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Chapter 17.2

The impact on service quality

Outline

Hiring employees of different abilities

- Investment banks hire employees of differing ability, but the quality is difficult to assess for clients
- Value to clients will impact the price they can charge
- Partnerships share the profits they generate, while incorporated investment banks first pay their employees

Ability of employees

- Investment banks have employees with different abilities, generating a surplus V for clients, which has distribution $F(V)$
- Investment banks can identify the ability of employees and hire employees of minimum ability V^* for incorporated investment banks and V^{**} for partnerships
- Clients can assess the quality of a service with probability p

Price of services

- Generating surplus V, the price an investment bank can charge will be the average surplus of all those they hire
- Price incorporated banks charge: $P^* = E[V|V > V^*] = \frac{1}{1-F(V^*)} \int_{V^*}^{+\infty} V dF(V)$
- Price partnerships charge: $P^{**} = E[V|V > V^{**}] = \frac{1}{1-F(V^{**})} \int_{V^{**}}^{+\infty} V dF(V)$

Investment bank profits

- A fraction p of clients know the quality of service and will pay P^*, the remainder can only infer the quality and will pay $\hat{P}^*$, following their inference of the quality
- Investment banks pay wages w
- Investment banks hold equity E
- Their employees have ability of at least V^*, hence they employ only a fraction $1 - F(V^*)$ of the possible market
- Profits: $\Pi_C = (1 - F(V^*)) \left(pP^* + (1-p)\hat{P}^* - w \right) - E$

Optimal ability threshold

- Investment banks choose the optimal ability threshold for hiring, V^*, by solving $\frac{\partial \Pi_C}{\partial V^*} = 0$
- This gives $w = pV^* + (1-p)\,P^*$, assuming clients infer the threshold correctly and $P^* = \hat{P}^*$
- Profits of investment banks then are $\Pi_C = p\,(1 - F\,(V^*))\,(P^* - V^*) - E$

Profits of each partner

- In a partnership only the partners joining are providing equity, with $1 - F\left(V^{**}\right)$ employed, each bring equity $\frac{E}{1-F(V^{**})}$
- As partners, each obtains the full revenue of those knowing the ability, paying P^{**} and the others $\hat{P}^{**}$
- Partners are paid no wages
- Profits: $\Pi_P = pP^{**} + (1-p)\,\hat{P}^{**} - \frac{E}{1-F(V^{**})}$

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- Given that we are looking at a partnership, the partners will receive the revenue the investment bank generates, which consists of the price paid by those knowing the quality of service that is provided,
- and those that make inferences about the quality of the service provided.

Optimal ability threshold

- Partnerships choose the optimal ability threshold for hiring, V^{**}, by solving $\frac{\partial \Pi_P}{\partial V^{**}} = 0$
- This gives $pP^{**} + (1-p)\,P^{**} - \frac{E}{1-F(V^{**})} = pV^{**} + (1-p)\,P^{**}$, assuming clients infer the threshold correctly and $P^{**} = \hat{P}^{**}$
- Profits of partnerships then are $\Pi_P = P^{**} - \frac{E}{1-F(V^{**})} = pV^{**} + (1-p)\,P^{**}$

Comparing optimal skill levels

- Using the first order conditions we can get that $P^* = \frac{\Pi_C + E}{1 - F(V^*)} + w$
- Assume $V^* = V^{**}$, then $P^* = P^{**}$, then $\Pi_P = \frac{\Pi_C}{1 - F(V^*)} + w$
- As V^* is optimal for the incorporated investment bank we have $\frac{\partial \Pi_C}{\partial V^*} = 0$
- $\frac{\partial \Pi_P}{\partial V^*} = \frac{\partial \Pi_C}{\partial V^*} \frac{1}{1 - F(V^*)} + \frac{\Pi_C f(V^*)}{(1 - F(V^*))^2} = \frac{\Pi_C f(V^*)}{(1 - F(V^*))^2} > 0$
- F $\Pi_C > 0$, this derivative is positive and V^* cannot be optimal for the partnership

Partnerships have higher skills

- This implies that $V^{**} > V^{*}$ and partnership employees are more able
- Partnerships hold more equity per employee, E for incorporated investment banks and $\frac{E}{1-F(V^{**})}$ for partnerships
- This increases the incentive to be able to charge high prices, which requires high ability

Partnerships are preferred over employment

- Partners will only join if they can earn more than as an employee: $\Pi_P > w$
- This gives $pV^{**} + (1-p)\,P^{**} \geq pV^{*} + (1-p)\,P^{*}$
- Differentiating the right-hand side gives
$$\begin{aligned} & p + \frac{(1-p)f(V^*)}{(1-F(V^*))^2}\int_{V^*}^{+\infty} V dF(V) - \frac{(1-p)V^* f(V^*)}{1-F(V^*)} \\ & > p + \frac{(1-p)f(V^*)}{(1-F(V^*))^2}\int_{V^*}^{+\infty} V^* dF(V) - \frac{(1-p)V^* f(V^*)}{1-F(V^*)} \\ & = p > 0 \end{aligned}$$
- If $V^* = V^{**}$, then $P^* = P^{**}$ and thus $\Pi_P = w$
- As $V^{**} > V^*$, then $P^{**} > P^*$, hence $\Pi_P > w$
- Being a partner is more attractive than being an employee

Incorporated investment banks are viable

- We can use the first order condition of partnerships to obtain $\Pi_C = p\left(\left(1 - F\left(V^*\right)\right)\left(P^* - V^*\right) - \left(1 - F\left(V^{**}\right)\right)\left(P^{**} - V^{**}\right)\right)$
- $\frac{\partial \Pi_C}{\partial V^{**}} = p\left(1 - F\left(V^{**}\right)\right) > 0$
- If $V^* = V^{**}$, then $P^* = P^{**}$ and thus $\Pi_C = 0$
- As $V^{**} > V^*$, we have $\Pi_C > 0$
- If partnerships are preferred, then incorporated investment banks are viable

Incorporated investment banks are profitable

- If clients are unable to identify the ability of investment banks, $p = 0$, then $\Pi_C = -E < 0$
- Assume that for if all clients are able to identify the ability, $p = 1$, then $\Pi_C > 0$
- There exists a $\hat{p}$ such that for $p > \hat{p}$ incorporated investment banks are viable

Partnerships are more profitable

- If partners were paid wages w, then their excess profits are $\Pi_P - w$
- Holding shares in the incorporated investment bank would give Π_C
- Partnerships are more profitable if $\Pi_P - w \geq \Pi_C$
- This requires $p \leq \hat{\hat{p}} = \frac{P^{**} - P^{*}}{F(V^{**})(P^{**} - V^{**}) - F(V^{*})(P^{*} - V^{*})}$
- If the ability of investment bankers is difficult to assess, partnerships are more profitable

- Problem and model assumptions
- Ability in incorporated investment banks
- Ability in partnerships
- Comparing skills of employees
- Attractiveness of partnerships
- Summary

Benefits of partnerships

- Partnerships are more attractive than being an employee
- Partnerships are more profitable than incorporated investment banks if clients are unlikely to identify the ability of investment banks
- Partnerships have higher abilities than incorporated investment banks

Dominance of partnerships

- Partnerships should dominate in markets where service quality is difficult to assess
- This can be in markets for complex products or services, or new products and services
- It can include markets that are generally difficult to analyse

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