However, in the case where the training expenditures are specific (i.e., they make the employees more productive only in the eyes of the current employer), employers will pay for at least some of the training costs with a training wage that exceeds marginal productivity less the training cost. It is expected the firm will recover this training investment gradually over time by setting the wage in future periods to be less than the corresponding marginal product, provided the present value of the entire compensation package remains at least competitive with what employees can attain elsewhere. The firm is willing to incur some of the initial training cost because it can recoup these costs by underpaying the worker (relative to productivity) in later periods; the worker is willing to stay even though paid less than the value of marginal productivity in the future because with specific training, the value of the worker’s skills is higher at this firm than it would be to other firms. In other words, where training is specific, the worker is overpaid relative to productivity during training and underpaid relative to productivity in later periods. Both workers and employers have invested in training, and thus both have an incentive to make the employment relationship work and share in the rewards. The share of the training cost borne by the employer will reflect the size of mobility costs as well; if mobility costs are high, then the firm will be willing to pay more of the training cost as it will not need to increase the post-training wage much in order to retain workers.

The gap that exists in equilibrium between the $MP$ and the post-training wage gives the worker some protection from temporary layoffs caused by declining demand. It will not be in the firm’s interest to lay off workers as long as it is still recovering some of its training investment. The gap between $MP^*$ and the post-training wage suggests that the firm will not have to worry about the worker quitting since the wage it is paying is higher than what the worker could earn elsewhere. Thus the existence of quasi-fixed costs like hiring and training costs can foster a more stable employment relationship. It can also explain why average productivity tends to fall at the beginning of a recession. Firms may “hoard” skilled labor, as they are unwilling to lay off trained employees. This surplus of labor relative to utilized capital causes average productivity to appear to fall during a recession, but it also means that firms can easily expand output without incurring new hiring and training costs when the economy picks up.

An alternative strategy for responding to quasi-fixed hiring costs may be to attempt to reduce them as much as possible. One method some firms use is to rely on credentials or screening devices instead of closely investigating each individual applicant. This can lead to statistical discrimination in the hiring process. For example, a firm may prefer hiring men, not out of prejudice against women, but because data suggested that on average, men had longer expected job tenures, which in turn would make the recovery of hiring and training costs more likely. In situations where upper-level positions require extensive firm specific knowledge, firms may rely on an internal labor market policy of filling most positions from the ranks of current employees, thus learning about future applicants gradually over time and eliminating the need for extensive screening.

### Review Questions

Choose the letter that represents the **BEST** response.

#### Definitions

1. The best definition of quasi-fixed costs is
   a. nonwage labor costs.
   b. hiring and training costs.
   c. costs that vary with the number of workers employed.
   d. costs that vary with the number of workers employed, but not with the number of hours worked by existing employees.
2. Which of the following is not a quasi-fixed cost?
   a. The hourly wage the firm pays.
   b. Costs associated with a defined benefit pension.
   c. Costs associated with a defined contribution pension.
   d. Employer contributions to Social Security.

*3. Consider a law that would require employers to provide the same package of nonwage benefits that is offered to full-time employees to part-time employees on a prorated basis. (For employees working 25% of the normal workweek, employers would pay for 25% of the benefit package offered to full-time employees, and so on.) Assuming most part-time workers do not currently receive any benefits, such a law would
   a. increase quasi-fixed costs.
   b. increase labor costs that vary with hours worked.
   c. have no effect on quasi-fixed costs.
   d. both b and c.

4. Suppose that during the training period, a firm spends in real terms 3,000 per trainee on labor and materials for its training program. Trainees in the program each produce 2,000 in output during the period, but could produce 3,500 if not occupied with training activities. What is the total cost of training per worker to the firm?
   a. 1,000.
   b. 1,500.
   c. 4,500.
   d. 6,500.

Use the following information in answering Questions 5–8.

Suppose the firm has 500 employees each working a standard workweek of 40 hours. The typical worker earns a real wage of 10 per hour and receives another 200 in weekly benefits and training, 150 of which are quasi-fixed costs to the firm.

5. The marginal expense an employer faces when increasing its average workweek by an hour \((ME_{H})\) is approximately the sum of wage and variable benefit costs (on a per-hour basis) multiplied by the number of employees. Assuming no overtime wage premium, an approximate value for \(ME_{H}\) would be
   a. 11.25.
   b. 60.
   c. 5,625.
   d. 30,000.

6. Recomputing \(ME_{H}\) assuming an overtime wage premium of 50%, an approximate value would be
   a. 16.875.
   b. 8,125.
   c. 8,437.5.
   d. 11,250.
7. The marginal cost an employer faces when employing an additional worker \( (ME_M) \) for a typical workweek is approximately total weekly wages plus the employee benefits that are variable costs plus the quasi-fixed costs. An approximate value for \( ME_M \) would be
   a. 15.
   b. 550.
   c. 600.
   d. 7,500.

The Employment/Hours Trade-Off

8. Suppose the marginal product of an additional worker is 50 and the marginal product associated with expanding the workweek by 1 hour is 625. Using the \( ME_H \) and \( ME_M \) values computed in Questions 6 and 7, employ the rule for cost minimization to find the firm's optimal adjustment of its employment/hours mix.
   a. Increase \( M \) and decrease \( H \).
   b. Increase \( H \) and decrease \( M \).
   c. Increase both \( H \) and \( M \).
   d. \( M \) and \( H \) should not change.

9. Increasing the overtime pay premium to double time may not result in overtime hours being converted to additional employment because
   a. firms may shift to more capital-intensive production methods.
   b. the optimal output of many firms is likely to be less.
   c. the unemployed may not be substitutes in production for those currently working overtime.
   d. all of the above.

In Questions 10 and 11, consider again the law that would require employers to provide the same package of nonwage benefits offered to full-time employees to part-time employees on a prorated basis. (For employees working 25% of the normal workweek, employers would pay for 25% of the benefit package offered to full time employees, and so on.) Also, assume most part-time workers do not currently receive benefits.

*10. Holding output and capital constant, how would firms adjust the employment/hours mix of part-time workers?
   a. \( H \) would increase and \( M \) would decrease.
   b. \( M \) would increase and \( H \) would decrease.
   c. No change in \( M \) or \( H \).
   d. Can not be determined without more information on the \( ME \) and \( MP \) values.

*11. Holding output and capital constant, what effect would there be on the firm’s mix of part-time and full-time workers?
   a. Full-time workers would increase and part-time workers would decrease since the marginal cost of part-time workers is now higher.
   b. Full-time workers would decrease and part-time workers would decrease since the marginal cost of part-time workers is now higher.
   c. There would be no change in the mix of part-time and full-time workers since part-time workers are still cheaper than full-time workers.
   d. Part-time employment would actually increase since more people would now want to work part-time.
In Questions 12 and 13, consider a law that would mandate full health insurance coverage for all employees. Assume that currently most, but not all, full-time employees have health insurance coverage, but that few part-time employees are covered.

12. Holding output and capital constant, how would firms adjust the employment/hours mix of part-time workers?
   a. \( H \) would increase and \( M \) would decrease.
   b. \( M \) would increase and \( H \) would decrease.
   c. \( M \) and \( H \) would both decrease.
   d. There would be no change in \( M \) or \( H \).

13. Holding output and capital constant, what effect would there be on the firm’s mix of part-time and full-time workers?
   a. Full-time workers would increase and part-time workers would decrease since the marginal cost of part-time workers is now higher.
   b. Full-time workers would decrease and part-time workers would decrease since the marginal cost of part-time workers is now higher.
   c. There would be no change in the mix of part-time and full-time workers since part-time workers are still cheaper than full-time workers.
   d. Part-time employment would actually increase since more people would now want to work part-time.

**Firms’ Hiring and Training Investments**

14. A basketball team promises to pay its top draft choice in real terms a 1 million bonus for signing with the team. The player receives 250,000 now and 250,000 each year for the next three years. Assuming an interest rate of 6%, the present value of this payment stream is
   a. 918,253.
   b. 925,251.
   c. 943,396.
   d. 1,093,654.

15. When a firm provides specific training, what happens to the gap between the post-training wage and the marginal product as the market interest rate decreases?
   a. It increases.
   b. It decreases.
   c. It stays the same.
   d. It persists for a longer period of time.

16. Workers want the firm to pay some of the initial cost of specific training because
   a. this will create a gap between the marginal product and the post-training wage.
   b. workers will have some protection from layoffs due to declining demand.
   c. the present value of the total compensation package will be higher.
   d. both a and b.

17. Firms want the workers to pay some of the initial cost of specific training because
   a. the firm will recover more of its investment in the workers.
   b. the post-training wage will be farther above the workers’ marginal product in other firms.
   c. workers will be less likely to quit the firm.
   d. both b and c.
18. Specifically trained workers will be predisposed to quit the firm when 
   a. the post-training wage is less than their marginal product at the firm. 
   b. the firm employs statistical discrimination. 
   c. the present value of the entire compensation scheme is not equivalent to what can be earned elsewhere. 
   d. the firm utilizes an internal labor market strategy. 

19. Firms faced with high hiring and training costs may 
   a. pay workers substantially less than their marginal product while they are in training. 
   b. use statistical discrimination in hiring. 
   c. use internal labor markets. 
   d. all of the above. 

20. If firms rely on old data that suggest women have shorter job tenures than men, firms may 
   a. pay women less. 
   b. offer fewer training opportunities to women. 
   c. employ fewer women. 
   d. all of the above. 

**Mobility Costs and Monopsony** 

21. In a labor market that is monopsonistic 
   a. firms pay a competitive wage. 
   b. firms face an upward-sloping supply of labor curve. 
   c. are monopolists in output markets. 
   d. all of the above. 

22. When mobility costs are high 
   a. the supply of labor is more elastic. 
   b. the supply of labor is less elastic. 
   c. the supply of labor is perfectly elastic. 
   d. the elasticity of supply of labor can no longer be determined. 

*23. Assuming the market supply curve of labor is linear, the marginal expense of labor curve for a monopsonist that pays all workers the same wage will 
   a. have a lower vertical intercept and the same slope when compared to the supply curve. 
   b. have a lower vertical intercept and a steeper slope when compared to the supply curve. 
   c. have a higher vertical intercept and the same slope when compared to the supply curve. 
   d. have the same vertical intercept and a steeper slope when compared to the supply curve. 

24. In a monopsonistic labor market where everyone is covered by the minimum wage, it is possible for the minimum wage to lead to 
   a. higher employment. 
   b. lower employment. 
   c. no change in employment. 
   d. all of the above.
Problems

The Definition of Quasi-Fixed Costs

25. Consider a firm where workers are typically employed for 40 hours a week and 50 weeks a year. Workers at this firm earn a real wage of $12.50 per hour. Suppose the firm is liable for a contribution on behalf of each worker to a fund that will help finance a program of national health insurance. This contribution is 5% of the first $50,000 the worker earns. ($50,000 is called the wage base.)

25a. How much would the firm typically have to contribute for each worker? Prove that this contribution is not a quasi-fixed cost.

25b. Holding the typical hours and the wage base constant, at what wage level would this contribution become a quasi-fixed cost? On the other hand, holding typical hours and the wage constant, what wage base would transform this contribution into a quasi-fixed cost?

The Employment/Hours Trade-Off

26. Immigration laws now require employers to determine whether newly hired workers are legally residing in the country.

26a. Assuming for simplicity that output and capital are constant, what effect does this law have on the employment/hours mix used by firms?

26b. How would the analysis be different if output were not constant?

27. Suppose the firm currently employs 500 workers at 40 hours per worker per week and that the following relationship holds.

\[ \frac{ME_{h}}{MP_{h}} = \frac{800}{400} = 2 > \frac{ME_{w}}{MP_{w}} = \frac{9,000}{6,000} = 1.5. \]

Prove that the firm is not at an equilibrium mix of workers and hours by showing there is a window of opportunity for it to reduce its total cost.

Firms’ Hiring and Training Investments

28. Consider a multiperiod labor demand scenario where for simplicity the interest rate is assumed to be zero. Assume the firm makes real specific training expenditures of 200 per worker, and the expected length of employment (after training) is 15 months. In equilibrium, the workers’ inherent marginal productivity is 225. During training the workers have a marginal product of 200 and are paid a real wage of 150. After training the marginal product is expected to rise to 250. Also, assume an equal wage in the post-training periods.

28a. Find the maximum monthly wage the workers could be offered in the post-training periods if the firm wants to recover fully its training costs by the time the workers are expected to leave. Will the training program be attractive to the workers?

28b. In this scenario, workers and the firm share in the cost of training during the initial period since workers are contributing a marginal product of 200 but are only being paid 150. What would happen to the post-training wage if the firm bore the full cost of training? Why does the firm want the workers to initially bear some of the cost of training?
28c. What would happen to the post-training wage if the worker initially bore the entire cost of training? Why does the worker want the firm initially to bear some of the cost of training?

28d. Suppose the expected length of employment after training is only 10 months. What does this do to the gap between the marginal product and the wage the workers receive?

28e. Assuming a monthly minimum wage of 225, could the firm recover its training costs in only 5 months after training? What is the shortest time over which the firm could recover its training costs?

28f. Given the initial information in the problem, what is the highest the inherent marginal product of the workers could be and still make the recovery of training costs possible?

29. Consider a firm that incurs real expenditures for specific training in the current period equal to 150 per worker. During the training period, the workers have a marginal product of 400 and are paid a real wage of 375. Next year, after the training is over, marginal productivity is expected to rise to 535.

29a. If the firm wanted to recover all its training costs in the initial year after training, what would be the maximum wage it could offer the workers, assuming the interest rate is 6%?

29b. Are workers likely to find this training program attractive?

30. A firm expects to hire workers for three years. The interest rate is constant at 6%. In the current period the firm incurs real training costs of 500 per worker. Suppose the workers’ marginal product during training is 1,800 and then rises to 2,500 in the second year and 2,800 in the third.

30a. If the firm pays the workers a real wage of 1,600 during the training year, 2,200 during the second year, and 2,600 during the third year, will the firm recover its training costs on a present value basis?

30b. Do you think such a pay schedule could persist over time?

31. A firm expects to hire workers for three years. The interest rate is constant at 6%. In the current period the firm incurs real general training expenditures of 3 per worker. A typical worker’s marginal product during training is 5.50. In the second and third years, the worker’s marginal product is expected to increase to 9.

31a. To fully recover its training costs, what real wage will the firm offer to pay the worker in each year?

31b. Why could the firm not pay the worker a post-training wage of 7.5?

31c. Suppose there is a minimum wage of 4 in this economy. How would this change your analysis?

*32. Suppose a firm has a marginal product schedule given by the equation

\[ MP_L = 50 - 2L, \]

where \( L \) is the number of workers. Suppose the money wage is $40 and the product price is $2.

*32a. Find the optimal employment level assuming no training investment.
*32b. If the price of the product the firm sells falls to $1, find the new employment level.

*32c. Suppose that at the employment level found in 28a, the firm only paid the workers a money wage of $20 because it was recovering an earlier investment in specific training. Find the new employment level when the product price falls to $1.

### Applications

**Effects of Equal Pay Laws**

33. Consider a firm that incurs expenditures for specific training in the current period equal to 3,000 per worker in real terms. During the training period, workers and the firm share the cost of training. The firm pays its workers a real wage of 10,500 and their marginal product is 11,000. Next year, after the training is over, the marginal product is expected to rise to 16,000, and then to 17,000 the year after that. The interest rate is 6%.

33a. Robin, a college senior, applies for the job and promises to stay two years after the training program is complete. Robin has other offers to work at 11,500, but they do not offer any training. If the firm wanted to recover all its training costs by the time Robin leaves, what would be the maximum wage it could offer in the post-training years? Assume an equal wage in the years following training.

33b. Would the firm be likely to attract Robin with this offer?

33c. A short time later, Ann also applies to this firm. She is a comparable applicant in all ways except that she plans to stay only one year after training is complete. What would be the maximum wage the firm could offer Ann in the post-training year if they want to recover their training investment?

33d. Assuming she has had offers similar to those made to Robin, would the firm be likely to attract Ann with its offer?

33e. Suppose the firm is required by law to pay workers who do comparable jobs the same wage. Discuss the likely effects on Ann.

**Effects of Minimum Wage Laws**

34. In April 1990, a lower minimum wage was instituted for teenagers. It applied to 16- to 19-year-olds for the first six months of their first job.

34a. How would you predict such a youth subminimum wage would affect the likelihood of teens receiving on-the-job training? Would general or specific training opportunities be most affected?

34b. Construct a simple numerical example to illustrate your reasoning.

**Effects of Subsidized Training**

35. Under the Job Training Partnership Act, the government substantially subsidized employer costs incurred in training certain disadvantaged groups in the population. Refugees from the Vietnam War, for example, were a group targeted by the program, although other groups also qualified.

35a. How would this program affect a firm’s employment/hours choice?

35b. How would this program affect the job stability of the targeted groups?