

1. What determines the economic rent for land? Explain from a supply and demand perspective.

Ans: Economic rent is the price paid for the use of land (or natural resources) whose supply is basically fixed. The first characteristic, therefore, is that the supply curve for land or natural resources is perfectly inelastic. Land and natural resources also have no production costs and are a “free” gift of nature, so an increase in economic rents provides no incentive function to bring forth more land. The second characteristic is that demand is the only active determinant of economic rent. As demand rises and falls, economic rents will rise and fall.

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2. “Buy land. They ain't making any more of the stuff.” What is the relevance of Will Rogers' quote to the economist's use of the term “rent”?

Ans: To an economist, rent is the price paid for the use of land or any other natural resource that is fixed in supply. Therefore, supply is perfectly inelastic and rent is determined solely by the demand for land and other natural resources.

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3. David Ricardo, a nineteenth century economist, wrote “The price of corn is not high because a rent is paid, but a rent is paid because the price of corn is high.” Explain this statement in the context of supply and demand.

Ans: The active determinant of land rent is the demand for land, not the supply of land, which is perfectly inelastic. If corn prices rise, then this in turn will increase the demand for land, and thereby increase land rent. Landowners may benefit from the higher rents on land, but they are not responsible for the high rents, or for the high price of corn.

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4. What is the relevance of the incentive function of price to the market for land?

Ans: In most resource markets, higher price serves as an inducement for resource suppliers to increase the quantity supplied. However, since the supply of land is perfectly inelastic, price does not perform this function. Higher prices for land will not lead to greater quantities supplied. Therefore, the price or economic rent of land is a surplus payment that is unnecessary to make the land available to the economy.

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5. What explains differences in the economic rent charged for two plots of 500 acres of land that are used for growing corn and located in the same county of a province?

Ans: Land differs in quality and this difference can lead to differences in productivity. The soil on one plot of land might be better than on another plot of land, thereby increasing the yield per acre on that plot over the other plot of land. These productivity differences will lead to differences in the demand for the two plots of land. Since demand is the only determinant of land rent, the differing demands will lead to different rents. There may also be location considerations that may make one plot of land more attractive than another plot of land, and these preferences get expressed in the demand for each plot of land.

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6. What is the difference between society's view and an individual firm's view of economic rent?

Ans: From society's perspective economic rent is a surplus payment. It is a payment above and beyond what is necessary to get use of the resource. From a firm's perspective economic rent is a cost. Firms must pay economic rent to bid the land it wants to use for its production away from alternative uses.

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7. Why is land rent a “surplus payment” from the perspective of economists?

Ans: Economic rent is the price paid for the use of land or natural resources whose supply is perfectly inelastic. The supply of land is perfectly inelastic because it is virtually fixed in the quantity available. Supply has no influence in determining economic rent. Demand is the active determinant of economic rent. As demand increases or decreases, economic rent will increase or decrease given the perfectly inelastic supply of land. Economic rent serves no incentive function given the fixed supply of land. It is not necessary to increase economic rent to bring forth more quantity, as is the case with other resources. For this reason, economists consider economic rent to be a surplus payment.

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8. Assume that the quantity of a certain type of farmland is 400,000 acres and the demand for this land is that given in the table below.

<u>Pure land rent, per acre</u>	<u>Land demanded, acres</u>
\$500	100,000
400	200,000
300	300,000
200	400,000
100	500,000
50	600,000

- (a) What will be the economic rent and how much land will be rented?
- (b) If the productivity of the land increases such that 200,000 more acres are demanded at each price, what will the economic rent be and how much land will be supplied?
- (c) Given the new demand schedule in (b), if landowners were taxed at a rate of \$200 per acre for their land, what would be the economic rent on this land after taxes and how many acres would be rented?
- Ans: (a) The rent will be \$200 an acre and 400,000 acres of land will be rented.
- (b) The new economic rent will be \$400 and only 400,000 will be supplied.
- (c) The before-tax rent is \$400 so the after-tax rent is \$200. Still, 400,000 acres would be rented.

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9. Assume that the quantity of a certain type of farmland is 300,000 acres and the demand for this land is that given in the table below.

<u>Pure land rent, per acre</u>	<u>Land demanded, acres</u>
\$300	100,000
250	200,000
200	300,000
150	400,000
100	500,000
50	600,000

- (a) What will be the economic rent and how much land will be rented?
- (b) If the productivity of the land decreases such that 200,000 less acres are demanded at each price, what will the economic rent be and how much land will be supplied?
- (c) Given the new demand schedule in (b), if landowners were taxed at a rate of \$50 per acre for their land, what would be the pure rent on this land after taxes and how many acres would be rented?

Ans: (a) The rent will be \$200 per acre and 300,000 acres of land will be rented.

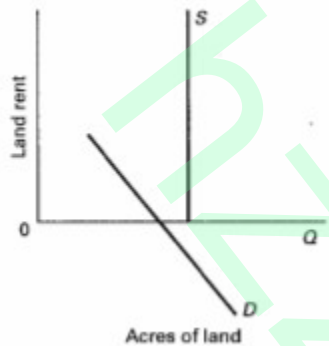
(b) The new economic rent will be \$100 per acre and only 300,000 acres will still be supplied.

(c) The before-tax rent is \$100 so the after-tax rent is \$50. Still, 300,000 acres would be rented.

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10. Using the below axes draw a supply and demand graph for land showing it as a “free” good.



Ans:

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11. Why is money *not* an economic resource? If it is not productive, then why do businesses want to obtain or “buy” it?

Ans: The four basic economic resources are land (or natural resources), labour, capital, and entrepreneurial ability. The key characteristic of these resources is that they are productive because they can be used to produce goods and services. Money cannot be used to produce goods and services. Money is simply a paper or token asset in the form of currency, coins, or checkable deposits. Businesses, however, obtain or “buy” money as a way to acquire real capital goods such as plants, equipment, or machinery. Thus, indirectly money gives access to real capital goods.

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12. Briefly explain the loanable funds theory of interest rate determination.

Ans: The demand for loanable funds shows the inverse relationship between the interest rate and the quantity of loanable funds demanded. At lower interest rates, more loanable funds will be demanded than at higher interest rates. The demand for loanable funds is a function of the demand for loans expressed by different groups in the economy—consumers, businesses, and governmental institutions. These groups borrow more when the interest rate is low because it is less expensive to borrow money. The supply of loanable funds shows a positive relationship between the interest rate and the quantity of loanable funds supplied. The higher the interest rate, the more incentive households will have to supply loanable funds to financial institutions. Consumers are more willing to forego consumption. When graphed, the demand for loanable funds is a downward sloping curve, and the supply of loanable funds is an upward sloping curve. The intersection of the supply curve and the demand curve for loanable funds determines the rate of interest.

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13. Suppose the total demand and supply of loanable funds (in billions) are as follows:

<u>Quantity demanded of loanable funds</u>	<u>Interest Rate (percent)</u>	<u>Quantity supplied of loanable funds</u>	<u>Surplus (+) or shortage (-)</u>
85	4	72	_____
80	6	73	_____
75	8	75	_____
70	10	77	_____
65	12	79	_____
60	14	81	_____

(a) What will be the market or equilibrium interest rate? What is the equilibrium quantity of loanable funds? Complete the surplus-shortage column.

(b) Why will 4 percent *not* be the equilibrium interest rate in this market? Why *not* 14 percent?

(c) Now suppose that the government sets the interest rate at 6 percent. Explain the economic impact of this price control.

Ans: (a) The equilibrium interest rate will be 8%. The equilibrium quantity will be 75 billion. Surpluses (interest rate, quantity): 14%, 21 billion; 12%, 14 billion; 10%, 7 billion. Shortages: 4%, 13 billion, 6%, 7 billion.

(b) At a 4% interest rate there will be a shortage of 13 billion that will raise the interest rate. At a 14% interest rate there will be a surplus of loanable funds that will drive down the interest rate.

(c) At a 6% interest rate the quantity of loanable funds demanded exceeds the quantity of loanable funds supplied by 7 billion, so there will be a shortage of loanable funds. This situation will lead to nonmarket rationing of available loanable funds supplied at this interest rate. Financial institutions will make loans to their most creditworthy customers. Creditworthy customers gain because they pay below market interest rates while lenders lose because they receive less interest on their loanable funds than the market would provide. The below market interest rate creates economic inefficiencies because funds get allocated to less productive investments whose rate of return is below the equilibrium market interest rate.

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14. What are some extensions to the simplified model of the loanable funds market?

Ans: First, households do not lend directly to businesses. Financial institutions serve as intermediaries in the supply and demand market for loanable funds. Second, the supply of funds can change because of changes in factors that affect the thriftiness of households. Third, the demand for funds can change because of changes in the rate of return on potential investments. Fourth, households and businesses can operate on both sides of the market-as both demanders and suppliers of loanable funds. Government also participates on both sides of the loanable funds market. Fifth, the central bank and financial institutions can alter the supply of loanable funds.

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15. How would each of the following events affect the interest rate and the quantity of loanable funds lent and borrowed? Include in your answer, whether the demand for or the supply of loanable funds changes and how it is affected.

- (a) higher productivity of capital investments is expected;
- (b) households become less thrifty;
- (c) concerns that retirement savings are inadequate increase;
- (d) savers become less sensitive to interest rates;
- (e) the economy experiences a large increase in the demand for products;
- (f) provincial governments run larger budget deficits;
- (g) financial institutions tighten their lending policies; and
- (h) the rate of tax on interest income is reduced.

Ans: (a) Higher productivity of capital investments increases the expected rate of return on investments. As business increases its demand for loanable funds, a higher interest rate and a higher quantity of loanable funds lent and borrowed result.

(b) When households become less thrifty, there are fewer savings available and the supply of loanable funds decreases. The interest rate rises and the quantity of loanable funds lent and borrowed declines.

(c) Increased concerns that retirement savings are inadequate spur more savings. The supply of loanable funds increases. In response, the interest rate would fall and the quantity of loanable funds lent and borrowed would rise.

(d) When savers become less sensitive to interest rates, the supply of loanable funds curve will become more inelastic. The interest rate and the quantity of loanable funds lent and borrowed do not change.

(e) Increased demand in the economy makes capital investments more profitable and increases the demand for loanable funds. The interest rate and the quantity of loanable funds lent and borrowed increase.

(f) When provincial governments run larger budget deficits, they must increase borrowing to finance them. The increase in the demand for loanable funds leads to a higher interest rate and a higher quantity of loanable funds lent and borrowed.

(g) The tightening of lending restricts the supply of loanable funds. A higher interest rate and a lower quantity of loanable funds lent and borrowed result.

(h) A reduction in tax rates on interest income encourages more savings. The increase in the supply of loanable funds reduces the interest rate and increases the quantity of loanable funds lent and borrowed.

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16. In your own words, describe what is meant by the time value of money. Provide an example.

Ans: The time value of money generally means that money (and the goods it buys) is worth more today than it is in the future. For instance, if the interest rate was 5% and you were to receive \$105 one year from now, you would be just as happy with \$100 today; you could always put that \$100 in the bank and get \$105 in a year. In other words, you could replace \$105 in the future with just \$100 today.

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17. What is the future value of \$1,000 invested today in 3 years if the interest rate is 7%?

Ans: If you invest \$1,000 today at 7%, next year you will have $\$1,000(1.07)=\$1,070$ in one year. You would have $\$1,070(1.07)=\$1,144.90$ at the end of year two and $\$1,144.90(1.07)=\$1,225.04$ at the end of the third year.

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18. What is meant by present value of some future opportunity?

Ans: The present value of a future opportunity is the value of that opportunity today. In order to calculate the present value, you must discount the future value.

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19. What factors might cause the interest rates to differ? Explain.

Ans: There are four key factors that cause interest rates to differ: (a) Interest rates vary depending on the degree of risk involved in the loan. Loans with higher risk will command higher interest rates. (b) The maturity of the loan can affect the interest rate, with longer terms usually paying higher rates. (c) Loan size can be a factor; smaller loans tend to have higher interest rates than larger loans reflecting administrative costs. (d) Market imperfections can give a degree of monopoly power to some lenders causing somewhat higher loan rates.

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20. Economists often speak as if there is a single interest rate when in fact there are many interest rates. What factors explain the differences in these interest rates?

Ans: Economists speak as if there is one interest rate for the sake of convenience.

Explanations can be confusing if all interest rates are considered. There are, however, many different interest rates. They differ because of four factors: risk; maturity; loan size; and market imperfections. In general, interest rates will be higher the riskier the loan, the longer the maturity of the loan, the smaller the size of the loan, the greater the taxability of the loan, and the more monopolistic the lender of the loan.

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21. What is the pure rate of interest?

Ans: When economists talk about “the interest rate” they are referring to the pure rate of interest that is best measured by the interest paid on long-term and riskless securities, such as thirty-year bonds of the Government of Canada.

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22. Why is the interest rate such an important price in the economy?

Ans: The interest rate affects both the level and composition of investment goods production. There is an inverse relationship between the interest rate and investment. Higher interest rates will restrict investment goods production and lower interest rates will encourage investment goods production. Lower interest rates will encourage investment, and therefore enhance the short-term and long-term growth in the economy.

The interest rate also affects the composition of investment goods production by allocating capital to those projects that have the best prospects for profitability. The interest rate rations scarce money capital, and therefore physical capital, to those activities in the economy with the best rate of return or which are the most productive.

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23. Distinguish between the nominal and real rates of interest using an example.

Ans: The nominal rate of interest is the stated rate of interest, while the real rate of interest is expressed in constant dollars or dollars adjusted for inflation. The real interest rate is the nominal interest rate minus the rate of inflation. In simple terms, if the nominal rate of interest charge on a loan is 7 percent, but the inflation rate is 3 percent, then the real rate of interest received by the institution making the loan is 4 percent.

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24. What role does the interest rate play in the economy? Is the distinction between real and nominal interest rates an important one in discussing these roles?

Ans: The interest rate plays several roles in the economy. First, it affects the total output because of the inverse relationship between the interest rate and investment spending; governments often try to influence the interest rate to achieve policy goals. Second, it rations (or allocates) financial and real capital among competing firms and determines the composition of total output of capital goods. Third, it changes the level and composition of spending on research and development. These effects are based on changes in the real interest rate, which is the rate expressed in inflation-adjusted dollars, and not the nominal interest rate, which is the rate expressed in current dollars. It is the real interest rate, not the nominal interest rate, which affects investment decisions.

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25. Explain the difference between the economist's and the accountant's view of profit.

Ans: Generally speaking, profit is equal to total revenue minus total cost. The difference in the economist's and accountant's view of profit is essentially one of what to include in total costs. The accountant views total costs narrowly and only includes explicit costs—payments made by the firm to outsiders. The economist considers total cost to be composed of not only explicit costs but also implicit costs—payments for resources contributed to the firm (e.g., owner's time, a building) for which no explicit payment is made. Thus, from the economist's perspective, profit is what remains after all opportunity costs, both explicit and implicit, have been subtracted from total revenue. This economic, or pure, profit will be an amount less than what would be calculated by the accountant when there are implicit costs that need to be considered.

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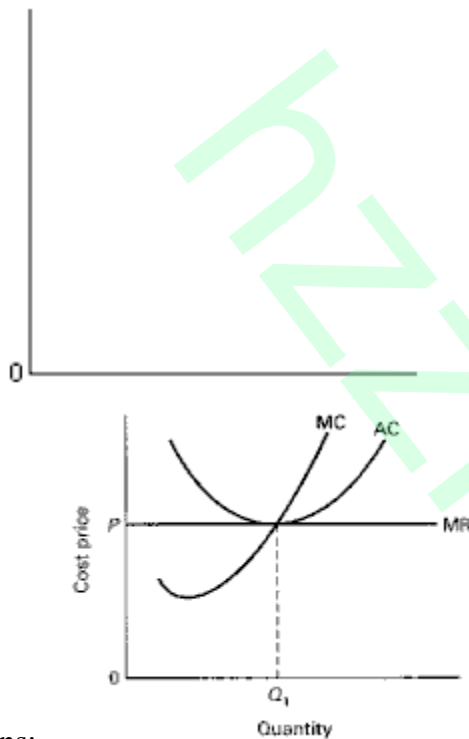
26. What is the difference between economic profit and normal profit?

Ans: Economic profit is what remains of the firm's revenue after all its explicit and implicit opportunity costs have been deducted. Economic profit is a payment for entrepreneurial ability. Normal profit is the payment that is necessary to keep the entrepreneur in current work, and is thus a cost. Economic profit is the residual payment to entrepreneurs from total revenues after all costs have been subtracted.

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Learning Objective: 13.3

27. Using the below axes draw a graph for a purely competitive firm that is earning normal profit in the long run. Explain why an entrepreneur may earn an economic profit and not just a normal profit, even in the long run.



Ans:

The above graph assumes a static economy. There are, however, dynamic features to capitalism that can give rise to economic profit over time. These factors can include uninsurable risks arising from changes in the general economic environment or the structure of the economy. Government policy can also change. In addition, innovation is a source of profit, and to the extent it is protected over time, it will generate economic profit. Market power (e.g., from a monopoly or oligopoly) can create economic profit. All of these factors create uncertainty from which entrepreneurs can profit.

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Learning Objective: 13.3

28. What are the basic sources of profit in a market economy?

Ans: Profit is a payment for entrepreneurial ability, which involves combining and directing the use of economic resources in an uncertain and innovative world. Profit results from three basic factors. First, profits are a reward for assuming risks in an uncertain and changing economy. Profit is not a payment for assuming all risk, but simply *uninsurable* risk due to changes in the market or the economy. Risk that can be insured, such as for weather damage or fire, becomes a cost of production in the form of a payment for insurance. Risk that cannot be insured becomes the source for profit.

Second, profit is a reward for innovation and for making technological changes because there is uninsurable risk in this type of activity. Third, profit can arise from market power that might restrict entry into a business or reduce output and increase price (e.g., under a monopoly or an oligopoly). This source of profit is less socially desirable than the other two sources and may result in government intervention into a market.

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29. Why are expectations important when discussing profits? What effects do these profit expectations have on the economic system?

Ans: It is the expectation of economic profit, not its guarantee, which serves as an incentive for the entrepreneur in the economy. The expectation of economic profits encourages businesses to innovate, and this innovation contributes to economic growth. Economic profits (and losses) also guide businesses to produce products and to use resources in the way most desired by society.

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Learning Objective: 13.3

30. What economic functions do rent, interest, and profit payments perform? How effective are they in performing these functions?

Ans: Rent performs an allocative function since it is the income earned on a fixed resource whose supply cannot expand with higher rents. Thus, differential rents allocate the existing amount of the resource to its highest and best use as determined by who is willing to pay the price or rent.

Interest rates affect both the level and composition of investment. The supply of and demand for loanable funds determine the interest rate and thus help to determine the level of investment. The cost of capital, or the interest rate, then allocates capital to its most productive uses. This is true except where monopoly power enables some firms to pay the higher interest rates because they have the power to raise prices to cover the additional cost.

Profits also perform both incentive and allocative functions. Resources will flow to profitable pursuits, and the expectation of profits provides the incentive for innovation and risk-taking that is essential to the capitalist process. Where profits are due to monopoly power, the process is not allocating resources as efficiently as society would choose.

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31. Give five examples showing how different factors affect interest rate calculations.

Ans: To determine the interest rate, one compares the interest paid with the amount borrowed: (1) The payback period is important. If you borrow \$10,000 and repay that amount plus \$1,000 at the end of the year, the interest rate is 10 percent [$i = \$1,000/\$10,000 = 10\%$]. (2) In some cases a lender will discount the interest payment at the time the loan is made, so the borrower would pay the \$1,000 interest in advance and receive the remaining \$9,000 for an 11 percent rate of interest [$i = \$1,000/\$9,000 = 11\%$]. (3) In other cases the financial institution uses a 360-day year instead of 365 days to calculate the interest rate, because it is simpler to calculate monthly rates (twelve 30-day months), but this does reduce interest paid. (4) If the loan is paid back in instalments, the process becomes more complicated because on average the borrower had only half the loan for the full year [$i = \$1,000/\$5,000 = 20\%$]. (5) The compounding of interest also affects the calculation. If the interest payment is added on to the deposit as it is earned, then the new amount plus the interest payment earns interest. Compound interest on deposits is effectively more than simple interest. The more often the interest payment is made and compounded, the higher effective rate of interest will be.

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