Chapter 9 Structural Empirical Analysis of Vertical Contracting

Presented by Siyuan (Bruce) Jin and Yangfan Sun

Hong Kong University of Science and Technology

March 2025

Outline - Theory

Introduction

Basics

- Setting
  - A upstream seller U and a downstream buyer D agree on a contract $\mathcal{C}$ from some feasible set.
  - The contract $\mathcal{C} = \{y, t\}$, y includes other provisions and t is a lump-sum transfer.
  - Firms' payoffs: $\Pi_U(\mathcal{C}) \equiv \pi_U(y) + t$; $\Pi_D(\mathcal{C}) \equiv \pi_D(y) - t$
- Pareto efficient contract

$$y^* \in \textit{argmax}_{(y,t)\in\mathcal{Y}\times\mathcal{R}} \pi_U(y) + \pi_D(y) \tag{1}$$

  - Bilateral contracting principle: complete information and lump-sum transfers.

Basics - example: successive monopoly setting

- A monopolist manufacturer sells a product to a monopolist retailer.
  - Vertically integrated: $p^m(c) \equiv argmax(p-c)D(p)$, $p^m(c_M + c_R)$ maximizes the bilateral surplus.
  - Price unilaterally: $p^m(w + c_R)$ maximizes the retailer's profit.
  - $p^m(w + c_R) > p^m(c_M + c_R)$: double marginalization problem.

Basics - example: negotiation by Nash bargaining

- The parties will agree to a contract that solves

$$\max_{C \in \mathcal{C}^+} \left[\Pi_D(C) - \overline{\Pi}_D\right]^b \cdot \left[\Pi_U(C) - \overline{\Pi}_U\right]^{1-b} \tag{2}$$

The offer game

The bidding game

Nash-in-Nash bargaining

Conclusion