

Answers to the Problems – Chapter 9

1. Explicit costs are \$30,000. Explicit costs are all the costs for which there is a payment. Explicit costs are the sum the wages paid (\$20,000) and the goods and services bought from other firms (\$10,000).
Implicit costs are the sum of the costs that do not involve a payment. Implicit costs are the sum of the interest forgone on the \$50,000 put into the firm, which presumably could have been used to pay part of the mortgage, in which case the interest forgone is \$3,000; the \$30,000 income forgone by Jack not working at his previous job; \$15,000, which is the value of 500 hours of Jill's leisure (10 hours a week for 50 weeks); and the economic depreciation of \$2,000 (\$30,000 minus \$28,000).
2. a. All methods other than “pocket calculator with paper and pencil” are technologically efficient.
To use a pocket calculator with paper and pencil to complete the tax return is not a technologically efficient method because it takes the same number of hours as it would with a pocket calculator but it uses more capital.
b. The economically efficient method is to use (i) a pocket calculator, (ii) a pocket calculator, (iii) a PC.
The economically efficient method is the technologically efficient method that allows the task to be done at least cost.
When the wage rate is \$5 an hour: Total cost with a PC is \$1,005, total cost with a pocket calculator is \$70, and total cost with paper and pencil is \$81. Total cost is least with a pocket calculator.
When the wage rate is \$50 an hour: Total cost with a PC is \$1,050, total cost with a pocket calculator is \$610, and the total cost with paper and pencil is \$801. Total cost is least with a pocket calculator.
When the wage rate is \$500 an hour: Total cost with a PC is \$1,500, total cost with a pocket calculator is \$6,010, and total cost with pencil and paper is \$8,001. Total cost is least with a PC.
3. a. Methods *A*, *B*, *C*, and *D* are technologically efficient. Compare the amount of labor and capital used by the four methods. Start with method *A*. Moving from *A* to *B* to *C* to *D*, the amount of labor increases and the amount of capital decreases in each case.
b. The economically efficient method in (i) is method *D*, in (ii) is methods *C* and *D*, and in (iii) is method *A*.
The economically efficient method is the technologically efficient method that allows the 100 shirts to be washed at least cost.
(i) Total cost with method *A* is \$1,001, total cost with method *B* is \$805, total cost with method *C* is \$420, and total cost with method *D* is \$150. Method *D* has the lowest total cost.
(ii) Total cost with method *A* is \$505, total cost with method *B* is \$425, total cost with method *C* is \$300, and total cost with method *D* is \$300. Methods *C* and *D* have the lowest total cost.
(iii) Total cost with method *A* is \$100, total cost with method *B* is \$290, total cost with method *C* is \$1,020, and total cost with method *D* is \$2,505. Method *A* has the lowest total cost.
4. a. Wal-Mart is a huge organization. As such, it uses both command and incentive systems. At the lower, store level, command is the system that is most commonly used. (For instance, an associate is old that he or she will help unload a delivery and stack the packages against the South wall.) At the higher, corporate level, incentive is the system most commonly used. (For instance, regional directors have part of their income tied to their region's

performance.) However, even at the store level some incentive systems are used (associates can enroll in a profit sharing plan) and even at the corporate level some command systems are used (regional directors are told that they must report to their supervisors on a weekly basis).

- b. Ms. Frey-Talley probably uses a command system significantly more than an incentive system. Her farm has few employees and so it is easy to tell each employee what to do, when to do it, and where to do it. Possibly the only use of an incentive system might be if Ms. Frey-Talley has some higher-ranking family members on a profit-sharing program.
- c. Wal-Mart faces many more principal-agent problems than does Ms. Frey-Talley. For Ms. Frey-Talley's farm, it is relatively straightforward to monitor each employee so employees will find it difficult to shirk. Plus Ms. Frey-Talley owns the farm herself, and so there is no principal-agent problem associated with a difference between the owners and the managers. Wal-Mart, however, has more than one million employees. Each of these employees realizes that if he she shirks, it will make little difference to Wal-Mart's overall performance. So Wal-Mart's managers must be constantly alert to this problem. Wal-Mart also faces the principal-agent problem that results because its owners are not its managers. As a result, the owners must try to create incentives for the managers to behave in the best interests of the owners.

Wal-Mart has a number of ways that it can try to overcome the principal-agent problems it faces. Its top management is given stock options. Regional managers, store managers, and top level store management are given profit sharing packages that depend on the performance of the region or a particular store. Buyers are often given profit-sharing packages that increase the buyer's income depending on well the products the buy purchased perform in the stores. All of these are designed to give the recipient the incentive to make decisions that boost Wal-Mart's profit and thereby its stock price, which benefit the owners.

- 5. a. The four-firm concentration ratio is 60.49.
The four-firm concentration ratio equals the ratio of the total sales of the largest four firms to the total industry sales expressed as a percentage. The total sales of the largest four firms is $\$450 + \$325 + \$250 + \200 , which equals $\$1,225$. Total industry sales equal $\$1,225 + \800 , which equals $\$2,025$. The four-firm concentration ratio equals $(\$1,225/\$2,025) \times 100$, which is 60.49 percent.
- b. This industry is highly concentrated because the four-firm concentration ratio exceeds 60 percent.
- 6. a. The Herfindahl-Hirschman Index is 1,800.
The Herfindahl-Hirschman Index equals the sum of the squares of the market shares of the 50 largest firms or of all firms if there are less than 50 firms. The Herfindahl-Hirschman Index equals $15^2 + 10^2 + 20^2 + 15^2 + 25^2 + 15^2$, which equals 1,800.
- b. This industry is moderately competitive because the Herfindahl-Hirschman Index lies in the range 1,000 to 1,800.
- 7. a. Lego faced all of the three types of constraints: Technology, information, and market. The technology constraint that Lego faced was how it produced its Legos. Before it made any changes, Lego used a relatively large number of high-paid, presumably high-skilled workers in the United States and Switzerland. After its changes, Lego switched to using apparently fewer workers, who are lower-paid and so likely lower-skilled in Eastern Europe and Mexico.

Lego also faced information constraints. In particular, if Lego had had full information about its market and its competitors' plans, it is unlikely Lego would have suffered economic

losses in 2003 and 2004. And, of course, if Lego had had better information, even after it started to suffer economic losses, Lego would have more rapidly made changes in order to limit its losses. In addition, Lego apparently faced information problems about which managers were not working as hard as they should.

Finally, Lego faced significant market constraints. Other firms were making very similar but lower-priced blocks. This competition led Lego's customers to switch (some of) their purchases from Lego to Lego's competitors, thereby leaving Lego to suffer an economic loss.

- b. When Lego was suffering an economic loss, Lego was manufacturing its blocks in Switzerland and the United States. These workers were generally high-skilled and therefore high-paid. In an effort to restore its profit, Lego changed its production method by firing 3,500 workers and moving its factories where to Eastern Europe and Mexico, where it could use lower-skilled, and therefore lower-paid workers. Apparently before the changes Lego was using an economically inefficient production method, with too many workers in general and too many high-skilled workers in particular.
 - c. Lego faced an information and organization problem because Lego apparently did not know which managers were shirking. In order to overcome this important principal-agent problem, Lego changed its compensation methods by introducing performance-based pay for its managers. By basing its managers' pay on their performance, Lego gave its managers the incentive to work diligently in their efforts to boost Lego's profits.
 - d. Lego operates in a monopolistically competitive market.
8.
 - a. Microsoft entered the market to hire various firms, Astro Studios and Hers Experimental Design Laboratory to design the Xbox 360 and then entered the market again to hire IBM, ATI, and SiS to design the hardware of the Xbox 360. Finally, Microsoft once again entered the market to hire Flextronics and Wistron, and Celestica to produce the Xbox 360. Once Microsoft had contracted with these firms, the design, manufacture, etc. takes place within the firm.
 - b. Microsoft works with a large number of firms rather than doing everything in-house because it is less expensive for Microsoft to work with other firms. These other firms have specialized in various tasks and so have gained economies of scale that Microsoft does not possess. Therefore it is cheaper for Microsoft to enter the market and hire the expertise it needs than to do it all itself.
 - c. Microsoft needed to determine what part of designing, building, and marketing the Xbox would take place inside of Microsoft and what would take place in other companies that Microsoft hired. Hiring other companies means that Microsoft would incur the transactions costs of using markets. However, other companies that specialized in different tasks could have economies of scale, economies of scope, and/or economies of team production that lower the cost to Microsoft of hiring them. So Microsoft had to determine which parts of the Xbox 360 would be cheaper to undertake inside of Microsoft and which parts would be cheaper to enter the market to contract with other firms.
 - d. The Xbox is designed in America and Japan because America and Japan has a large number of highly-skilled workers who can successfully design the Xbox. With a large number of technically adept workers, it is less expensive to design the Xbox in these countries. Manufacturing the Xbox, however, takes place in China because China has a large number of lower-skilled workers and so it is less expensive to build the Xbox in China.

Critical Thinking

1.
 - a. Yahoo and Google provide search services for consumers.
 - b. Yahoo and Google generate revenue from advertising.
 - c. If a consumer clicks on an advertising search link, the company doing the advertising pays the Internet search provider. This payment is called “paid search advertising.” Google specializes in paid search advertising. Display advertising refers to advertisements that appear on the web page of the Internet search provider. Yahoo specializes in display advertising.
 - d. Google purchased YouTube because Google wanted to gain advertising revenue from display advertising on YouTube’s web site.
 - e. If better search technologies are developed so that searches provide more accurate, more useful information, then Internet search providers will be used more often, thereby giving them the possibility of increasing their profit.
2.
 - a. FedEx faces a principal-agent problem. In particular, it is not easy to monitor its drivers and insure that they are working hard to efficiently deliver packages. FedEx overcomes this problem by hiring independent contactors and then paying them based on the amount of packages they deliver. Essentially, FedEx uses a piecework method of payment.
 - b. FedEx pays its drivers based on the volume of packages they deliver. This method of payment creates a few potential problems for FedEx. First, FedEx must worry about the quality of its service. In particular, unless FedEx bases part of the payment on quality, its drivers have an incentive to drop the package and race off to the next delivery with no concern for how the packages are handled. Second, FedEx must take care that drivers do not attempt to select only packages that are close to the FedEx location and avoid packages that have a greater than average driving time. Finally, FedEx also must worry that its drivers do not take undue risks while driving in order to deliver as many packages as possible. If FedEx trucks were involved in a too many accidents, FedEx would suffer bad publicity and, presumably, would lose some business.
3. Dell buys computer components from other companies because it is less expensive for Dell. Dell specializes in assembling computer components not in manufacturing them. Therefore it is cheaper for Dell to incur the costs of using a market (such as the transactions costs) and outsource the manufacture of these items than it would be for Dell to produce them in-house. If Dell produced these components, there would be diseconomies of scale.

Web Exercises

1.
 - a. Mr. Miller asserts that letting the private market handle airport security is the best method. He argued that there should be privately owned security firms and privately owned smuggling firms, each essentially testing one another. If a security firm failed to stop enough smuggling attempts, it would be fired and potentially would fail. Smuggling firms should be paid by the security firms for every successful smuggling attempt. If a smuggling firm was perpetually unsuccessful, it, too, would fail.
 - b. The principals are the airlines and the passengers on the airlines. The agents are the security firms. The principals want the agents to work hard to protect the airport from terrorists smuggling items onto airlines. The principal-agent problem is that the agents, the security firms, might not work diligently to protect the principals.
 - c. Mr. Miller wants to let the private market to provide security. To insure that the security firms are working hard, that is, to overcome the principal-agent problem, Mr. Miller wants

them tested by establishing privately owned smuggling firms. These firms would attempt to smuggle fake weapons onto planes, thereby constantly testing the agents (the security firms) to insure that they are not shirking.

- d. Private firms might provide better security service than public providers because the owners of the private firms stand to make a profit if their firm is efficient at providing security and stand to suffer a loss if their firm is inefficient at providing security. In contrast, no one's wealth can be increased or decreased if security is provided by government agencies. In this case, the incentive to insure efficient security services is less than the situation with privately owned firms.
- e. Your students' answers will depend on their views.