

All economic costs

Production costs

The costs of transforming inputs into outputs or the direct production expenses.

Transaction costs

The costs of making exchange or the indirect production expenses.

Motivation costs

The costs of motivating specialized agents to align their interests, e.g.:

- Cost of cheating or opportunistic behavior, Williamson [1975, 85].
- Agency cost among owners, managers, and debt holders, Jensen and Meckling [1976].

Costs are mainly caused by **opportunism**.

Coordination costs

The costs of coordinating the actions between specialized agents, e.g.:

- Cost of obtaining information, Stigler [1961].
- Cost of coordinating input in production, Alchian and Demsetz [1972].
- Cost of measurement, Barzel [1982].

Mainly caused by **bounded rationality**.

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Relaxing the assumption of full knowledge

All the analysis so far has assumed that the consumer has full knowledge about the prices, availability, and qualities of the goods in question. When we relax the assumption of full knowledge, we have a slightly different situation.

Markets and transaction costs

Economic activities take place in markets. We can abstractly define a market as the sphere through which price-making forces (the terms of exchange) operate. In other words, supply and demand work themselves out in markets. We can then define marketplaces as locations where exchanges occur and where the terms of exchange are registered. In the marketplace, groups of individuals and businesses keep in touch with each other in order to buy or sell some particular good. Finally, market mechanisms are aspects of marketplaces and are information networks, for example, to allow individuals to keep in touch with each other. Market mechanisms are often set up to minimize transactions costs.

But what are transactions costs? We can define them as all of the costs of enabling

exchanges to take place. Transactions costs include the cost of being informed about the qualities of a particular product. The general nature of a product can include its price, availability, durability record, servicing facilities, degree of safety, and so on. Consider, for ex-

ample, the transactions costs in shopping for a 10-speed bicycle. Such costs would include phone calls or actual visits to sellers in order to learn about product features and prices. These are transactions costs. In addition to these costs, we must include the costs of negotiating a sale. The specification and execution of any sales contract is thus included, and ultimately, transactions costs must include the cost of enforcing such contracts.

Without going into a full discussion of the theory of transactions costs, we can point out here that they depend on the following:

1. The number of distinct transactions per unit time period
2. The volume of goods traded per unit time period
3. The number of distinct parties involved in each transaction
4. The number of distinct goods per transaction

Information and price dispersion

Ignoring for the moment questions about quality and availability of a product, let us dwell only on the fact of life that price dispersion exists even for homogeneous products, that is, products that have similar qualities. Even if a product's attributes are well defined, it is possible to purchase it at different prices from different sellers. An automobile with exactly the same features may be sold at different prices by different dealers (even after correcting for possible differentials in service and the choice of models or brands from which to choose).

The relaxation of our assumption of full information, in the face of price dispersion, can be looked at as a situation of consumer choice with uncertainty. Uncertainty, in this example, is uncertainty about where the product can be bought at the lowest price. We now can define the term "information" in the context of price to mean a change in the consumer's

knowledge of price dispersion or differences. Information generation is an active process. Acquiring information is therefore costly. It uses such resources as time and money income. As such, some information costs are transactions costs. However, Robinson Crusoe (before Friday's arrival on the scene) would have incurred information costs, but no transactions costs, because he was alone.

The optimal search for information

Consider now a typical situation in which there is price dispersion and incomplete information about that dispersion. The consumer must engage in a search. In how much searching should he or she engage? Clearly not an infinite amount because searching requires time which is a resource that is scarce and costly. Moreover, a consumer's search for a lower price must eventually run into what must be called diminishing marginal returns. Beyond some point, the expected reduction in unit price is less than the unit cost of the additional search time and effort. After a while, the consumer will find it more difficult to locate a seller who is going to sell the product at a price lower than the lowest price already quoted. Early search efforts are apt to turn up sellers whose prices lie considerably below the average price. After each successive lowest price is found, however, the consumer can expect to encounter more and more firms whose prices are higher. Thus, each time a lower price is found, it is less likely that the consumer in the next search period will encounter a still lower one.⁴

The rational consumer will continue to search for a lower price up to a point where the expected return from one more unit of search will not cover the cost of that activity.

⁴This follows from the law of diminishing returns, discussed in Chapter 7.

Four propositions regarding the optimal amount of search to undertake can be made.⁵

1. The greater the price dispersion, the greater is the optimal search time, *ceteris paribus*.
2. The greater the percentage of a consumer's total wealth that will be spent on the product in question, the greater is the optimal search time. It may be worth an extended search for a new car bargain, but it is not worth the same time to search for a lower price of common table salt.
3. The more repetitive the purchase in question, the greater is the optimal search time (so long as differential prices among dealers persist).
4. The greater the value of the consumer's time, the smaller the optimal search will be, *ceteris paribus*. Other things being the same, the IBM executive will search less than the lower-salaried IBM filing clerk.

These propositions about search time can explain, for example, why big cities are not so expensive for residents as they are for tourists. Because tourists stay only for a relatively short period of time, it does not pay them to invest much of their relatively scarce time in learning about which are the cheapest-priced restaurants, which are the cheapest-priced bookstores, which are the cheapest-priced department stores, and so on. Rather, we can expect that rational tourists will frequent "tourist spots." The city resident, however, makes repeated purchases and hence will invest a larger amount of time searching for and acquiring information about where the prices of commodities are lowest.

The above argument may also explain the success of franchised fast-food and lodging chains. Although it may appear that the price to tourists is higher than the price to non-tourists for "similar" commodities, such may not be the case. The services offered to

⁵A detailed discussion can be found in G. Stigler, "The Economics of Information," *Journal of Political Economy*, vol. 69, no. 3, June 1961.

tourists may be different. There may be more advertising and use of nationally standardized products, both of which are costly. The tourist's time is more valuable, in a sense, than the nontourist's time in any particular city the tourist is visiting. The tourist just doesn't have the time for shopping that the nontourist does. The tourist ends up at Howard Johnson's or the Holiday Inn and pays for

Why do firms exist?

Commodities are produced by firms. Here we will limit our definition of a firm to any organization in which there is an employer and one or more employees.¹ The employees are paid a contractual wage that they receive for a specified period, no matter what the rate of output and no matter what the rate of sales. On the other hand, the employer, who is also defined as an entrepreneur—the organizer and undertaker of business risks—does not receive a contractual wage rate in the capacity of entrepreneur. Rather, the employer receives what revenue is left over, if any, after all contractual payments are made. In accounting, "what is left over" from each year's revenues is called *profit*, or *net income*. It is also called the *residual*, or *net revenues*, by economists. We will have occasion to examine the concept of profit in more detail in Chapter 8.

Firms do exist. In principle, an individual could, for example, make automobiles, but automobile *firms* in fact produce most automobiles. Many of the production activities that go into the final product called an automobile are carried out within an automobile manufacturing firm.

Much can be learned about the reasons firms exist merely by recognizing that economic transactions are not costless. Exchange between two individuals has its costs, gener-

¹More generally, we could define a firm as an organization that buys and hires resources and sells goods and services. A single-person proprietorship would fall under this broader definition.

advertising, cleanliness, and the assurance of a standardized product. In other words, the information about the quality of the product has a value for the tourist, and the tourist is often willing to pay for it in order to avoid searching.

We might conclude by stating that the full price of a commodity is the money price plus the transactions costs.

ally called *transactions costs*. Given the existence of transactions costs, it may be cheaper to organize production in such a way that some market transactions are eliminated and replaced instead by an entrepreneur who both monitors and directs the production process.

However, such an organization does have its bad points. Production by a group of individuals who are not the residual claimants to any profits—"what's left over"—increases the cost of monitoring, metering, directing, and renegotiating contracts. If 10 Haitian basket weavers operate separately as individual entities in which each one is an entrepreneur, each one will feel the full brunt of "not doing his or her job." Income and profits will fall for each individual who slacks off in proportion to how much the individual slows down. However, if all 10 are put into one firm in which they work together as a coordinated group, each specializing, say, in one aspect of production, the cost of any one individual member's not doing the job will be spread out equally among all members. Hence, if a firm is used to organize production, the cost to an individual of slacking off on the job is less than in a situation where the worker is also the residual claimant to any profits. Moreover, in a firm, it is more difficult to meter the output of each individual in the group because they are all working together. Thus, it is more difficult to work out a proper incentive system to reward a worker who generates a higher output by way of a greater work effort. The above are factors working *against* organizing firms.

What we observe in firms, however, are monitors. These monitors make sure that workers perform. Monitors also attempt to meter the output of workers. The ultimate monitor in a firm is the entrepreneur or employer. If the entrepreneur or employer doesn't monitor effectively, his or her net wealth position is reduced. Employees, in choosing to work for a firm, implicitly agree to being monitored by the entrepreneur.

All this leads us to the prediction that firms will exist whenever cooperative group effort results in a larger product than the sum of the products of individual efforts. The difference, of course, must be at least as great as the costs of organizing, monitoring, metering,² and enforcing contracts with employees less the transactions costs associated with the subcontracting alternative.

The goal of the firm

Lurking behind the explanation of why firms exist was an implicit assumption about the goal or goals of the firm. It was stated that the buck stopped at the ultimate monitor—the owner-entrepreneur or employer who had a residual claim on whatever was left over after all expenses were paid. This residual claim is called profit. Underlying our assertion that the entrepreneur as monitor will slack off less in his or her duties because of the immediate impact on net worth is an assumption of net worth maximization (in the present value sense). The theory of the firm as we present it in this book is built around this hypothesis.

Profit maximization

In demand theory, utility or satisfaction maximization provided the basis for the analysis. In the theory of the firm and production, at least initially, profit or wealth maximization is the underlying hypothesis of our predictive theory.

Is this assumption of profit maximization realistic? If we are trying to explain business behavior, we don't actually have to assume

that entrepreneurs consciously try to maximize profits. We hypothesize that their behavior is consistent with the maximization of profits. If a physicist wants to predict where a billiard player will hit the cue ball in order to cause a particular ball to go into a pocket on the billiard table, the physicist predicts the billiard player's behavior by hypothesizing that the player knows the laws of physics, even though this may be an "unrealistic" assumption. Remember from our discussion in Chapter 1 that it is not necessary that assumptions be directly testable—indeed, normally they are indirectly tested by the refutable predictions of the model. If the real world consistently refutes a model's predictions, then the assumptions of the model may be inappropriate.

Theories of managerial discretion

Nonetheless, other goals of the firm can be presented, and we examine several of them below. However, we will use the profit-maximizing assumption throughout the remainder of this text.

Staff maximization

Whenever there is a separation of the ownership of a business from its control, the possibility arises that the managers will not act in the best interests of the owners.³ Since monitoring is not a costless activity, owners would not be expected to eliminate completely managerial activities which benefit the managers but harm the owners. Given the separation of ownership and control, it is possible that man-

²A detailed discussion of the notion of monitoring and metering and of the existence of firms can be found in A. A. Alchian and H. Demsetz, "Production, Information Costs, and Economic Organization," *American Economic Review*, December 1972, pp. 777-795. See also R. H. Coase, "The Nature of the Firm," *Economica*, new ser., vol.

4 November 1937 pp 386-408. The article is also reprinted in G. Stigler and K. Boulding, *Reading in Price Theory* (Homewood Ill.: Irwin, 1952), pp. 332-335.

³See, for example, Adolph A. Berle and Gardiner C. Means, *The Modern Corporation and Private Property* (New York: Macmillan, 1948).

agers may seek to satisfy their own utility by having a larger staff than is necessary to achieve maximum profit or wealth for the owners. The manager is willing to trade off some of the owners' profit for an increase in his or her staff, particularly when it is difficult for the managers to "get caught" at not acting 100 percent in the owners' interest. We can represent the trade-off in terms of indifference curves. Three of these we show in Figure 7-1.

We see in Figure 7-1 that the horizontal axis measures staff hours per unit time period and the vertical axis measures profit per unit time period. Assume that the indifference curves for a manager are convex to the origin. There is a profit curve showing the relationship be-

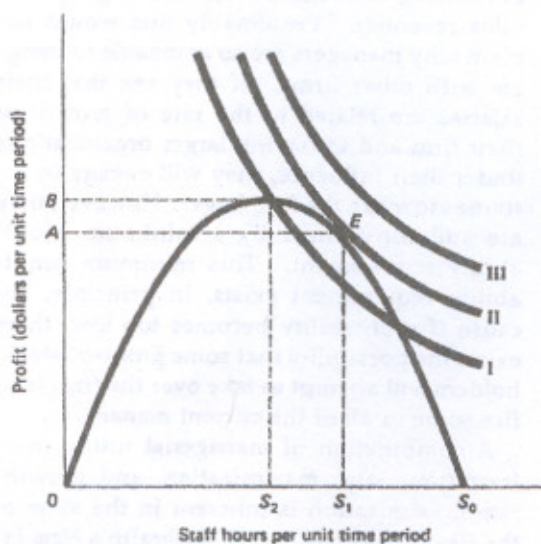


Figure 7-1: Staff maximization.

Staff hours per unit time period are measured on the horizontal axis. Profit is expressed as dollars per unit time period on the vertical axis. Up to S_2 as staff is added, profits increase. After that point, profits decrease. Thus, the profit-maximizing size of staff is at S_2 ; however, the managers are assumed to obtain utility from a larger staff size. Thus, they hire staff up to the point where they can reach their highest indifference curve, II, or at point E . Staff hired will be equal to S_1 , which is greater than S_2 . The corresponding profit A will be less than the maximum profit B .

tween profit and staff size. *Ceteris paribus*, as more staff members are added, profit rises to a maximum of B associated with a staff size of S_2 and then falls; reaching zero with a staff size of S_0 . To maximize the utility of the manager, the staff size would be set at S_1 , for that is where the indifference curve II is tangent to the "budget constraint" or trade-off line between profit and staff size (point E). If there were no separation of ownership and control, or if monitoring by owners were costless, the size of the staff would be set at S_2 and profits would be at their maximum of B . In other words, managers would act as if they were owners in setting the optimal staff size.

This is a utility-maximizing theory of managerial behavior. It requires the existence of imperfect information among the owners-stockholders. It also requires that the firm have some degree of market power.⁴ If the firm were in a completely competitive market, a topic we will discuss in Chapter 10, it would have to maximize profits merely to survive.

Sales maximization⁵

Another type of model that has been offered for the firm is based on sales maximization. Managers may pursue sales maximization if they think that their own compensation and/or their professional prestige depends more on sales than on profits. We must insert the constraint here that there be a minimum rate of return on investment that stockholders require. (Note that we are referring now to the rate of profit—profits/investment per year—rather than to absolute profits.)

We present the model of sales maximization in Figure 7-2. Profit, expressed as a rate of return on investment, is represented on the ver-

⁴Oliver E. Williamson, *The Economics of Discretionary Behavior* (Englewood Cliffs, N.J.: Prentice-Hall, 1964).

⁵William J. Baumol, *Business Behavior, Value and Growth*, rev. ed. (New York: Harcourt Brace Jovanovich, 1967).

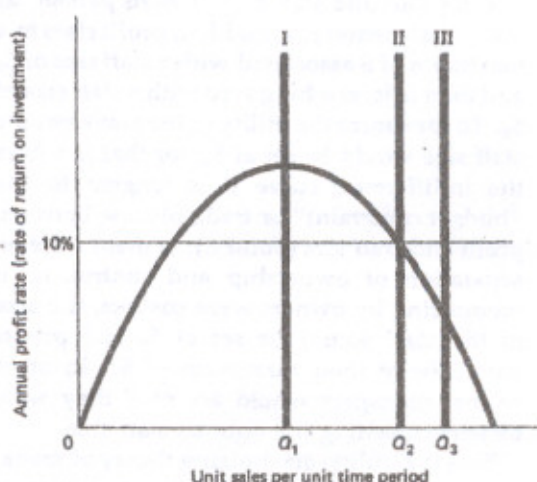


Figure 7-2: Sales maximization.

Assume that profitability, expressed as a rate of return on investment, is an increasing function of unit sales up to rate of unit sales Q_1 , after that profitability diminishes. Assume, also, that there is a minimum annual rate of return that managers must meet and that it is 10 percent. The indifference curves for the managers are I, II, and III. They are vertical, indicating the managers receive no utility from profitability per se. The highest indifference curve that managers can reach is not III, with the rate of unit sales at Q_3 , because that rate of unit sales yields a rate of profitability below 10 percent per year. Therefore, the rate of unit sales that managers will strive for is Q_2 , which puts them on indifference curve II. Note that this rate exceeds the profitability maximizing rate of unit sales Q_1 .

tical axis, and unit sales per unit time period on the horizontal axis. The relationship between the profit rate and unit sales is given by the curve; the profit rate reaches a maximum at a rate of sales Q_1 . However, assume that the point of maximum revenues (price times quantity) occurs at a quantity of sales Q_3 . Even if management wishes to maximize sales revenues, it will not be able to produce at the quantity Q_3 . This is because there is a constraint imposed upon it. That constraint is the minimum profit rate which we have drawn in arbitrarily at 10 percent per year. Thus, the managers will set sales at Q_2 rather than at the profitability-maximizing rate of Q_1 .

We have drawn indifference curves I, II, and

III vertically. The reason they are drawn vertically is because we assume that management obtains no utility at all from profitability; thus, a higher utility curve is merely a vertical line that is farther to the right. How can managers increase unit sales and hence revenues? Provided they are operating in the elastic portion of their demand curve, they can lower the price of the product and increase total revenues. (Why?) Further, they can engage in more advertising to increase sales by shifting the demand curve outward to the right.

Growth maximization

A similar model of the firm involves managers attempting to maximize the rate of growth of sales revenues. Presumably this would explain why managers are so amenable to mergers with other firms. If they see that their salaries are related to the rate of growth of their firm and to having larger organizations under their influence, they will engage in activities to make the firm larger. However, they are still constrained by a minimum profitability requirement. This minimum profitability requirement exists, in principle, because if profitability becomes too low, there exists the possibility that some group of stockholders will attempt to take over the firm (and fire some or all of the current managers).

A combination of managerial utility maximization, sales maximization, and growth-rate maximization is inherent in the view of the firm presented in J. K. Galbraith's *New Industrial State and Economics and the Public Purpose*. Additionally, Galbraith points to the managerial drive for prestige and technical virtuosity. He further suggests that the managers can carry out their plans because they are able to influence the behavior of consumers, primarily by advertising. Since the corporation is run by managers who wish to have an easy life for themselves, Galbraith emphasizes that large corporations will try to avoid risks and engage in extensive planning

to produce stability. This is his so-called planning sector of the economy, and it is run by corporate technocrats—*technically* skilled individuals who, in Galbraith's view, make all the important business planning decisions.

Satisficing behavior⁶

According to the satisficing theory of firm behavior, the firm sets for itself a minimum standard for performance. It aims at a "satisfactory" rate of profit; presumably, once this rate of profit is obtained, the firm will slack off. An implication of the satisficing theory of firm behavior is that within the firm there is no consistent attempt to minimize costs for any given level of output, provided, of course, that a satisfactory rate of return is being earned. In other words, there is "internal slack."

Criticisms of non-profit-maximizing assumptions

Aside from the question of the role of assumption in economic theory, there have been criticisms leveled against the alternative models presented above. One is that there is indeed a market in managers. Every management team of every firm faces the possibility that some other management team may convince the stockholders that the latter will increase the profitability of the firm if allowed to take control. Given the existence of a market for corporate control, behavior that deviates dramatically from profit maximization presumably will not be allowed to continue indefinitely. (Although clearly the more impediments there are to controlling corporate management, the more likely is the firm to operate in a non-profit-maximizing dimension.)

Additionally, critics of non-profit-maximizing models of the firm point out that not only

existing stockholders but *potential* stockholders must be considered. Remember in the last chapter when we said that the price of an asset is the discounted stream of its anticipated future net income? If the asset in question is the common stock of a firm, then its value or price in the marketplace will be the present value of the expected stream of future net profits. Thus, to the extent that current management decisions are not maximizing long-run profits, the current market price of the firm's stock will be less than it otherwise would be. Some outsiders might take note of this, making the corporation a sitting duck for a takeover bid. A group of investors would attempt to take over the corporation by buying a large block of its stock at its current low price, kicking out the current managers, and installing a new set, thereby increasing anticipated future profitability. The market value of the stock will then rise. Those who took over would experience an increase in their net worth—a capital gain—since the stock they owned in the company could now be sold for more than they paid for it. Thus, to the extent that there exists a market for corporate takeovers, non-profit-maximizing behavior has some limits set on it.

Accepting for the moment, then, the assumption of profit maximization, we can now proceed to examine the determinants of the way in which a firm organizes production. Specifically, we will look at the optimal use of inputs.

⁶Herbert Simon, "Theories of Decision-making in Economics and Behavioral Science," *American Economic Review*, June 1959.