Vertical Foreclosure: A Dynamic Perspective

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Introduction

- Increased competition concerns of vertical mergers due to
  - Emergence of large digital platforms
  - Importance of industry dynamics
  - Vertical foreclosure (e.g., self-preferencing)

- Input foreclosure
  - Firm controls an essential input
  - Limits access to the input to distort downstream competition

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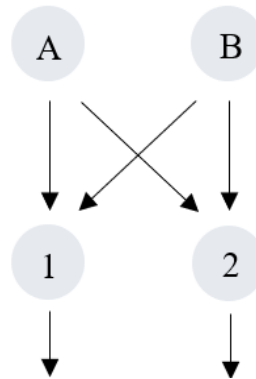
  - Vertical foreclosure (e.g., self-preferencing)
- Input foreclosure
  - Firm controls an essential input
  - Limits access to the input to distort downstream competition
- Raising rivals' costs: a firm has incentives to vertically integrate if
  - it can commit to limit supply of input to downstream rivals
  - input tariffs are linear (double marginalization)

Research question: How do industry dynamics affect ability and incentives to raise rivals' cost?



Contribution

This paper:

- Two-period version of a consecutive duopoly model
- Includes dynamics (two forces in opposite direction)
  - Intertemporal linkages: Monetization of data, learning-by-doing, state dependence in demand...
  - **Discipline** unintegrated upstream firm
  - **Magnify effect** for a given cost asymmetry
- Allows for endogenous mergers

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Results: Intertemporal linkages

- Create a **cooperation incentive** among independent firms
- Limit integrated firm's ability to discourage a counter-merger
- Can either increase or decrease the **scope of foreclosure** (compared to the static model)
  - Increased scope if no threat of a counter-merger and/or intertemporal linkages are not too large
  - Reduced scope otherwise
  - No foreclosure whatsoever for high enough intertemporal linkages

Related literature

- Models of Vertical Foreclosure: I account for industry dynamics other than Entry
  (Ordover, Saloner and Salop, 1990; Salinger, 1988; Fumagalli and Motta, 2018)

- Literature related to dynamic aspects of competition
  I study strategic considerations in vertically related industries when intertemporal linkages are present
  - Competition with learning-by-doing:
    (Fudenberg and Tirole, 1983; Spence, 1981)
  - Competition with state dependence in demand:
    (MacKay and Remer, 2022; Shcherbakov, 2016; Li and Agarwal, 2017; Grzybowski and Nicolle, 2021)
  - Role and implications of data in the economy:
    (Hagiu and Wright, 2021; Prüfer and Schottmüller, 2021)

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3 Downstream competition stage: simultaneously set $\{p_{1,t}, p_{2,t}\}$ that maximize intertemporal profit given input prices

Downstream prices

- Intertemporal profit of downstream firm i:

$$\Pi(\mathbf{p}) \equiv (p_{i,1} - w_{i,1})D(p_{i,1}, p_{j,1}) + (p_{i,2} + \lambda D(p_{i,1}, p_{j,1}) - w_{i,2})D(p_{i,2}, p_{j,2})$$

- In equilibrium:
  - 1 is always supplied at cost (internally, or because of upstream competition)
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  - Unique price equilibrium for any $\tilde{w}_2 \geq 0$
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- Intertemporal linkages ($\lambda > 0$)
  - For $\tilde{w}_2 = 0$, all prices are decreasing in λ
    intuition: quest for data intensifies competition
  - However, intertemporal linkages also exacerbate sensitivity of 2's price to $\tilde{w}_{2,t}$

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- For any w_A, B's response is stationary $w_{B,1} = w_{B,2}$, and this response can be triggered by a stationary w_A. From now on, I focus on stationary offers $\{w_A, w_B\}$.

Integrated firm's problem and Counter-merger

- Optimal w_A that would induce separation:

$$\begin{aligned} \max_{w_A} \quad & \Pi^F_{A-1}(w^R_B(w_A)) \\ s.t. \quad & \sum_{i \in \{B,2\}} \Pi^F_i(w^R_B(w_A)) - \bar{\Pi} \geq 0 \end{aligned}$$

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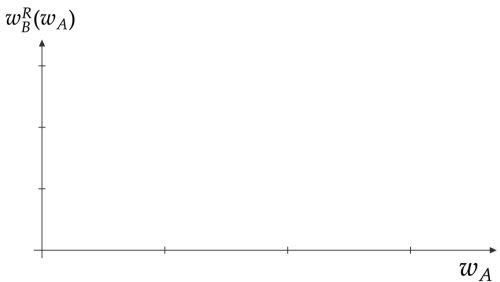

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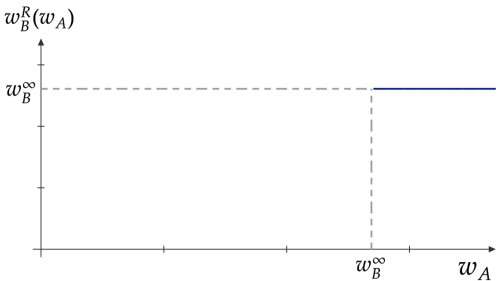

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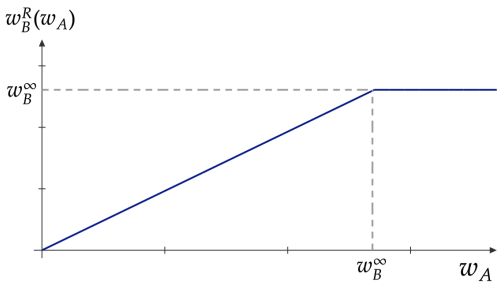

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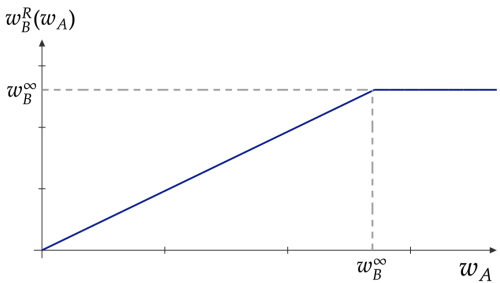

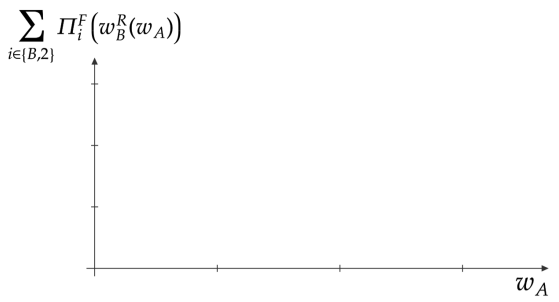

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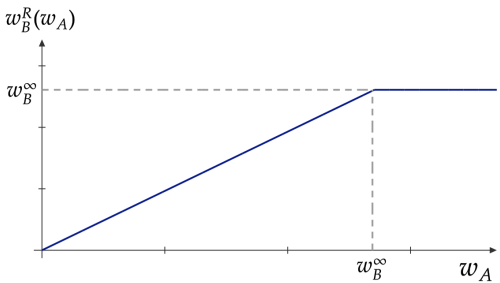

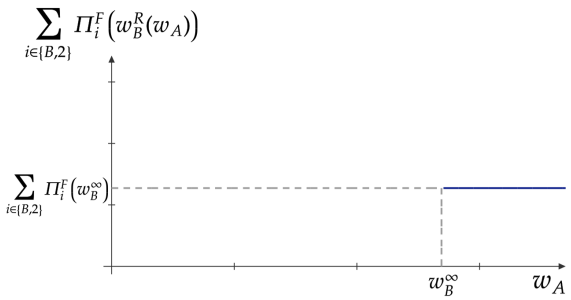

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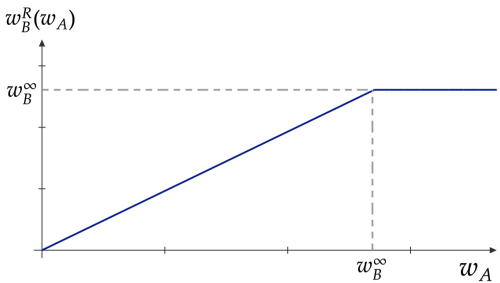

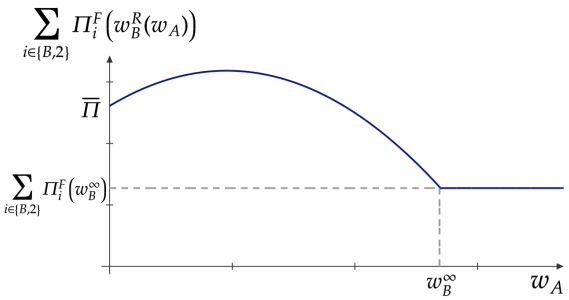

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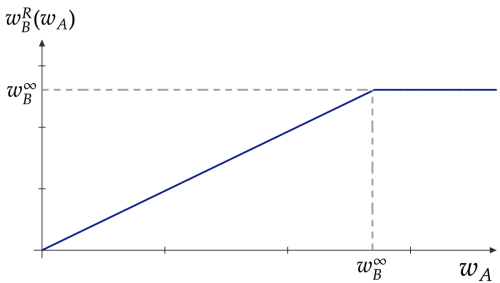

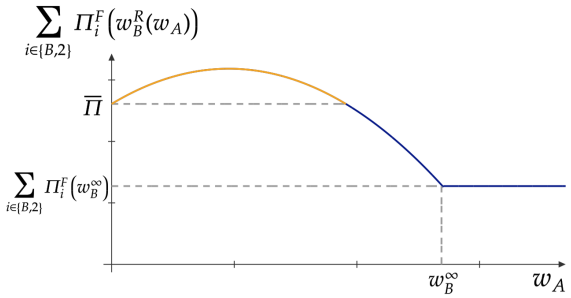

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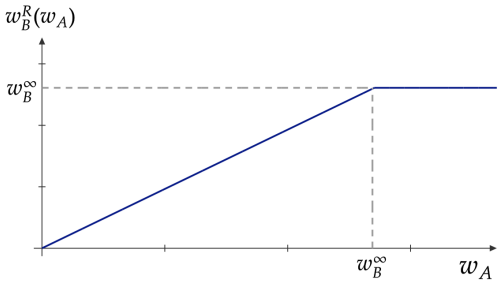

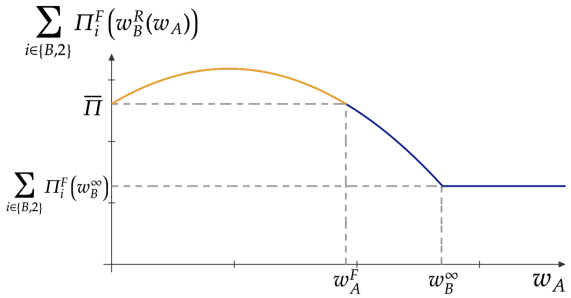

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(iii) *For large enough* λ*, there is no foreclosure whatsoever*

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Thank you

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