ECN 453: Vertical Relationships 2

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Vertical relationships between firms

- **Vertical relationships**: relationships between two firms in a sequence along the value chain.
- Main idea of last time: vertical integration eliminates double marginalization.
- Today: other important economic behavior in supply chains.

Plan

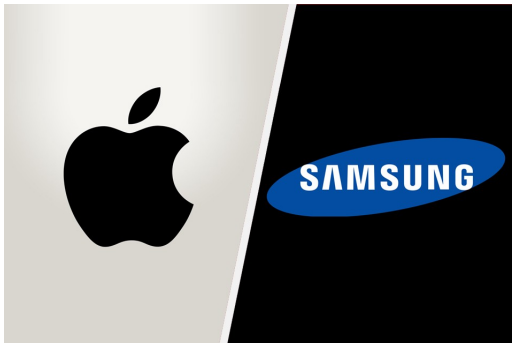
1. Downstream competition
2. Investment incentives

Plan

1. **Downstream competition**
2. Investment incentives

Downstream competition

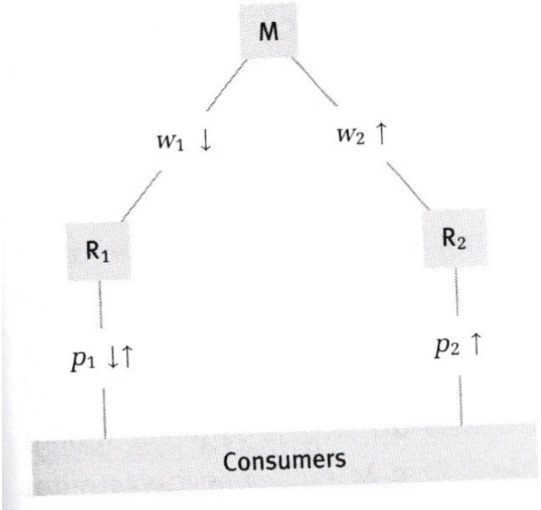
- Last time we looked at the situation where there was only one firm downstream
- What if there is > 1 firm downstream, and these firms are competing against each other?
- Example: Samsung makes phone parts and phones. It also supplies Apple with phone parts, and Apple then competes with Samsung downstream by selling phones to consumers.



Downstream competition

- **Setup:**
- A single upstream firm (manufacturer M)
- Two downstream firms (retailers R_1 and R_2)
  - Denote w_i the wholesale price paid by R_i
  - Denote p_i the retail price paid by R_i
- **Question:** Suppose that firm M merges with retailer R_i. What impact would we expect this to have on prices?

Downstream competition (diagram from book)



Downstream competition

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- Effect on w_2 and p_2: Effect is to increase w_2 (and also p_2). Why?
  - Firm R_2, which was a customer of firm M, is now a *rival* of the newly merged firm.
  - The merged firm can now increase its profits by increasing w_2.
  - This is because an increase in w_2 induces R_2 to **increase** p_2, which in turn helps R_1, which in turns helps the newly merged firm.
  - This is called the incentive to **raise rivals' costs**.

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  - Vertical integration eliminates double marginalization: tends to decrease p_1
  - But, vertical integration causes **competition softening** that tends to push the price p_1 up.
  - Why does competition softening happen?

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  - Vertical integration eliminates double marginalization: tends to decrease p_1
  - But, vertical integration causes **competition softening** that tends to push the price p_1 up.
  - Why does competition softening happen?
  - Answer: When R_1 increase price it loses market share to R_2, causing R_2 to buy more from the manufacturer, which benefits the merged firm. Therefore, the benefits to decreasing price are lower which causes p_1 to increase.

Downstream competition

- Overall effects from M and R_1 merging:
  - Profits of the merged firm increase.
  - Profits of R_2 decrease
  - Conflicting effects on consumers: eliminate double marginalization but also soften downstream competition. Net effect can go either way.

Plan

1. Downstream competition
2. **Investment incentives**

Investment incentives

- Suppose the R comes up with a new car model worth v to consumers.
- But: production is only possible if M makes an investment (e.g. building a mould to make a car part)
  - (Also assume that this is a **specific asset** i.e. mould can only be used to make R's car.)

Investment incentives

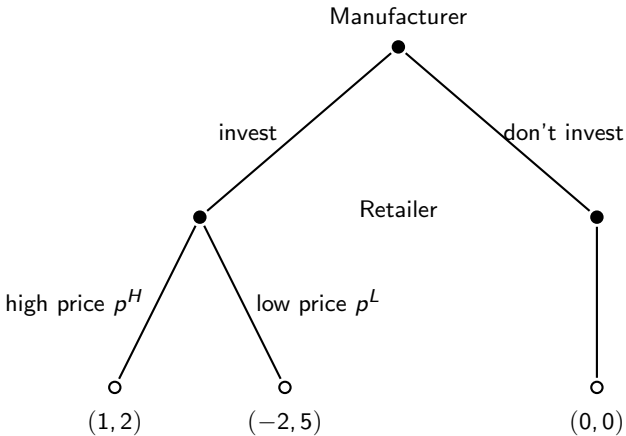
- **Issue that comes from the timing**: There are unforseen contingencies that make it hard to write a contract (e.g. how much it will cost to make the part, or how many cars will be demanded), but M's investment needs to be made from the get-go.

- This generates a commitment problem: once M's investment has been made, R could renege on its promise to pay for the investment and only agree to pay a price lower than the cost of the investment itself.
  - M would then agree to pay the lower price (since the investment is relationship-specific, M will not be able to find an alternative buyer, so will accept any price > 0)

Investment incentives

- **Setup:** (game tree on the next slide)
- The investment costs $c = 5$, whereas the total value created by the investment is $v = 8$ (which R gets)
  - Since $v > c$, this is a worthwhile investment.
- After the investment is made, wholesale price (which retailer pays to manufacturer) is then negotiated. Assume there are two possible prices $p^H = 6$ and $p^L = 3$.
- **Payoffs:**
- So, final payoff for the Manufacturer is $6 - 5 = 1$ if investment is made and high price is chosen, and $3 - 5 = -2$ if the investment is made and low price is chosen.
- Final payoff for the Retailer is $8 - 6 = 2$ if high price is chosen, and $8 - 3 = 5$ if low price is chosen.

Investment incentives



Investment incentives

- Solving the game, the equilibrium is 'don't invest' even though the investment overall is worthwhile (i.e. the value of 8 is greater than the cost of 5).
  - This is because the investment is a sunk cost by the time prices are determined.

- This is called a **hold-up problem**: once the Manufacturer pays for the relationship-specific asset, the seller can charge a lower price.

- In this context, vertical integration solves the hold-up problem. Why?

Investment incentives

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- This is called a **hold-up problem**: once the Manufacturer pays for the relationship-specific asset, the seller can charge a lower price.

- In this context, vertical integration solves the hold-up problem. Why?
  - The decision to invest is made by a single firm who simply chooses whether the investment is worthwhile (i.e. invest if $v > c$)

- **When investments in specific assets are at stake, vertical integration alleviates the hold-up problem.**

Summary of key points*

- Understand two other economic issues in vertical relationships:
  1. The hold-up problem
  2. How downstream competition affects wholesale prices and the final prices when two firms merge in a supply chain (a trade-off between double marginalization vs raising rivals' costs)

*To clarify, all the material in the slides, problem sets, etc is assessable unless stated otherwise, but I hope this summary might be a useful place to start when studying the material.