

# The Principle of Reciprocity in the 21st Century: New Predictions for Trade Agreement Outcomes

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# Introduction

## The Purpose of Trade Agreements

- What problem do trade agreements solve?
- Standard theory (Johnson, 1953-54; Bagwell and Staiger, 1999)
  - Trade agreements reduce final good tariffs
  - Focus: national income, terms-of-trade manipulation
- Newer stories (Baldwin, 2013; Regan, 2015)
  - Coordinate non-tariff barriers in global supply chains
  - Distributional motives seem to matter a lot in trade negotiations
- This paper
  - Can we capture newer stories in basic trade agreement theory?
  - How do they change properties of trade agreement outcomes?

# Introduction

## The New Problems

- What's new? We build on a growing literature
- New trade agreement problems arise from *local price externalities*
  - Policy affects some local price
  - Nations do not internalize effect of price change on trading partners
  - Contrast with old story of *terms-of-trade externalities*
- Examples
  - Final good price affects profits for upstream intermediate supplier
    - Antras and Staiger (2012), Blanchard, Bown, and Johnson (2016)
  - Firm/production delocation and profit-shifting
    - Ossa (2011), Mrázová (2011)
- This paper: unified theory of trade agreements solving new problems

# Introduction

## New Predictions for Trade Agreement Outcomes

- We need a way to select among Pareto efficient outcomes
  - But usual method does not work when local price externalities matter (Bagwell and Staiger, 2016)
- *Stability under reciprocity* is a generally desirable property
  - Reciprocal policy changes  $\equiv$  increase trade value equally
  - Stability  $\equiv$  no nation can gain from reciprocal policy changes
  - *Rules-based* approach rather than power-based approach
- New method: *directly* find stable policies under reciprocity
  - We prove these policies are generally efficient

# Introduction

## New Predictions and New Insight for Trade Cooperation

- Politically-organized exporters induce lower cooperative tariffs
  - Consistent with results of Ludema and Mayda (2013)
- Trade agreements can cut into politically-motivated tariffs
  - Matches claim of Regan (2015)
- Post trade agreements, nations seek alternative policies that increases local prices in import-competing sectors
  - Examples: non-tariff barriers, temporary trade barriers
  - Nations seek these policies even if they're small in world markets
- Lastly, we characterize outcomes for various offshoring settings

# Road Map

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- **Main implication:** deeper liberalization than terms-of-trade theory, as exporter gains are pursued at import-competing sectors' expense

# General Framework for Reciprocity

- Consider two countries, Home and Foreign
  - Policy vectors  $\Lambda$  for Home and  $\Lambda^*$  for Foreign
  - Government objectives  $W(\Lambda, \Lambda^*)$  and  $W^*(\Lambda, \Lambda^*)$
- We define a *reciprocity rule* as a function  $R(\Lambda, \Lambda^*; \Lambda^0, \Lambda^{0*}) = 0$  that specifies permissible policies based on prevailing policies  $(\Lambda^0, \Lambda^{0*})$
- We define *stable policies under R* to be policies  $(\Lambda^R, \Lambda^{*R})$  such that neither nation can gain from reciprocal policy changes

## Proposition

*Suppose  $(\Lambda^R, \Lambda^{*R})$  is stable under reciprocity rule  $R$ . Then  $(\Lambda^R, \Lambda^{*R})$  is on the global efficiency frontier.*

# The Standard Reciprocity Rule

- Now add more structure of policies affecting prices
  - Home government objective  $W(p^I(\Lambda, \Lambda^*), p^W(\Lambda, \Lambda^*))$
  - Foreign government objective  $W^*(p^{I*}(\Lambda, \Lambda^*), p^W(\Lambda, \Lambda^*))$
- For trade vector  $M$ , we define the *standard reciprocity rule*

$$R^0 = M(\Lambda, \Lambda^*)p^W(\Lambda^0, \Lambda^{*0}) = 0.$$

## Remark

*Stable policies under the standard reciprocity rule  $R^0$  must be efficient.*

# When Do New Externalities Matter?

- Certain forms of policy incompleteness are necessary for additional trade agreement problems to matter
  - Targeting principle: if domestic policies solve all domestic "distortions," then only role of trade policy is terms-of-trade manipulation
  - There need to be "missing instruments" (Bagwell and Staiger, 2012)

## Proposition

*Suppose welfare can also be written as functions  $W(q(p, p^*, p^w), p^w)$  and  $W^*(q(p, p^*, p^w), p^w)$ . Suppose there exist (first-best) policies  $(\Lambda_{FB}, \Lambda_{FB}^*)$  such that  $\frac{dW}{dq} = 0$  and  $\frac{dW^*}{dq} = 0$ . Then these policies are efficient, and stable only with respect to the standard reciprocity rule  $R^0$ .*

*Consider policies  $(\Lambda_{PO}, \Lambda_{PO}^*)$  where  $\frac{dW}{dp^l} \frac{dp^l}{d\Lambda} = \frac{dW^*}{dp^{l*}} \frac{dp^{l*}}{d\Lambda^*} = 0$  and  $\frac{dp^l}{d\Lambda}$  and  $\frac{dp^{l*}}{d\Lambda^*}$  have full row rank. Then these policies are efficient, and stable only with respect to the standard reciprocity rule  $R^0$ .*

- Multi-sector perfect competition with politically organized exporters
  - Bagwell and Staiger (2001, 2016)
- Offshoring with free trade but hold-up in intermediate exports
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# Partial Equilibrium Model

## Setup

- Political Economy Objectives for Home (similar for Foreign)

$$W = CS_x(p_x) + \gamma_M \Pi_x(p_x) + (p_x - p_x^w)M(p_x) + \\ CS_y(p_y) + \gamma_E \Pi_y(p_y) - (p_y - p_y^w)E(p_y), \text{ and}$$

- Only import tariffs are available
- Organized exporters:  $\gamma_E > 1$

# Partial Equilibrium Model

## Stable Reciprocity-Robust Point

- Policies at the stable point satisfy (for Home)

$$\frac{dW}{dp_x} \frac{dp_x}{d\tau_H} + \frac{dW}{dp_y} \frac{dp_y}{d\tau_F} \frac{d\tau_F}{d\tau_H} = 0$$

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- Any exporter weight on political economy implies export price effects

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$$\frac{dW}{dp_y} > 0.$$

- So cooperative equilibrium prices in import-competing sector satisfy

$$\frac{dW}{dp_x} > 0.$$

# Partial Equilibrium Model

## Properties of the Stable Point

- Unusual to have positive local price effects in import-competing sector at cooperative equilibrium
- Standard prediction
  - Negative local price effect: price in import-competing sector is too high because of terms-of-trade manipulation
  - Negative local price effect along whole liberalization path
  - Zero local price effect at efficient point
- Nations will liberalize so deeply that losses to import-competing sector from lower prices outweigh consumer gains
  - as long as there is some small political weight on the export sector, no matter the weight for the import-competing sector,

# More Comparison, Standard Results vs. New Results

## Tariff cooperation

- For the standard model with terms-of-trade externality
  - Trade negotiations cut tariffs motivated by terms-of-trade manipulation
  - Trade negotiations keep tariffs related to political motives
  - No potential cooperation for nations "small in world markets"
- At the new stable efficient point,
  - Nations cut tariffs for terms-of-trade motives + exporting rents
  - Nations cut into politically-motivated tariffs
  - Still potential cooperation for nations "small in world markets"

# Partial Equilibrium Model

A specific solution

- Use linear demands/supplies as in Bagwell and Staiger (2001, 2016)
- The new stable efficient point

$$\tau_H = \tau_F = \frac{4(2\gamma_M + 1 - 3\gamma_E)}{59 - 9\gamma_E - 8\gamma_M}$$

- Total trade barriers are same as in Bagwell and Staiger (2001)
- The same outcome is achieved even despite having no export policies

# Graphical Depiction of Equilibrium

- Consider  $\gamma_M = 1.2$ ,  $\gamma_M^* = 1.15$ ,  $\gamma_E = 1.1$ ,  $\gamma_E^* = 1.05$
- Efficient point  $\bar{\lambda} \approx 1.18$ , reciprocity neutralizes higher Home weights

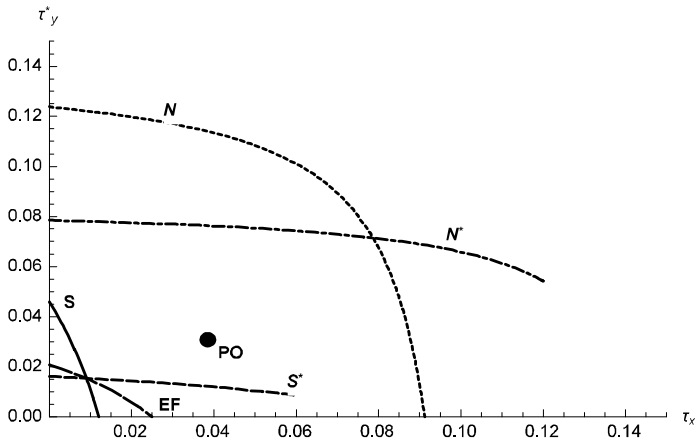


Figure: Asymmetric Model

# Relevance for Explaining WTO Round Outcomes

- If trade liberalizes to point where  $\frac{dW}{dp_x} > 0$ , then we predict more liberalization than addressing only terms-of-trade concerns
- The basic prediction would be more tariff cuts based on an interaction between exporter organization and inverse trade elasticities
- In fact, Ludema and Mayda (2013) include such a term in predicting Uruguay Round tariff cuts, and it is negative and significant
  - This suggests the negotiations address some externality other than terms-of-trade

# Relevance for Contingent Protection

- Consider contingent protection, e.g. antidumping, safeguards
  - Nations are more likely to deviate from cooperative tariffs when terms-of-trade gains from protection are larger
  - Why? These gains outweigh efficiency losses after trade shocks
  - Theory (Bagwell & Staiger, 1990), empirics (Bown & Crowley, 2013)
- But what if motive to gain rents for exporters matters &  $\frac{dW}{dp_x} > 0$ ?
  - Shocks lead to benefit of defection regardless of terms-of-trade gains

# Global supply chain model

- Now consider the following Antràs and Staiger (2012) extension
  - symmetric nations negotiating over final good tariffs
  - free trade in intermediates
  - similar policy space to Blanchard, Bown, and Johnson (2016)
- Notice this setting implies local price externalities matter
  - So political optimum is inefficient
  - Our stable point should better predict negotiation outcomes
- We expect higher import tariffs and intermediate trade than P.O.

# Global supply chain model - Simulation

	Nash point	Stable point	"Political optimum"
Final good surplus	2.79	1.18	1.39
Intermediate surplus	1.93	4.35	4.13
Final good protection	.025	.74	.68
Intermediate trade	1.56	3.35	3.22

- Cooperation involves higher final good prices
- Compared to political optimum, robust point has
  - more trade volume in intermediate
  - more protection allowing rents that are shared upstream
- Here consumer gains are sacrificed for final good producers to achieve rents from intermediate trade

# Conclusion

- We develop theory for efficient trade agreement outcomes that are stable under reciprocity, even when multiple externalities matter
- Main implication: deeper liberalization than terms-of-trade theory, as exporter gains are pursued at others' expense
- Other empirical implications
  - Larger interaction of exporter organization and inverse trade elasticities implies lower cooperative tariffs
  - If exporters are better organized, terms-of-trade gains should be less relevant in predicting contingent protection