

Chapter13

Incentives and Organizations

CHAPTER SUMMARY

The architecture of an organization comprises the distribution of ownership, incentive schemes, and monitoring systems. Ownership means the rights to residual control. Incentive schemes and monitoring systems are related as incentives must be based on behavior that can be observed. An efficient incentive scheme balances the incentive for effort with the cost of risk.

An efficient organizational architecture resolves four internal issues – holdup, moral hazard, monopoly power, and economies of scale. Holdup and moral hazard arise between parties with a conflict of interest. Additionally, moral hazard depends on one party not being able to observe the actions of the other. Holdup can also be resolved through more detailed contracts, moral hazard through incentive schemes and monitoring systems, and internal monopoly power through out-sourcing.

KEY CONCEPTS

organizational architecture	relative performance	ownership
moral hazard	holdup	residual control
performance pay	specificity	residual income
performance quota	complete contract	vertical integration

GENERAL CHAPTER OBJECTIVES

1. Discuss the problem of moral hazard.
2. Analyze monitoring systems and incentive schemes to resolve moral hazard.
3. Appreciate the risk imposed by incentive schemes.
4. Appreciate how to give incentives for multiple responsibilities.
5. Discuss the problem of holdup.
6. Analyze how the distribution of ownership affects moral hazard and the potential for holdup.
7. Discuss the design of organizational architecture.

NOTES

1. Organizational architecture.

- (a) Organizational architecture comprises incentive schemes, monitoring systems, and the distribution of ownership. The vertical and horizontal boundaries of the organization are two implications of the organizational architecture.
- (b) An efficient organizational architecture revolves and should be designed to balance 4 internal issues: moral hazard, holdup, monopoly power, and economies of scale and scope.

2. Moral hazard.

- (a) **Moral hazard** exists when one party's actions affect but are not observed by another party with whom it has a conflict of interest, e.g., delivery persons, sales representatives are subject to moral hazards.
- (b) Moral hazard arises only when there is asymmetric information about the *future* actions of the better-informed party.
- (c) **Economic efficiency.** The relevant parties would like to resolve the moral hazard so that the better-informed party will make the economically efficient choice.
 - i. The degree of moral hazard is measured by the discrepancy between the actual action or effort and the economically efficient level.
 - ii. Economically efficient level of action:
 - (1). Employer's profit = employer's benefit (revenue – other costs) – wages and incentives paid to the worker subject to moral hazard.
 - (2). Worker's net benefit = wages and incentives – cost of effort.
 - (3). Employer's marginal benefit from the worker's effort = change in employer's profit from worker's increase in effort.
 - (4). Worker's marginal cost from effort = additional cost required to increase effort.
 - (5). Economic efficiency for the group: a level of effort when employer's marginal benefit balances worker's marginal cost.
 - iii. The actual action or effort chosen by a party subject to moral hazard will be lower than the economically efficient level.
 - (1). Worker acts independently and considers only her personal marginal benefit and marginal cost from effort, not the employer's marginal benefit.
 - (2). The lower the worker's marginal benefit relative to the employer's marginal benefit, the lower the effort the worker chooses relative to the economically efficiency level.
 - iv. A profit can be made by resolving the worker's moral hazard. The greater the moral hazard, the greater the gain in net benefit from resolving the moral hazard.

3. Monitoring systems and incentive schemes.

- (a) 2 complementary approaches to resolve moral hazard: **monitoring systems** (e.g., time clock, vehicle log, random checks by supervisors, customer reports) and incentive schemes.
- (b) **Incentive schemes** align incentives of the party subject to moral hazard with those of the less-informed party by tying payments to some *observable measure* of performance. They depend on:
 - i. A link between the unobservable action and some observable measure of performance.
 - ii. Information provided by monitoring systems.
- (c) *Performance pay* is an incentive scheme that bases pay on some measure of performance (e.g., a commission per delivery).
 - i. An incentive scheme is stronger (resulting in higher level of worker's effort) if it provides a higher personal marginal benefit for effort.
- (d) A *performance quota* is a minimum standard of performance (set at the economic efficient level of effort, e.g., minimum number of deliveries), below which penalties (e.g., deferral of promotion, pay reduction, dismissal) apply.
 - i. A performance quota is cost effective. It does not reward effort below or above the economically efficient level.
- (e) An economically efficient scheme (one that maximizes net benefit) must balance the incentive for effort with the **cost of risk**.
 - i. Risk arises whenever incentives are based on *an indicator* that depends on extraneous factors (deliveries made by a delivery person depends on traffic, weather, customers' orders...etc) and the party subject to moral hazard has imperfect information about those extraneous factors.
 - ii. The costs of risk depend on 3 factors:
 - (1). The structure of the incentive scheme: the stronger the scheme, the higher the risk to the party subject to moral hazard.
 - (2). The degree of risk aversion of the party subject to moral hazard, and
 - (3). The importance of extraneous factors: when the indicator is sensitive to these factors and the factors are subject to wide swings, the higher the risk. Note: Incentive schemes based on *relative performance* (e.g., fixed pay plus a commission for each delivery above an average level) are an effective way of reducing risk due to *common* extraneous factors (whose effect is cancelled out to the extent they affect all workers equally).
 - iii. *Stronger* schemes should be adopted when the party subject to moral hazard is less risk adverse and extraneous factors are weaker.
- (f) A party may be subject to moral hazard with respect to **multiple responsibilities**, i.e., when one party's multiple actions (as opposed to a

single action) affect but are not observed by another party with whom it has a conflict of interest.

- i. An incentive scheme should balance the multiple responsibilities: monitoring each of the unobservable actions and with incentives based on each of the corresponding indicators.
- ii. An incentive scheme that focuses on one responsibility may aggravate moral hazard associated with other functions.
- iii. When there are responsibilities for which it is difficult to measure performance, a deliberate use of *weak* incentives is a way to achieve the necessary balance among responsibilities.

4. Holdup.

- (a) Holdup is an action intended to exploit another party's dependence. It arises only when there is a conflict of interest between the parties.
- (b) It does not require asymmetric information.
- (c) The prospect of a holdup deters investments in specific assets.
 - i. The specificity of an investment in an asset is the percentage of the investment that will be lost if the asset is switched to another use.
 - ii. The costs of holdup will be higher if the relevant assets are more specific.
- (d) The prospect of a holdup lead other parties to take **precautions** which either reduce the benefit from the relationship or increase costs, reducing the group's net benefit.
 - i. A profit can be made by resolving the holdup.
- (e) A *complete/more detailed* **contract** would resolve holdup, but would be very costly to prepare.
 - i. A complete contract specifies what each party must do and the corresponding payments under every possible contingency.
 - ii. The degree to which a contract should be *incomplete* depends on:
 - (1). The (lower) potential benefits and costs at stake, and
 - (2). The (smaller) extent of possible contingencies.
- (f) Another way to resolve holdup is through **changing the ownership** of the relevant assets, e.g., **vertical integration**.
 - i. Ownership is the rights to residual control (rights that have not been contracted away). Rights to residual control include:
 - (1). The right to receive *residual income* from the asset (i.e., the income remaining after the payment of all other claims) and the benefit of changes in income and costs.
 - (2). The right to withhold the services of the asset.
 - ii. A transfer of ownership means shifting the rights of residual control to another party.

5. Vertical integration: affects moral hazards and resolves holdup.

- (a) Vertical integration is the combination of the assets for two successive stages of production under a common ownership.
 - i. Downstream: closer to the final consumer.
 - ii. Upstream: further from the final consumer. The “make or buy” decision is a decision to vertically integrate upstream.
 - iii. Vertical integration changes ownership of assets and alters the rights to residual control and residual income.
- (b) With **vertical integration**:
 - i. **Holdup** can be resolved.
 - ii. The degree of **moral hazard** is increased. The internal supplier is subject to moral hazard.
 - iii. The internal supplier may acquire **monopoly power**. One can **outsource** (purchase of services or supplied from external sources) whenever the internal provider’s cost exceeds that of external sources/competitive level in the market.
 - iv. The internal supplier may lack **economies of scale and scope** as compared with external suppliers. Note: however, at some point, scope economies are outweighed by the degree of moral hazard within the various operational units of a huge organization (with **wide horizontal** organizational **boundaries**).

ANSWERS TO PROGRESS CHECKS

- 13A. The new marginal cost curve lies above the original. Please refer to Figure 13A on page 548 of the text. (1) The economically efficient effort will be lower. (2) The effort that the worker actually chooses will be lower.
- 13B. Draw any personal marginal benefit curve that crosses the marginal cost curve at 120 units of effort.
- 13C. See Figure 13C on page 548 of the text.
- 13D. Mary’s incentive scheme should be stronger.
- 13E. The salesclerk’s incentive to process returns will be reduced.
- 13F. On-the-job training.
- 13G. Walt Disney integrated downstream; Broken Hill integrated downstream; Loral integrated downstream; Dominion Resources integrated upstream.
- 13H. There are scale economies in processing credit card transactions. Mercury is too small to operate the service efficiently.

ANSWERS TO REVIEW QUESTIONS

1. [omitted].
2. As it is costly for the insurer to monitor Leah's precautions, information is asymmetric. With insurance, Leah bears the cost of precautions but receives only part of the benefit, and so, there is a conflict of interest.
3. With moral hazard, the marginal benefit of effort exceeds the marginal cost. By resolving the moral hazard, the potential profit is the marginal benefit less the marginal cost.
4. Method (b) provides more incentive to the lawyer.
5. (a) Pay or quotas based on sales relative to the average. (b) Rewards or quotas based on the number of accidents or breakdowns relative to average.
6. The scheme will reduce the secretary's incentive for effort in the other tasks.
7. (a) Index of small stocks; (b) Index of U.S. government bonds; (c) Index of Japanese stocks.
8. (b) Airbus-340 training.
9. Because the additional cost of preparing a complete contract outweighs the potential benefit in avoidance of holdup.
10. (i) Shareholders have residual control (rights that have not been contracted away). For instance, they may dismiss the current board of directors and management. (ii) Shareholders also have the rights to residual income (income remaining after the payment of all other claims). They receive dividends only after all other claims, such as interest and trade debts, have been paid.
11. [omitted].
12. False. Internal production would give rise to problems of moral hazard and internal monopoly.
13. If the internal supplier quotes a price that is too high, internal customers will out-source. This constrains the monopoly power of the internal supplier.

14. Vertical integration involves combining assets for the two successive stages of production under common ownership. Horizontal integration involves combining assets for the same or similar stage of production under common ownership.
15. For: reduces potential for hold up. Against: increases moral hazard, creates internal monopoly, and does not benefit from scale economies.

WORKED ANSWER TO SAMPLE DISCUSSION QUESTION

Mars Power has built an electric power generating plant next to the Mercury coal mine. Mars has tailored its plant to the grade of Mercury's coal. The other customers for Mercury's coal are relatively distant.

- (a) Use this example to explain specific assets.
- (b) How can Mars take advantage of Mercury? How can Mercury take advantage of Mars?
- (c) If Mars acquires the coal mine, how will that affect (i) the potential for hold up, and (ii) unobservable efforts by Mercury managers?

Answer

- (a) By building a power plant adjacent to and tailored to the grade of Mercury's coal, Mars Power had made an investment in an asset that was specific to its relationship with Mercury. This means that if Mars decides to switch to another coal source, it will lose its specialized investment in the power plant.
- (b) Mercury can take advantage of this specific relationship (Mars's need for coal) by holding up or refusing delivery of coal unless Mars pays a higher price. To the extent that Mercury's other customers are relatively distant, Mars can also engage in holdup.
- (c) If Mars vertically integrates with Mercury, it will reduce the potential for holdup since now both the coal source and power generation are under common ownership. There is no incentive for holdup in either direction. A new problem will arise – the managers of the coal mine will be subject to moral hazard. Mars may have difficulty in monitoring the effort of the mine managers and there will be the usual employee-employer conflict of interest.