

Microeconomics, labor markets, final exam practice problems

(The attached PDF file has better formatting.)

*Question 1.2: Real Wage Rate

If a worker's real wage rate exceeds his or her marginal value of leisure,

- A. The worker should work more hours until the real wage rate equals the marginal value of leisure.
- B. The worker should work fewer hours until the real wage rate equals the marginal value of leisure.
- C. If the market is efficient, this situation is temporary, and the real wage rate will fall to the marginal value of leisure.
- D. Since leisure provides no wage, the relation of the real wage rate to the marginal value of leisure is not relevant.
- E. If the real wage rate is permanent, the worker's marginal value of leisure will rise to the real wage rate.

Answer 1.2: A

An additional hour of work raises the benefit of working by the real wage rate and the hours less of leisure reduces the benefit of leisure by its marginal value.

*Question 1.3: Changes in Wage Rates

Suppose that a worker receives a 25% increase in wages and decides to work 10% fewer hours. Which of the following is most likely?

- A. The substitution effect dominates the income effect
- B. Intertemporal substitution dominates the income effect
- C. The marginal product of labor has increased
- D. The income effect dominates the intertemporal substitution effect
- E. The income effect dominates the substitution effect

Answer 1.3: E

- The substitution effect causes the worker to supply more labor, since each hour of labor produces more income.
- The income effect cause the workers to supply less labor, since less labor is needed to pay for life's necessities.

Intertemporal substitution is relevant only if the increase in wages is temporary. The marginal product of labor depends on the value of the labor, not the wage rate.

Jacob: Where do we see this in real life?

Rachel: Some economists see this in the history of labor in Western countries. A hundred years ago, most workers earned little, and they worked 60 hour weeks. Now workers earn more, and they work 35 or 40 hour weeks.

Jacob: Do all economists agree with this?

Rachel: Other economists ascribe the shorter work week with labor law, not income effects. Most persons working 60 hour weeks a hundred years ago had little choice. Compare France and the U.S.: the average U.S. workers earns more than the average French worker, but the French spend less time working. One difference is labor law mandating a 35 hour work week in France with six weeks of paid vacation.

Jacob: Where else does one see the income effects?

Rachel: Perhaps highly paid attorneys and physicians work shorter hours because they don't need the money.

Jacob: On the contrary; the executives at my company earn handsome salaries, but they work 60 hour weeks.

Rachel: The income effect presumes that workers prefer leisure to work. But an executive job can be so exhilarating that it is preferred to leisure. This is true also for much medical and legal work.

*Question 1.4: Marginal Revenue Product of Labor

Suppose a firm hires labor in a competitive labor market. If the marginal revenue product of labor is greater than the real wage rate, then

- A. The firm can increase its profit by hiring less labor.
- B. The firm can increase its profit by replacing labor with capital.
- C. The firm can increase its profit by hiring more labor.
- D. The firm should change its production processes to use less labor.
- E. The firm should provide more training for its workers to increase their real wage rates.

Answer 1.4: C

If the firm hires more labor, the increase in revenues exceeds the increase in cost.

Jacob: How do we determine if the firm should use more labor or capital (Choice B)?

Rachel: We compare the marginal product of labor with the marginal product of capital.

Jacob: How do we determine if the firm should provide training for workers (Choice E)?

Rachel: We compare the cost of the additional training with the increase in the marginal product of labor.

Jacob: Study time for actuarial candidates is a training cost. Is the amount of study time determined by comparing the cost of study time with the increased marginal product of labor?

Rachel: Actuarial candidates compete in a competitive labor market. If an insurer does not provide study time, it loses candidates to firms which give study time. Study time is a minor training cost; the major training cost is the high turnover of actuarial candidates, when candidates move to other firms or other careers. Study time is similar for many large insurers, since no firm wants to be significantly below average.

Jacob: How do insurers know what the average is?

Rachel: Insurers survey their peer companies to determine average study time.

*Question 1.5: Capital Changes and the Marginal Product of Labor

An insurance company has 100 actuaries and 100 secretaries. The insurer buys

- New laptop computers with advanced software packages, and
- New phones with advanced voice mail and conferences capabilities.

If the marginal product of actuarial labor rises and the marginal product of secretarial labor falls, then

- A. Actuarial labor and capital are substitutes in production; secretarial labor and capital are complements in production.
- B. Actuarial labor and capital are complements in production; secretarial labor and capital are substitutes in production.
- C. Actuarial labor, but not secretarial labor, is a regressive factor of production.
- D. Secretarial labor, but not actuarial labor, is a regressive factor of production.
- E. The real wage rate is higher for actuarial labor than for secretarial labor.

Answer 1.5: B

- If coffee and tea are substitutes, a reduction in the price of coffee causes consumers to buy less tea (and more coffee); this is comparable to secretaries and voice mail.
- If cameras and film are complements, a reduction in the price of cameras causes consumers to buy more film; this is comparable to actuaries and software products.

*Question 1.6: Non-Labor Income

Suppose all workers have large investments in capital represented by ownership of common stock. A strong bull market that doubles the value of the common stock is most likely to cause which of the following?

- A. A decrease in the labor supplied
- B. A decrease in the real wage rate but not in the nominal wage rate
- C. A decrease in the nominal wage rate but not in the real wage rate
- D. An increase in the labor supplied
- E. A decrease in the marginal value of leisure.

Answer 1.6: A

Jacob: How might one see this in real life?

Rachel: Suppose a 60 year old worker has \$100,000 in a common stock retirement fund.

- If the market declines and the stock fund is worth \$50,000 two years later, the worker will continue working until age 65.
- If the market doubles and is worth \$200,000 two years later, the worker may take early retirement.

*Question 1.7: Substitution Effect

If the wage rate rises, the substitution effect causes an individual's work effort to

- A. Fall
- B. Rise
- C. Rise if the labor supply curve is backward bending; otherwise to fall.
- D. Fall if the labor supply curve is backward bending; otherwise to rise.
- E. The substitution effect has no effect on work effort

Answer 1.7: B

The question asks about the substitution effect, not the wealth effect. A backward bending supply curve says the wealth effect dominates the substitution effect at high wage rates.

*Question 1.8: Backward Bending Supply of Labor

When is an individual's labor supply curve most likely to be backward bending?

- A. At low wage rates, where income effects are often large.
- B. At high wage rates, where income effects are often large.
- C. At low wage rates, where substitution effects are often large.
- D. At high wage rates, where substitution effects are often large.
- E. At all wage rates, as long as substitution effects are sufficiently large.

Answer 1.8: B

A backward bending supply curve means that the supply of labor decreases when the real wage rate increases. At high wage rates, workers earn all they need without working full time; an increase in the real wage rate may cause the worker to work less and enjoy more leisure time.

*Question 1.9: Intertemporal Substitution

Suppose the NAIC institutes a one-time requirement for all insurers to produce an actuarial opinion cataloging all the terrorism risks facing the company. Each opinion requires six months of actuarial work. To induce actuaries to provide the extra work needed for the opinions, which of the following should insurers do? Assume actuaries are paid by hourly wages, not by salaries.

- A. Permanently raise actuarial wages
- B. Increase benefits for actuaries
- C. Temporarily raise actuarial wages
- D. Permanently lower actuarial wages to subsistence levels
- E. Temporarily lower actuarial wages to subsistence levels

Answer 1.9: C

Jacob: Why won't a permanent increase in actuarial wages have the same effect?

Rachel: If the increase is temporary, actuaries defer vacations and leisure and work 60 hour weeks all year. If the increase is permanent, actuaries are happier, but they continue working 40 hour weeks and taking vacations.

Jacob: How do we see this in real life? Insurers don't temporarily raise actuarial wages.

Rachel: Insurers do not raise salaries or hire more actuaries for a temporary increase in the demand for workers. They use consulting firms to provide the additional labor. The consulting firms induce the extra actuarial labor by giving the consulting actuaries a portion of the income, either immediately or as part of the year-end bonus.

*Question 1.10: Total Product of Labor

Assume that capital deepening increases the marginal product and total product of labor. Which of the following would cause the total product of labor curve to shift upward?

- A. An increase in the labor used
- B. An increase in the capital used
- C. An increase in the real wage rate paid to labor
- D. An increase in the rental rate paid to suppliers of capital
- E. An increase in the nominal wage rate paid to labor

Answer 1.10: B

Capital deepening, or an increase in the capital available per worker, increases the marginal product and total product of labor.

*Question 1.11: Output Prices and Demand for Labor

The Specialty Motor Company makes minivans which require twice as much gas per mile as cars made by foreign manufacturers. Higher demand for oil in Asia, depletion of oil fields in the Middle East, and hurricanes in the Gulf Coast cause the price of gasoline to double. What is the effect on consumer demand for minivans? Assume the demand curve and supply curve for minivans are sloped, not vertical or horizontal.

	Demand Curve	Equilibrium Price	Equilibrium Quantity
A	No Change	Higher	Lower
B	No Change	Lower	Higher
C	Moves Left	Higher	Lower
D	Moves Right	Higher	Lower
E	Moves Left	Lower	Lower

Answer 1.11: E

The demand curve curves to the left; at any price, consumers want fewer minivans. The supply curve doesn't change, and the intersection is at a lower price and lower quantity.

*Question 1.12: Complements

Suppose that capital deepening increases the total product of labor for both secretaries and actuaries, but actuarial labor and capital are complements in production and secretarial labor and capital are substitutes in production. How will an increase in the amount of capital affect the total product of labor curve for actuaries?

- A. Twists clockwise but does not rise or fall.
- B. Twists counter-clockwise but does not rise or fall.
- C. Rises and becomes steeper at every level of labor usage.
- D. Rises and becomes flatter at every level of labor usage.
- E. Falls and becomes steeper at every level of labor usage.

Answer 1.12: C

*Question 1.13: Industry Demand Curve for Labor

Assume that actuarial labor is *not* a regressive factor and twenty auto insurers compete in a perfectly competitive market. Auto insurance is mandated by state law, and consumers' demand for insurance is relatively inelastic (fixed). Is the industry's demand curve for actuarial labor more or less elastic than the horizontal sum of individual firms' demand curves and why?

- A. More elastic, since the industry cannot raise its output without lowering price.
- B. Less elastic, since the industry cannot raise its output without lowering price.
- C. More elastic, since the industry's use of capital is fixed in the short run.
- D. Less elastic, since the industry's use of capital is fixed in the short run.
- E. The industry's demand curve is defined as the horizontal sum of the firm's demand curves.

Answer 1.13: B

If the wage rate rises for one firm, the firm's costs increase but the total industry output doesn't change materially. If costs increase for all firms, the market costs of production rise and the market supplies less of the good, causing the price of the good to rise and an increased demand for labor.

*Question 1.14: Factor Shares

Suppose an industry is in long run competitive equilibrium and production has constant returns to scale. The factor shares paid to labor, capital, land, or entrepreneurs add up to

- A. The firm's marginal cost
- B. The firm's variable cost
- C. The firm's revenues
- D. Producers' surplus
- E. Net after-tax profits

Answer 1.14: C

All the firm's revenues are paid to some factor: labor, capital, land, or entrepreneurs.

*Question 1.15: Wage Rate and Marginal Value of Leisure

If the wage rate is less than a worker's marginal value of leisure, he or she

- A. Should choose to work fewer hours.
- B. Should switch to a higher paying job and work fewer hours, since the wage rate is too low.
- C. Should switch to a higher paying job and work more hours, since the wage rate is too low.
- D. Should work more hours, assuming additional work can be obtained
- E. Should switch to a higher paying job and work the same hours.

Answer 1.15: A

*Question 1.16: Work Effort

In countries Y and Z, wage rates increase by 20%. In Country Y, work effort increases; in country Z, work effort decreases. Which of the following is a possible explanation? (In Country Z, the labor supply curve shows less labor supplied at a higher wage.)

- A. In Country Y, the increase in wage rates is permanent; in Country Z, it is temporary.
- B. In Country Y, workers are highly paid; in Country Z, they are low paid.
- C. In Country Y, the labor curve is backward bending; in Country Z, it is not.
- D. In Country Y, workers receive subsistence wages; in Country Z, workers receive government subsidies and wages are used for additional income.
- E. Country Y has a progressive income tax; Country Z has a flat income tax.

Answer 1.16: D

*Question 1.17: Wages and Discrimination

Suppose workers have three possible occupations: teachers, mechanics, and office workers. The demand curve for labor is same for each occupation:

$Q = 1,000 - 20P$, where P is the hourly wage rate and Q is the number of workers.

- If $P = \$0$ per hour, employers want 1,000 workers.
- If $P = \$10$ per hour, employers want 800 workers.
- If $P = \$50$ per hour, employers want no workers.

The demand curve for two occupations combined is $Q = 2,000 - 40P$.

The demand curve for all three occupations combined is $Q = 3,000 - 60P$.

The work force has 500 men and 500 women. The labor supply is inelastic (elasticity = 0): each of the 500 men and 500 women works for the best wage available and no one remains unemployed.

If the law allows only men to be mechanics and only women to be teachers or office workers, what is the wage rate for men minus the wage rate for women?

- A. 25.00
- B. 12.50
- C. 0
- D. -12.50
- E. -25.00

Answer 1.17: D

Wage rate is \$25 for men and \$37.50 for women.

- For men: $500 = 1,000 - 20P \Rightarrow P = (1,000 - 500) / 20 = \25
- For women: $500 = 2,000 - 40P \Rightarrow P = (2,000 - 500) / 40 = \37.50

*Question 1.18: Compensating Differentials

Wages may include compensating differentials because

- A. Different jobs require different types of education or training.
- B. Compensating differentials adjust for different skills needed for each job.
- C. Some jobs are more unpleasant than others.
- D. Compensating differentials adjust for the likelihood that workers stay with the same firm.
- E. Compensating differentials for different unemployment benefits by state.

Answer 1.18: C