agreements between "large" countries
  - $\Rightarrow$ incentive to discriminate against imported goods in regulatory policy once border instruments are constrained
  - $\Rightarrow$ inefficiently stringent regulation may emerge under certain circumstances even if regulatory discrimination is prohibited
  - $\Rightarrow$ a foundation for shallow integration based on tariff bindings, non-discrimination and non-violation

The Basic Idea

- A simple partial equilibrium model of trade between a domestic and a foreign country, with '*'s denoting foreign variables

- The product under consideration is produced in both countries but only demanded in the domestic country:

$$D = \alpha - P,$$

with P the consumer price of this good in the domestic market

- Consumption of the good generates an "eye sore" pollutant that does not cross borders

- The domestic government can impose a regulatory standard
  - specifies a (maximum) level of pollution generated per unit of the good consumed
  - may differ across domestically produced and imported units

The Basic Idea (cont'd)

- The domestic government also has at its disposal an import tariff τ and a consumption tax t (all taxes expressed in specific terms)
- The foreign government has an export tax τ^*
- Assuming all taxes set at non-prohibitive levels, domestic consumer and producer price/domestic and foreign producer price relations:

$$P = q + t, \text{ and } q = q^* + \tau + \tau^*.$$

- Note: all units of the product sell in the domestic country at the same price P regardless of the standard to which they are produced ("eye sore" pollutant)
- Define the "world" producer price (i.e., the price at which the good is available for sale in international markets once it clears customs in the exporting country):

$$q^w \equiv q^* + \tau^* = q - \tau.$$

The Basic Idea (cont'd)

- Market clearing – the volume of domestic imports must equal the volume of foreign exports:

$$D - S = S^*,$$

determines the market-clearing world price as a function of the tax and regulatory policies:

$$\tilde{q}^w = \frac{1}{3}[\alpha - 2\tau + \tau^* - t + \phi(r) + \phi^*(\rho)].$$

- Market-clearing levels of each of the other prices as functions of the tax and regulatory policies – $\tilde{P}$, $\tilde{q}$ and $\tilde{q}^*$ – then also determined through earlier pricing relationships
- Note: $\tilde{q}^w$ *increasing* in ρ
  - stricter regulation of foreign product appears to *worsen* domestic ToT
  - but stricter regulation of foreign product also *changes* the product

- Define the market-clearing foreign producer price of the "raw" *un*regulated good – prior to bringing it into compliance with the prevailing regulatory standard:

$$\tilde{q}_0^* \equiv \tilde{q}^* - \phi^*(\rho) = \frac{1}{3}[\alpha - 2(\tau + \tau^*) - t + \phi(r) - 2\phi^*(\rho)]$$

- And the associated world price of the foreign-produced unregulated good:

$$\tilde{q}_0^w \equiv \tilde{q}^w - \phi^*(\rho) = \frac{1}{3}[\alpha - 2\tau + \tau^* - t + \phi(r) - 2\phi^*(\rho)]$$

- We refer to $\tilde{q}_0^w$ rather than $\tilde{q}^w$ as the terms of trade, although for any ρ there is a one-to-one mapping between the two

The Basic Idea (cont'd)

- $\Rightarrow$ Incentive to discriminate against imported goods in regulatory policy once border instruments are constrained

$$\tilde{q}_0^w \equiv \tilde{q}^w - \phi^*(\rho) = \frac{1}{3}[\alpha - 2\tau + \tau^* - t + \phi(r) - 2\phi^*(\rho)]$$

- $\Rightarrow$ Inefficiently stringent regulation may emerge under certain circumstances even if regulatory discrimination is prohibited
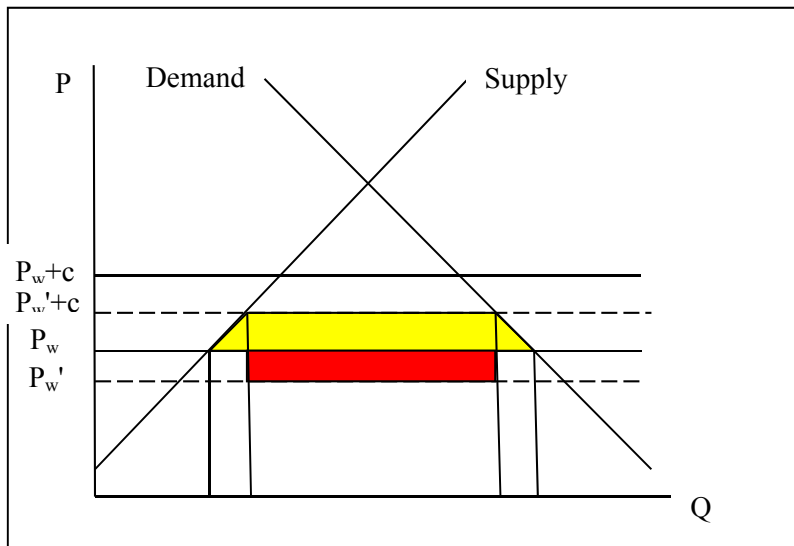 - Under National Treatment ($r = \rho$) and symmetry ($\phi = \phi^*$)

$$\tilde{q}_0^w \equiv \tilde{q}^w - \phi(r) = \frac{1}{3}[\alpha - 2\tau + \tau^* - t - \phi(r)]$$

- From here, straightforward to show:
  - a single Nash inefficiency (tariffs too high)
  - a foundation for shallow integration based on tariff bindings, non-discrimination and "market access preservation" rule

A ToT Interpretation of the TFA

- Simple intuition: Figure 3.2 from WTO draft WTR2015

- But notice: gains from elimination of inefficient custom procedures in (large) importing country are shared by importing country *and exporting country*

    - world (foreign exporter) price rises from $P_w^{/}$ to P_w

- If addressing inefficiencies in custom procedures requires costly investments (e.g., modernizing ports, implementing IT advances),

    - from a global perspective too little investment will be undertaken unilaterally by (large) importing country

Figure 3.2: Impact of inefficient custom procedures on welfare

- A competitive (market clearing) ToT framework bears out this simple intuition
  - with tariffs unconstrained, Nash investment in trade facilitation (reduction in transport costs) is efficient
  - with tariff constrained below Nash, non-cooperative investment in trade facilitation will be inefficiently low
  - in principle a non-violation clause would work to address this

- But as these are border regulatory measures, direct negotiation as in TFA does not raise sovereignty issues as in behind-the-border "deep" integration and may be preferred approach

Antràs and Staiger (2012a)

- Terms-of-Trade Theory of Trade Agreements:
    - in the Nash equilibrium, tariffs are inefficiently high but domestic policies are internationally efficient
    - negotiations over tariffs alone, coupled with a "market access preservation rule," can bring governments to the efficiency frontier – **"shallow"** integration

- Nature of international price determination is important for these predictions:
    - **"deep"** integration needed when prices are not fully disciplined by market clearing (bilateral bargaining)

Market Clearing

- Perfectly competitive trade model: **F**oreign ('$*$') exports a single good to **H**ome
- Measure $\frac{1}{2}$ of H consumers with demand $D(p)$
- Measure $\frac{1}{2}$ of F consumers with demand $D(p^*)$
- Measure 1 of firms in F with increasing-concave production technology $y^* = F(L^*)$
- Measure Λ of workers in each country paid a wage of 1 (pinned down by outside sector)

Market Clearing

- H has import tariff τ, F has both export tax τ^* and labor subsidy s^* (applied only to the export sector), all defined in specific terms
- Governments are social welfare maximizers (W and W^*)
- Efficient policies maximize world welfare and deliver $T^e \equiv \tau^e + \tau^{*e} = 0$, $s^{*e} = 0$. No surprise (no frictions)
- Nash policies: FOCs $\Rightarrow \tau^N = \hat{p}^*/\eta_E^*$, $\tau^{*N} = \hat{p}/\eta_M$ and $s^{*N} = 0$ (where all prices and elasticities are evaluated at the Nash policies)
- Why isn't s^{*N} distorted? τ^* is first best for terms of trade manipulation in this setting

Market Clearing

- **Shallow integration:** Suppose H agrees to eliminate its tariff and F agrees to eliminate its tariff and in addition F agrees to a **"market access preservation" constraint** on its future choices of s^*:

$$\frac{d\tau^*}{ds^*} = \frac{-d\hat{p}/ds^*}{d\hat{p}/d\tau^*}$$

- Reflects essential mission of GATT/WTO rules: provide secure property rights over negotiated market access
- Then F solves

$$\frac{dW^*}{ds^*} = \frac{\partial W^*}{\partial s^*} - \frac{\partial W^*}{\partial \tau^*}\frac{d\hat{p}/ds^*}{d\hat{p}/d\tau^*} = 0$$

  with W^* evaluated at $\tau = 0$

- Delivers $s^{*R} = 0$ and $\tau^{*R} = 0$. Hence, with $\tau = 0$, efficiency frontier achieved

Matching Model

- Now suppose international prices determined by bilateral bargaining

- Measure 1 of consumers each matched with measure 1 of producers; no possibility of rematching (0 outside option of the agents)
  - extreme assumption but results generalize to any pricing not fully disciplined by market clearing

- Each producer produces an amount of x with the production function $F(L)$ in anticipation of payoff obtained upon matching

- Consumer utility $u(x)$, where u is increasing and concave

- With cost of producing x sunk at time of matching, consumer and producer Nash bargain over the surplus, with producer capturing share $\alpha \in (0, 1)$

Matching Model

- **International match**: F seller takes her good to H market; tariff costs not sunk at time of bargaining, so ex-post surplus over which parties negotiate is

$$S\left(L, \tau + \tau^*\right) \equiv u\left(F\left(L\right)\right) - \left(\tau + \tau^*\right) F\left(L\right)$$

- Labor L hired by F selling to H is then determined by maxing $\alpha S\left(L, \tau + \tau^*\right) - (1 - s^*) L$, which defines $\hat{L}(s^*, \tau + \tau^*)$ and trade volume $F(\hat{L})$

- **Local (F) match**: tariffs irrelevant to bargaining surplus, so labor hired by F selling to F is $\hat{L}^*(s^*)$ and production for local sales is $F(\hat{L}^*)$

Matching Model

- Efficient policies $T^e = 0$, $s^* = 1 - \alpha$: no role for tariffs, and F labor subsidy resolves the under-investment in L
- Nash policies: FOCs $\Rightarrow \tau^N + \tau^{*N} > 0$, $s^{*N} > 1 - \alpha$
- Hence, $T^N > T^e$, but now s^{*N} is inefficient **even conditional on trade volume**

Matching Model: Shallow Integration

- Consider F's preferred τ^* and s^* to deliver efficient trade volume
- Efficient trade volume is $F(\hat{L}(1 - \alpha, 0))$, so starting from efficient policies changes in τ^* and s^* must satisfy

$$\frac{d\tau^*}{ds^*} = -\frac{d\hat{L}/ds^*}{d\hat{L}/d\tau^*}$$

- Then F solves

$$\frac{dW^*}{ds^*} = \frac{\partial W^*}{\partial s^*} - \frac{\partial W^*}{\partial \tau^*}\frac{d\hat{L}/ds^*}{d\hat{L}/d\tau^*} = 0$$

- Delivers $s^{*R} > s^{*e}$. Hence, shallow negotiations **cannot** achieve the efficiency frontier

Matching Model: Another Interpretation

- "World"/exporter price:

$$\hat{p}^w = \frac{\alpha u(F(\hat{L}))}{F(\hat{L})} + \underbrace{(1-\alpha)\,\tau^* - \alpha\tau}$$

- But $\frac{-d\hat{L}/ds^*}{d\hat{L}/d\tau^*} > 0$, so F maintains trade volume with **an increase in** τ^* and s^* while raising $\hat{p}^w$ and improving its terms of trade
- Shallow integration cannot fully eliminate terms-of-trade manipulation when international prices are determined through bargaining
- But if negotiations impose $s^* = s^{*e}$ (i.e., **"deep" integration**), then efficiency frontier is immediately achieved

Summary

- According to ToT theory, Nash tariffs inefficiently high but domestic policies internationally efficient, market access/shallow integration approach can achieve efficiency
- But when prices are not fully disciplined by market clearing (bilateral bargaining), deep integration needed
- How much are international prices disciplined by market clearing?
  - arguably less and less so with the increase in offshoring (Antràs and Staiger 2012b)
- How sensitive is the performance of the market-access/shallow integration approach to the nature of international price determination?
  - some suggestive evidence: rise of deep-integration FTAs (Orefice and Rocha 2014)
- Important questions for the architecture of the WTO moving forward