The Principle of Reciprocity in the 21st Century

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Motivation and Research Questions

- Principle of reciprocity explains WTO's success by guiding states to a "rules-based" power-neutral outcome on Pareto frontier in tariff-setting games (Staiger, 2023)
- · This claim has been defended in a seemingly broad array of settings
 - Perfect competition (Bagwell & Staiger, 1999), various Krugman/Melitz models
 - P.E. imperfect competition with no domestic policies, but reciprocity involves negotiations over both import & export policies (Bagwell & Staiger, 2012, 2015)
- · But there are still important deviations from these conditions
 - World economy is distorted; observed policy does not correct these distortions (Lashkaripour & Lugovskyy, 2023; Ding, Lashkaripour, & Lugovskyy, 2022)
 - Reciprocity involves import tariffs in practice
- Q1: Does reciprocity function well when distortions are uncorrected and export subsidies are unavailable? (a first look, Bagwell & Staiger, 2016, suggests not well)
- · Q2: Do implications of reciprocity in the distorted economy fit well with reality?

Q1: Does reciprocity still function well? Yes!

- Reciprocity rules do support Pareto efficient outcomes in bilateral policy negotiations even when economies are distorted and instruments are limited
- I introduce stability under reciprocity as an equilibrium concept
 - There is a reciprocity rule, e.g., tariff cuts must increase value of trade volumes equally
 - Consider policy sets such that neither country gains from reciprocal policy changes
 - I show these policies are Pareto efficient, even for distorted economies
 - This nests cooperative outcomes of Bagwell & Staiger (1999, 2012) but is more general
- Other key points
 - Alternative to power-based Nash bargaining (Ossa, 2014) for rules-based outcomes
 - Equilibrium concept can extend to reciprocity rules other than the standard trade one
 - Limited applications beyond bilateral two-policy case without more structure

Q2: What implications? Local price externalities may persist!

- · My setting yields comforting standard implications and interesting new implications
- Interestingly, the net trade barriers are same as if countries negotiated over both import and export subsidies (as in Bagwell & Staiger, 2001, 2012, 2015)
 - So I formalize how "trade agreements substitute for missing instruments"
 - Distortions in other policies from terms-of-trade manipulation are resolved
 - But only jointly, not unilaterally like in Bagwell-Staiger "political optimum"
- But implications for unilateral deviations from cooperative equilibrium are distinct
 - First-order effects of domestic or foreign local price changes can be non-zero
 - States may want to increase prices of import-competing sectors, and this is not possible in prior literature on path from Nash policies to cooperative policies
 - Unilateral motives to promote export and import sectors can persist!

Q2: Implications for a variety of recent trade agreement topics

- Unilateral motives to increase import-competing sector prices from the cooperative equilibrium helps to explain wasteful trade barriers
 - Alternative explanations: Commitment motive (Maggi, Mrázová, and Neary, 2018), GE terms-of-trade gains (Beshkar & Lashkaripour, 2020)

- · I argue two additional applications, relevant to present experience
 - Exporter influence contributes to globalization backlash
 - Motives to transition from rules to power, absent terms-of-trade gains

General Framework for Reciprocity

- Consider two countries, Home and Foreign
 - Policy vectors Λ for Home and Λ^* for Foreign
 - Government objectives $W(\Lambda, \Lambda^*)$ and $W^*(\Lambda, \Lambda^*)$
- We define
 - a reciprocity rule as a function R(Λ, Λ*; Λ⁰, Λ^{0*}) = 0 that specifies permissible policies based on prevailing policies (Λ⁰, Λ^{0*})
 - stable policies under R to be policies $(\Lambda^R, \Lambda^{*R})$ such that neither nation can gain from policy changes satisfying R (i.e., FOCs for small policy changes satisfying R are zero)
- $\cdot\,$ With the additional structure, stable policies under R are efficient
 - conflict over particular policies
 - R defines binding constraints
- · We proceed to consider a particular choice of R and more structure

Generalization of the Standard Reciprocity Rule

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

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

- Interpretation: policy changes increase trade equally when valued at prevailing p^w
- With standard structure on $\frac{dW}{dp^{W}}$ and $\frac{dW^{*}}{dp^{W}}$, the stable policies under R^{0} are efficient
 - Intuition: only zero-sum rent shifting from altering terms of trade is possible from policy changes satisfying FOCs for stability under reciprocity

Application #1: Globalization Backlash

- Motivation: The "shallow" WTO resulted in globalization backlash
 - Globalization backlash dates to the 90s (Colantone et al. 2022).
 - The WTO is largely a shallow agreement (Staiger 2023)
 - But prior theory finds only "deep" agreements lead to backlash (Maggi & Ossa 2021)
- · The cooperative equilibrium I've described can fit well here
 - A key ingredient is exporter influence (as in Blanga-Gubbay et al. 2023)
 - The reciprocal outcome is effectively selling out import sectors for exporter influence
 - A shallow agreement then leads to backlash under reasonable definitions

A simple partial equilibrium framework

- Follow Bagwell and Staiger (2001, 2016)
 - Countries choose tariff policies but no subsidies
 - State wants to protect import sector: $\gamma_M^G > 1$
 - State exhibits effects of exporter influence: $\gamma_F^G > 1$
- · Home government objective in terms of prices (Foreign's is analogous)

$$G(p_{x}, p_{y}^{*}, p_{x}^{W}, p_{y}^{W}) = \int_{p_{x}}^{\bar{p}} D(p_{x}^{1}) dp_{x}^{1} + \gamma_{M}^{G} \Pi_{x}(p_{x}) + (p_{x} - p_{x}^{W}) M_{x}(p_{x}) \\ + \int_{p_{y}^{*}}^{\bar{p}} D(p_{y}^{1}) dp_{y}^{1} + \gamma_{E}^{G} \Pi_{y}(p_{y}^{*}) - (p_{y}^{*} - p_{y}^{W}) M_{y}(p_{y}^{*})$$

• $\tau_x = p_x - p_x^w$: tariff wedge in local and world prices

 $\cdot 0 = p_y^* - p_y^w$: but this notation is still useful

Export promotion

- Public has distinct motives as state
 - Public and state both want to protect import sector: $\gamma_M^G = \gamma_M^W > 1$
 - State has greater export influence: $\gamma_E^G > \gamma_E^W = 1$
- · Home public objective in terms of prices (Foreign's is analogous)

$$W(p_{x}, p_{y}^{*}, p_{x}^{W}, p_{y}^{W}) = \int_{p_{x}}^{\bar{p}} D(p_{x}^{1}) dp_{x}^{1} + \gamma_{M}^{W} \Pi_{x}(p_{x}) + (p_{x} - p_{x}^{W}) M_{x}(p_{x}) \\ + \int_{p_{y}^{*}}^{\bar{p}} D(p_{y}^{1}) dp_{y}^{1} + \gamma_{E}^{W} \Pi_{y}(p_{y}^{*}) - (p_{y}^{*} - p_{y}^{W}) M_{y}(p_{y}^{*})$$

What is the outcome of a rules-based trade agreement here?

- We model GATT as selecting among the set of Pareto efficient tariff policies based on the principle of reciprocity
- Tariff cuts satisfying reciprocity deliver equal trade volumes valued at world prices
- The change in foreign tariff satisfying reciprocity for given home tariff reduction is

$$\frac{d\tau_y^*}{d\tau_x} = \frac{\frac{dM_x}{dp_x}\frac{dp_x}{d\tau_x}\boldsymbol{p}_x^W}{\frac{dM_y}{dp_y^*}\frac{dp_y^*}{d\tau_y^*}\boldsymbol{p}_y^W} = \frac{M_x\frac{dp_x^W}{d\tau_x}}{M_y\frac{dp_x^W}{d\tau_y^*}} > 0$$
(1)

- Agreement outcome: a tariff pair with no first-order gains for either country when tariff changes satisfy reciprocity
 - This is also a property of the political optimum in Bagwell and Staiger (1999)
 - We already argued this outcome was generally Pareto efficient for this policy space

FOCs for trade agreement outcome

The cooperative tariffs under reciprocity satisfy

$$\frac{dG}{dp_x}\frac{dp_x}{d\tau_x} + \frac{dG}{dp_y^*}\frac{dp_y^*}{d\tau_y^*}\frac{d\tau_y^*}{d\tau_x} = 0, \text{ and}$$
$$\frac{dG^*}{dp_y^*}\frac{dp_y^*}{d\tau_y^*}\frac{d\tau_y^*}{d\tau_x} + \frac{dG^*}{dp_x}\frac{dp_x}{d\tau_y^*} = 0.$$

- We can sign $\frac{dG}{dp_y^*} < 0$, which implies $\frac{dG}{dp_x} > 0$
 - $\frac{dG}{dp_y^*} = \frac{dp_y}{dp_y^*}(\gamma_E^G 1)Q < 0$
 - The state likes foreign tariff cuts to promote exports, absent other promotion policies
 - The state cuts import tariffs to point where $\frac{dG}{dp_v} > 0$
 - But public ($\gamma_E^M = 1$) hates this because it doesn't value this export promotion!
- · Contrast with "full instrument" setting (Bagwell and Staiger, 2001, 2012, 2015)
 - Solution policies satisfy $\frac{dG}{dp_x} = \frac{dG}{dp_y^*} = 0$, etc., and there is no conflict

First main result

Remark

For the perfect-competition, partial-equilibrium trade model where exporters influence the government more than the general public, the government institutes more shallow trade liberalization than is desirable for public welfare.

Proof sketch: welfare losses for the public from a marginal reciprocal tariff reduction will equal the export rents gained; integrate over these to derive the public loss

Note: The paper derives results for more general sets of public political economy parameters. We require only that:

- The state wants to promote exports more than the public
- · The public desire to promote imports is not too much weaker than the state's

Comparison with related literature

- This result contrasts with extant literature (Maggi & Ossa, 2021) that argues shallow agreements are never bad for the public. Why do I get different results?
- · One difference is I contrast the outcome vs. the best agreement for the public
 - They focus on comparing agreement outcomes vs. absence of any agreement

- A second difference is I consider positive externality from import-sector production
 - This avoids pathologies where liberalization takes form of import subsidies

Application #2: Rules to Power

- US switched from "rules" to "power" without China "paying for tariffs"
 - The US-China trade war = shift to power-based system (Mattoo and Staiger, 2020)
 - The US benefits are a terms-of-trade (ToT) improvement
 - But US terms-of-trade gains are absent in the data (e.g., Fajgelbaum et al. 2019).

- My extension
 - Shift from "rules" to "power" is about promoting individual sectors, not ToT gains

Modeling transition from rules to power-based system

- Question: can a government desire a transition to a power-based system even if it leads to no terms-of-trade gains?
- Modeling approach
 - The outcome based on the reciprocity rule is the rules-based outcome
 - We may instead have a power-based system based on bargaining power
 - If we look at the planner's social-welfare weight that delivers the rules-based outcome, we can consider the transition to power as increasing the powerful country's weight

Equations for power-based transition

• The FOCs for the planner's optimum are

$$\lambda^{R} \frac{dG}{d\tau_{x}} + \frac{dG^{*}}{d\tau_{x}} = 0, \text{ and}$$
$$\lambda^{R} \frac{dG}{d\tau_{y}^{*}} + \frac{dG^{*}}{d\tau_{y}^{*}} = 0$$

• Power is a small increase in from λ_R

$$egin{array}{rcl} \displaystyle rac{d au_x}{d\lambda} &=& \displaystyle rac{\displaystyle rac{dG}{d au_x}}{-(rac{\displaystyle d^2G}{\displaystyle d au_x^2}+rac{\displaystyle d^2G^*}{\displaystyle d au_x^2})}>0 ext{, and} \ \displaystyle rac{\displaystyle d au_y^*}{\displaystyle d\lambda} &=& \displaystyle rac{\displaystyle rac{\displaystyle dG}{\displaystyle d au_y^*}}{-(rac{\displaystyle d^2G}{\displaystyle d au_y^2}+rac{\displaystyle d^2G^*}{\displaystyle d au_y^2})}<0. \end{array}$$

Implications of power based shift

- We proved the more powerful country gets to raise its import tariffs and gets market access abroad.
- · What are the implications? The starting point is

$$\frac{dG}{dp_x}\frac{dp_x}{d\tau_x} + \frac{dG}{dp_y^*}\frac{dp_y^*}{d\tau_y^*}\frac{d\tau_y^*}{d\tau_x} = 0$$

· What the more powerful country gets is

$$\frac{dG}{dp_x}\frac{dp_x}{d\tau_x}\frac{d\tau_x}{d\lambda} + \frac{dG}{dp_y^*}\frac{dp_y^*}{d\tau_y^*}\frac{d\tau_y^*}{d\lambda} > 0$$

- The powerful government benefits even without terms-of-trade gains
 - Contrast with prior literature where only gain from rules-based outcome is ToT gain
 - Also the public benefits from import protection in case we considered earlier

Conclusions

- Reciprocity can still guide states to Pareto efficient negotiation outcomes, even if there are uncorrected distortions and no export policies
- The agreement still solves fundamental problem of terms-of-trade manipulation, but implications of deviating from the cooperative outcome are quite distinct
- Distinct implications
 - Unilateral benefits from wasteful trade barriers
 - A shallow agreement can lead to globalization backlash
 - A transition from rules to power can benefit the powerful state, even if terms-of-trade gains are absent