MGT 621 – MICROECONOMICS

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9. Markets and Intermediaries

Autumn 2023

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AGENDA

What is an intermediary?

Intermediary's Value Proposition

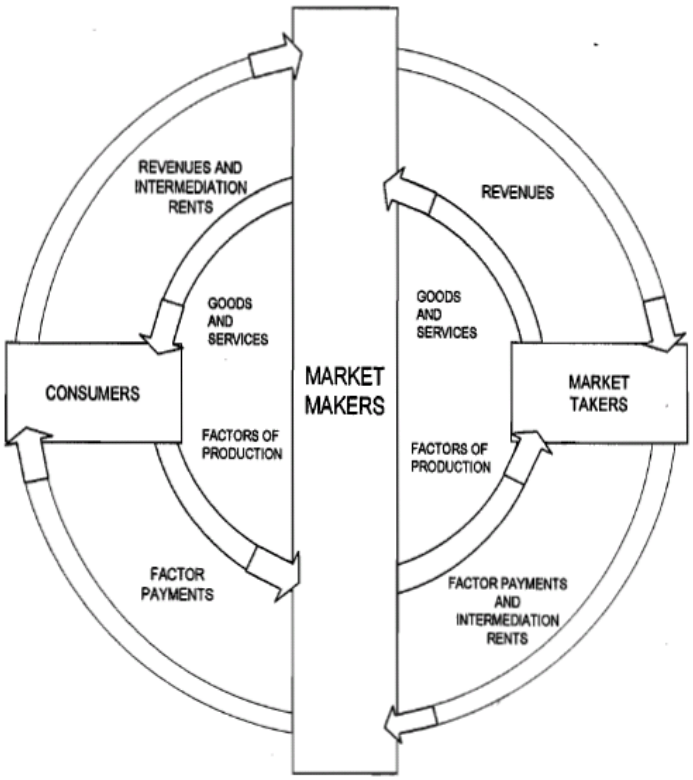
Key Concepts to Remember

WHAT IS AN INTERMEDIARY

Definition. An intermediary offers intermediation services between two trading parties by acting as a conduit for goods and services offered by a supplier to a consumer. Typically the intermediary offers an added value to the transaction that is not available in a direct exchange between the two trading parties.

INTERMEDIARIES ARE MARKET MAKERS
… and Create Two-Sided Markets …

Consumption Side



Supply Side

Source: Spulber (1999)

EXAMPLES OF INTERMEDIARIES

There are plenty …

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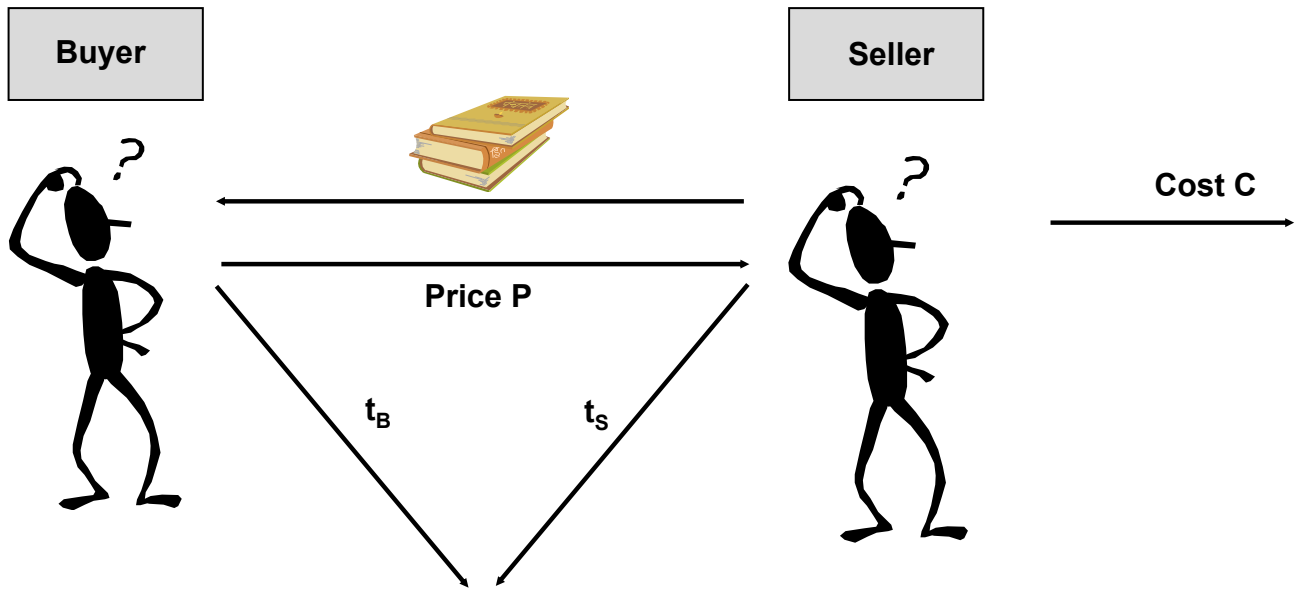
-

DIRECT EXCHANGE



Transaction Cost T = t_B + t_S

$U_B = V - t_B - P$

$U_S = P - t_S - C$

Direct exchange takes place $\Leftrightarrow \quad V - C \geq T$

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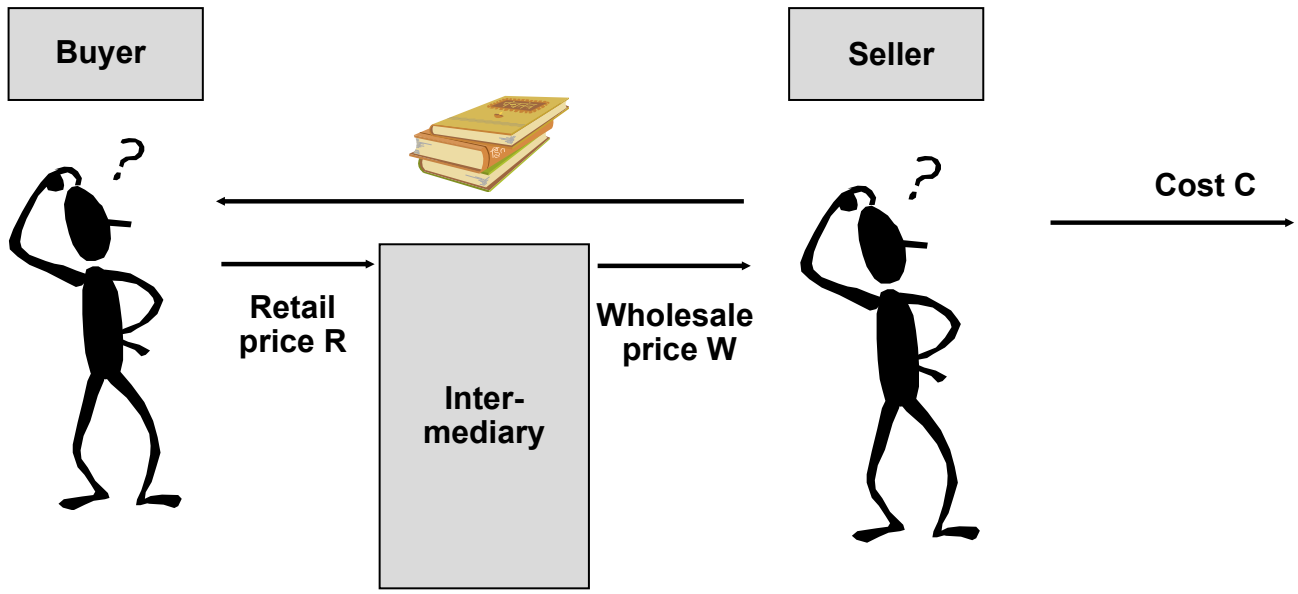
INTERMEDIATED EXCHANGE



Intermediation Cost K

$U_B = V - R$

$U_S = W - C$

Intermediated exchange takes place $\Leftrightarrow$ $V - C \geq K$ **and** $T \geq K$

REASONS FOR LOWER TRANSACTION COSTS

- **Intermediary trades larger volume → Economies of scale**
- **Commitment power →Intermediary can guarantee prices**
- **Longevity of Intermediary → Reputation**
- **Information aggregation → Intermediary knows more**
- **Inventory → Intermediary can achieve immediacy by keeping an inventory**

MONOPOLISTIC INTERMEDIARY

The profit-maximizing prices (R,W) satisfy

$$V - R = (V - C - T)/2 = W - C$$

The intermediary's "markup" is therefore

$$R - W = T.$$

Hence, the intermediary is viable if and only if

$$K \leq T.$$

PRICE COMPETITION BETWEEN INTERMEDIARIES

"Bertrand Price Competition"

Assume two intermediaries have identical intermediation cost K. Then in a simultaneous-move price-setting game their gains are dissipated fully since undercutting the opponent is a dominant strategy, as long as payoffs are positive.

Hence, at the unique Nash equilibrium, both intermediaries charge (P,W) such that

$$V - P = (V - C - K)/2 = W - C$$

The intermediaries' equilibrium payoffs are zero, while the seller's and the buyer's payoffs are (V – C – K)/2, respectively.

Intermediaries can enable social gains by lowering transaction cost.

TRANSACTION COST DECREASE: IMMEDIACY

Assume that the buyer and seller are equally sensitive to the time value of money and have a common per-period discount factor $\delta \in (0,1)$. When conducting a direct exchange, the gains from trade V – C are realized in the following period, so that the surplus to be divided between the trading parties becomes

$$S = \delta (V - C).$$

An intermediary, e.g., by keeping an inventory of the items to be traded, can provide immediacy of the exchange.

It is viable if and only if the intermediation cost K is such that

$$K \leq (1 - \delta)(V - C)$$

TRANSACTION COST DECREASE: ELIMINATION OF SEARCH

Assume that the buyer and seller have a probability $\beta \in (0,1)$ of meeting in a direct exchange. Then with probability $(1 - \beta)$ no exchange takes place, resulting in a transaction cost

$$T = (1 - \beta)(V - C)$$

Hence, an well-known intermediary that provides a trading platform can be viable if the intermediation cost K is such that

$$K \leq (1 - \beta)(V - C)$$

The lower the probability of matching between buyers and sellers, the higher the likelihood that an intermediary emerges.

INTERMEDIARY CAN ENABLE TRADE WHEN MARKETS FAIL

Consider a buyer whose value for an item is either high (V_H) or low (V_L), with equal probability (where $V_H > V_L > 0$), so that in expectation

$$V = (V_H + V_L)/2.$$

Suppose further that a seller has either high opportunity cost (C_H) or low opportunity cost (C_L), with equal probability (where $C_H > C_L > 0$), so that in expectation

$$C = (C_H + C_L)/2.$$

Assume that $V_H > C_H > V_L > C_L$. After meeting and learning each other's type they decide to transact or not. Thus, with probability 1/4 there is no trade.
The expected gains from direct transaction are therefore

- **Buyer L: $(V_L - C_L)/4$**
- **Buyer H: $(V_H - C)/2$**
- **Seller L: $(V - C_L)/2$**
- **Seller H: $(V_H - C_H)/4$**

Total ex-ante expected surplus:

$$V_H - C_L - (C_H - V_L)/2 \qquad (< V_H - C_L)$$

ENABLE TRADE WHEN MARKETS FAIL (Cont'd)

If a monopolist intermediary offers prices $R = V_H - (V_H - C)/2$ and $W = C_L + (V - C_L)/2$, then buyer H's and seller L's expected surplus from using the intermediary are equal to the expected surplus from direct exchange, since

$$V_H - R = V_H - V_H + (V_H - C)/2 = (V_H - C)/2$$

and

$$W - C_L = C_L + (V - C_L)/2 - C_L = (V - C_L)/2.$$

However, buyer L's and seller H's surplus are negative, preventing them from using the intermediary. Hence, they will be inactive in equilibrium, while the intermediary is viable if its intermediation cost K is such that

$$R - W = V_H - (V_H - C)/2 - C_L - (V - C_L)/2 = (V_H - V_L + C_H - C_L)/4 \geq K.$$

Thus, an intermediary may produce a separating equilibrium in a market that has a positive probability of failing if intermediation costs are low enough.

INTERMEDIARY MAY ALLEVIATE ADVERSE SELECTION

Consider a seller whose product is of either high (H) or low quality (L). The seller's opportunity cost increases with the quality of the good supplied, $C_H > C_L > 0$. The buyer's willingness to pay is increasing in the product quality, $V_H > V_L > 0$.

Let $\lambda \in (0,1)$ be the probability that the good is a "lemon", i.e., is of low quality, such that the following "lemons condition" is satisfied:

$$V = \lambda V_L + (1 - \lambda) V_H < C_H.$$

Hence, if the buyer cannot distinguish between the two product qualities in equilibrium, the high-quality seller will leave the market, as the buyer's willingness to pay does not cover the cost of providing the good.

Therefore, the lemons condition implies that only lemons are directly exchanged in the market. The payoff for the remaining buyer and seller type (L,L) is $(V_L - C_L)/2$. Trade occurs with probability λ.

ALLEVIATE ADVERSE SELECTION (Cont'd)

Assume that a trusted intermediary is able to observe the quality of the seller's product at a cost K and then to communicate that information to the buyer.

$V = \lambda V_L + (1 - \lambda) V_H < C_H$.

The intermediary can then make the prices (R,W) contingent on the observed quality (L or H). The optimal intermediation prices are such that buyer's and sellers are just as well off as under direct exchange, so that

$(R_H,W_H) = (V_H,C_H)$

and

(R_L,W_L): $W_L - C_L = (V_L - C_L)/2$ and $V_L - R_L = \lambda (V_L - C_L)/2$.

The intermediary is viable if $(1 - \lambda)(V_H - C_H) + \lambda(V_L - (1 + \lambda)(V_L - C_L)/2 - C_L) \geq K$.

INTERMEDIARIES CAN MITIGATE MORAL HAZARD

Suppose that a buyer can enhance the default value V_L obtained from a certain good or service to V_H by making a relationship-specific investment I. This investment is non-contractable. The seller's cost is $C < V_L$, and the surplus is evenly divided such that both parties obtain $(V_i - C)/2$ for i = L,H.

Assume that the required investment is "substantial", i.e., $V_H - V_L > I > (V_H - V_L)/2$.

Then the buyer will not find it worthwhile to make the relationship-specific investment, since

$(V_H - C)/2 - I < (V_L - C)/2$.

MITIGATE MORAL HAZARD (Cont'd)

An intermediary can set prices (R,W) such that

$V_H - I - R = (V_L - C)/2 = W - C.$

The intermediary is viable if

$R - W = V_H - V_L - I \geq K.$

INTERMEDIARIES AND TRANSACTION COST
Summary

- **Provide Immediacy**
- **Reduce Search & Matching Cost**
- **Enable Trade when Markets Fail (Bilateral Asymmetric Information)**
- **Alleviate Adverse Selection**
- **Mitigate Moral Hazard**

… and reduce "coordination problems"

CONCLUSION

Public-Policy Implications with respect to Intermediaries

- **Should the government encourage the entrance of intermediaries?**
- **Should the government act as an intermediary?**
- **Should the government encourage the competition of intermediaries?**

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KEY CONCEPTS TO REMEMBER

- **Intermediary / Market Maker / Two-Sided Market**
- **Transaction Cost**
- **Intermediation Cost**
- **Immediacy**
- **Search Cost**
- **Market Failure**
- **Adverse Selection**
- **Moral Hazard**