Discussion of Bai, Lu, and Wang:

Optimal Trade Policies and Market Power in General Equilibrium Trade Models

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Summary

- Derives optimal trade *and* domestic policies in a multi-country, multi-sector general equilibrium framework
- Introduces the **CES supply system** — a unified supply-side class nesting Ricardo-Roy, multi-sector-Krugman-Roy, and others
- Closed-form optimal policy formulas: import tariffs, export taxes, domestic taxes (Props. 2–4); computed via a FOC-based hat-algebra approach
- Quantifies US and China optimal policies using WIOD data

Overall evaluation

- Elegant theoretical contribution: the same formula holds across a broad class of structural models
- Comments: (1) connection to the traditional optimal tariff literature; (2) scope of the CES supply system; (3) contribution relative to Lashkaripour and Lugovskyy (2023); (4) the right benchmark for the multi-country exercises

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The Traditional Optimal Tariff Formula

- Foreign offer curve in (Graaff, 1949)

$$F(m_1, m_2, \ldots, m_J) \equiv \sum_j p_j^* m_j = 0.$$

- optimality condition

$$\underbrace{-\frac{\partial F/\partial m_j}{\partial F/\partial m_i} = \frac{p_j^*(1+1/\varepsilon_j^{*,XS})}{p_i^*(1+1/\varepsilon_i^{*,XS})}}_{\text{marginal rate of transformation}} = \frac{p_j}{p_i} \Rightarrow \frac{1+1/\varepsilon_j^{*,XS}}{1+1/\varepsilon_i^{*,XS}} = \frac{1+\tau_j^m}{1+\tau_i^m}$$

- $\varepsilon_j^{*,XS}$ is the (net) foreign supply elasticity

$$\frac{1}{\varepsilon_j^{*,XS}} = \sum_k \frac{\partial p_k^*}{\partial m_j}\frac{m_k}{p_j}$$

- Zero cross-price elasticities (reduced-form GE): $\frac{\partial p_k^*}{\partial m_j} = 0 \; \forall k \neq j \Rightarrow \varepsilon_j^{*,XS} = \frac{\partial \ln m_j}{\partial \ln p_j^*}$.

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Connecting to This Paper's Formula

Two-country optimal tariff (Proposition 3, CES supply system):

$$\tau_j^m - \tau_i^m = \frac{1}{\eta_j}\frac{M_j}{Y_{2,j}} - \frac{1}{\eta_i}\frac{M_i}{Y_{2,i}}$$

- Shares implications with the traditional formula: more inelastic foreign supply $\Rightarrow$ higher tariffs
- **Key novelty**:
  - Structurally derive $\varepsilon_j^{*,XS}$
  - Show η_j depends on factor mobility (κ) and economies of scale (ψ_j)
  - More general results under multiple countries: third country effects
- Among all models considered here, I think only Ricardian-Roy with $\kappa = 1$ (immobile labor) leads to zero cross-price elasticities

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Empirically implementing the traditional approach (Broda et al., 2008)

- Quasi-linear demand with outside sector $\Rightarrow$ partial equilibrium
- Popular framework for politically optimal tariffs (Grossman and Helpman, 1994)
- Broda et al. (2008) uses the Feenstra approach to estimate $\varepsilon_j^{*,XS}$ from trade data
- They show that the formula can predict tariffs for non-WTO countries

Advantages of the current approach:

- $\varepsilon_j^{*,XS}$ endogenously varies with τ
- Do not need to impose zero cross-price elasticities
- Interdependencies with multiple countries

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Middle ground?

- The paper (and the modern approach literature) could benefit from making a connection to the traditional optimal tariff literature
- The dilemma
  1. The Broda et al. (2008) approach makes lots of simplifying assumptions but exploits rich trade data and allows rich heterogeneity in elasticities
  2. The modern approach imposes lots of structure and may not match the reduced-form export supply elasticities
- Farrokhi and Soderbery (2024) combine the modern approach with a Feenstra style estimation and obtain three sufficient elasticities: demand, supply, and aggregation $(\epsilon_{n,j}, \omega^{(1)}_{n,j}, \omega^{(2)}_{n,j})$

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Comment # 2: The CES Supply System

Model	η_j	Key feature
Ricardo-Roy, CRS (one factor)	$\kappa \in [1, \infty]$	same across sectors
Multi-sector Krugman (IRS)	$-1/\psi_j$	sector-varying IRS
Hybrid (Ricardo-Roy + Krugman)	$f(\kappa, \psi_j)$	both forces

Q1: Is there an inversion result? Section 4 refers to a CES supply system with $\eta_j = \kappa$ but effectively quantifies a Ricardo-Roy model

Q2: which important models are not nested?

- The paper shows one: multi-factor Ricardo-Roy
- Does not seem to nest Costinot et al. (2015), but shares insights
- What about other supply settings, say multi-sector Melitz
- More general demand, say Graaff (1949) or the non-parametric demand case in Lashkaripour and Lugovskyy (2023)

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Comment # 3: What is the right benchmark for multi-country results?

- The paper compares to the bilateral share formula in the two-country case
- Unlikely for someone to use the bilateral share formula for a multi-country case
- One natural benchmark is to aggregate the Rest of the World (RoW) into one country
  - recalibrate elasticities and trade shares given the aggregation
  - or, estimate the foreign export supply elasticity and use the traditional formula
- How does the correct multi-country formula compare to the aggregate RoW approach?

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Comment # 4: Clarify contribution relative to Lashkaripour and Lugovskyy (2023)

- Characterize the CES Supply System; clean two-country formulas; country interconnectedness $\rightarrow$ convengence of tariffs
- Model-wise, the major extension is to allow imperfect labor mobility $\kappa < \infty$
- Can we learn more from the CES Supply System or the more general Proposition 1?

Minor Comments

- US optimal export taxes are $\sim$24% and import tariffs are $\sim$2%. We rarely see countries use export taxes. Is this just a normalization issue? If not, may consider optimal tariffs without export taxes.
- Canada and Mexico face the highest optimal US tariffs. What does this imply about NAFTA's welfare cost to the US?
- What are the substances of Proposition 5 and 6? What needs to be proved? Is this hat algebra a lot more difficult to derive than the original DEK? What is the contribution to the literature?

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Comments on exposition

- Footnote 3: ψ_j is differential sectoral economies of scale. "Differential" seems redundant
- Lemma 2 titled "Convergence" but contains no analytical convergence result
- Example 2 (p. 22): "increasing returns to scale generate a downward-sloping relative supply curve" (after correcting grammar mistake). Was "relative supply curve" defined earlier? How to show it's downward-sloping?
- Figure 4: hard to read and not accessible to color-blind readers
- Net imports notation $\beta_{1j}x_1 - (1+\tau_j^d)Y_{1j}$ is non-standard; consider M_{1j}, especially for the introduction
- Grammar, p. 54: "Using our formula, but pre-tax observed trade shares result in..." $\rightarrow$ "Using our formula but with pre-tax observed trade shares results in..."
- Formatting: content following "Proof: Appendix B." should start on a new line
- Footnote 11 refers to equation A.76. Do you want to refer to an equation in that section?

Comments on exposition

- Useful to explain the economic meaning of δ_n in equation 33
- Should introduce the algorithm before the numerical examples
- The numerical example after Lemma 2 is a bit repetitive given that Table 1 has all cases considered
- What is Figure 2 measuring? Is it just the discrepancy of the model shares under balanced trade from the data? If so, I think just mentioning some summary statistics of these deviations would be enough. Figures can go to the online appendix.
- Tables and figures in Section 4 are often referred once with a small point. For example, Figure 3 is mentioned only once briefly in the main texts. It contains very rich information, such as the sectoral tariffs for Canada and Mexico isolated. It is worth discussing more.
- Page 54: "Although the optimal tariff-import slope is not equal to 1 for all countries, the overall optimal tariffs remain close to the 45-degree line. " – what is the latter slope?

An important and elegant contribution to the optimal trade policy literature!

Looking forward to the next version.

References

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