

Suggested answers.

Ch23 1. What components of GDP (if any) would each of the following transactions affect? Explain.

- a) A family buys a new refrigerator.
- b) Aunt Jane buys a new house.
- c) Rover sells a Mini from its inventory.
- d) You buy fish and chips.
- e) Leicester City Council resurfaces University Road.
- f) Your parents buy a bottle of French wine.
- g) Nissan expands its factory in Sunderland.

- A
- a. Consumption increases because a refrigerator is a good purchased by a household.
 - b. Investment increases because a house is an investment good.
 - c. Consumption increases because a car is a good purchased by a household, but investment decreases because the car in Rover's inventory had been counted as an investment good until it was sold.
 - d. Consumption increases because fish and chips is a good purchased by a household.
 - e. Government purchases increase because the (local) government spent money to provide a good to the public.
 - f. Consumption increases because the bottle is a good purchased by a household, but net exports decrease because the bottle was imported.
 - g. Investment increases because new structures and equipment were built.

Ch23 2. The "government purchases" component of GDP does not include spending on transfer payments such as Social Security. Thinking about the definition of GDP, explain why transfer payments are excluded.

- A. With transfer payments, nothing is produced, so there is no contribution to GDP.

Ch23 7. If prices rise, people's income from selling goods increases. The growth of real GDP ignores this gain, however. Why, then, do economists prefer real GDP as a measure of economic well-being?

- A. Economists ignore the rise in people's incomes that is caused by higher prices because although incomes are higher, the prices of the goods and services that people buy are also higher. Therefore, they will not necessarily be able to purchase more goods and services. For this reason, economists prefer to look at real GDP instead of nominal GDP.

Ch23 10. Goods and services that are not sold in markets, such as food produced and consumed at home, are generally not included in GDP. Can you think of how this might cause the numbers in the second column of Table 3 (in the book) to be misleading in a comparison of the economic well-being of the United States and India? Explain.

- A. In countries like India, people produce and consume a fair amount of food at home that is not included in GDP. So GDP per person in India and the United States will differ by more than their comparative economic well-being.

Ch24 1. Suppose that people consume only three goods, as shown in this table:

Tennis Balls	Tennis Racquets	strawberries
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2003 price	£2	£40	£1
2003 quantity	100	10	200
2004 price	£2	£60	£2
2004 quantity	100	10	200

- a) What is the percentage change in the price of each of the three goods? What is the percentage change in the overall price level?
- b) Do tennis racquets become more or less expensive relative to strawberries? Does the well-being of some people change relative to the well-being of others? Explain.

- A. a. The price of tennis balls increases 0 percent; the price of tennis racquets increases 50 percent $[(£60-£40)/£40 \times 100\%]$; the price of strawberries increases 100 percent $[(£2 - £1)/£1 \times 100\%]$.

To find the percentage change in the overall price level, follow these steps:

- 1) Determine the fixed basket of goods: 100 balls, 10 racquets, 200 strawberries
- 2) Find the price of each good in each year:

Year	Balls	Racquets	Gatorade
2001	£2	£40	£1
2002	£2	£60	£2

- 3) Compute the cost of the basket of goods in each year:
2001: $(100 \times £2) + (10 \times £40) + (200 \times £1) = £800$
2002: $(100 \times £2) + (10 \times £60) + (200 \times £2) = £1,200$
- 4) Choose one year as a base year (2001) and compute the CPI in each year:
2001: $£800/£800 \times 100 = 100$
2002: $£1,200/£800 \times 100 = 150$
- 5) Use the CPI to compute the inflation rate from the previous year:
2002: $(150 - 100)/100 \times 100\% = 50\%$

- b. Tennis racquets are less expensive relative to strawberries, since their price rose 50 percent while the price of strawberries rose 100 percent. The well-being of some people changes relative to the well-being of others. Those who purchase a lot of strawberries become worse off relative to those who purchase a lot of tennis racquets or tennis balls.

Ch24 4. In the US beginning in 1994, environmental regulations have required that petrol contain a new additive to reduce air pollution. This requirement raised the cost of petrol. The US Bureau of Labour Statistics (BLS) decided that this increase in cost represented an improvement in quality.

- a) Given this decision, did the increased cost of petrol raise the CPI?
- b) What is the argument in favour of the BLS's decision? What is the argument for a different decision?

- A. a. Since the increase in cost was considered a quality improvement, there was no increase registered in the CPI.
- b. The argument in favor of this is that consumers are getting a better good than before, so the price increase equals the improvement in quality. The problem is that the increased cost might exceed the value of the improvement in air quality, so consumers are worse off. In this case, it would be better for the CPI to at least partially reflect the higher cost.

Ch24 10. When deciding how much of their income to save for retirement, should workers consider the real or the nominal interest rate that their savings will earn?

- A. In deciding how much income to save for retirement, workers should consider the real interest rate, since they care about their purchasing power in the future, not the number of dollars they will have.

Ch25 2. List the capital inputs necessary to produce each of the following:

- a) cars
- b) high school education
- c) plane travel
- d) fruits and vegetables

- A.
- a. Producing cars requires a factory with machines, robots, and an assembly line, as well as human capital that comes from training workers.
 - b. Producing a high-school education requires books and buildings as well as human capital from the teachers.
 - c. Producing plane travel requires planes and airports as well as human capital in terms of pilots' knowledge.
 - d. Producing fruits and vegetables requires irrigation systems, harvesting machinery, and trucks to transport the goods to the market, as well as human capital in the form of agricultural knowledge.

Ch25 7. What is the opportunity cost of investing in capital? Do you think a country can “over-invest” in capital? What is the opportunity cost of investing in human capital? Do you think a country can “over-invest” in human capital? Explain.

- A. The opportunity cost of investing in capital is the loss of consumption that results from redirecting resources towards investment. Over-investment in capital is possible because of diminishing marginal returns. A country can "over-invest" in capital if people would prefer to have higher consumption spending and less future growth. The opportunity cost of investing in human capital is also the loss of consumption that is needed to provide the resources for investment. A country could "over-invest" in human capital if people were too highly educated for the jobs they could get—for example, if the best job a Ph.D. in philosophy could find is managing a restaurant.

Ch25 10. In the countries of South Asia in 1992, only 56 young women were enrolled in secondary school for every 100 young men. Describe several ways in which greater educational opportunities for young women could lead to faster economic growth in these countries.

- A. Greater educational opportunities for women could lead to faster economic growth in the countries of South Asia because increased human capital would increase productivity and there would be external effects from greater knowledge in the country. Second, increased educational opportunities for young women may lower the population growth rate because such opportunities raise the opportunity cost of having a child.

Ch26 3. Theodore Roosevelt once said, “There is no moral difference between gambling at cards or in lotteries or on the race track and gambling in the stock market.” What social purpose do you think is served by the existence of the stock market?

- A. The stock market does have a social purpose. Firms obtain funds for investment by issuing new stock. People are more likely to buy that stock because there are organized stock markets, so people know that they can sell their stock if they want to.

Ch26 5. When the Russian government defaulted on its debt to foreigners in 1998, interest rates rose on bonds issued by many other developing countries. Why do you suppose this happened?

- A. When the Russian government defaulted on its debt, investors perceived a higher chance of default (than they had before) on similar bonds sold by other developing countries. Thus the supply of loanable funds shifted to the left, as shown in Figure 1. The result was an increase in the interest rate.

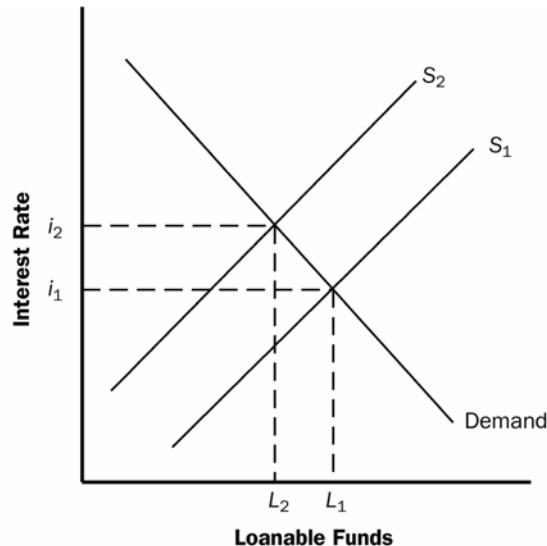


Figure 1

Ch26 6. Many workers hold large amounts of shares issued by the firms at which they work. Why do you suppose companies encourage this behaviour? Why might a person *not* want to hold shares in the company where he works?

- A. Companies encourage their employees to hold stock in the company because it gives the employees the incentive to care about the firm's profits, not just their own salary. Then, if employees see waste or see areas in which the firm can improve, they will take actions that benefit the company because they know the value of their stock will rise as a result. And it also gives employees an additional incentive to work hard, knowing that if the firm does well, they will profit.

But from an employee's point of view, owning stock in the company for which she or he works can be risky. The employee's wages or salary is already tied to how well the firm performs. If the firm has trouble, the employee could be laid off or have her or his salary reduced. If the employee owns stock in the firm, then there is a double whammy—the employee is unemployed or gets a lower salary and the value of the stock falls as well. So owning stock in your own company is a very risky proposition. Most employees would be better off diversifying—owning stock or bonds in other companies—so their fortunes wouldn't depend so much on the firm for which they work.

Ch26 8. Suppose GDP is £8 trillion, taxes are £1.5 trillion, private saving is £0.5 trillion, and public saving is £0.2 trillion. Assuming this economy is closed, calculate consumption, government purchases, national saving, and investment.

- A. Given that $Y = 8$, $T = 1.5$, $S_{private} = 0.5 = Y - T - C$, $S_{public} = 0.2 = T - G$.
 Since $S_{private} = Y - T - C$, then rearranging gives $C = Y - T - S_{private} = 8 - 1.5 - 0.5 = 6$. Since $S_{public} = T - G$, then rearranging gives $G = T - S_{public} = 1.5 - 0.2 = 1.3$.
 Since $S = \text{national saving} = S_{private} + S_{public} = 0.5 + 0.2 = 0.7$.
 Finally, since $I = \text{investment} = S$, $I = 0.7$.

Suggested answers.

- Ch27 1. About 400 years ago, native Americans sold the island of Manhattan for \$24. If they had invested this money at an interest rate of 7 percent per year, how much would they have today?
- A. The future value of \$24 invested for 400 years at an interest rate of 7 percent is $(1.07)^{400} \times \$24 = \$13,600,000,000,000 = \$13.6$ trillion.
- Ch27 3. For each of the following kinds of insurance, give an example of behaviour that can be called *moral hazard* and another example of behaviour that can be called *adverse selection*.
- a) health insurance
 - b) car insurance
- A. a. A sick person is more likely to apply for health insurance than is a well person. This is adverse selection. Once a person has health insurance, he may be less likely to take good care of himself. This is moral hazard.
- b. A risky driver is more likely than a safe driver to apply for car insurance. This is adverse selection. Once a driver has insurance, he may drive more recklessly. This is adverse selection.
- Ch27 4. Imagine that you intend to buy a portfolio of ten stocks with some of your savings. Should the stocks be of companies in the same industry? Should the stocks be of companies located in the same country? Explain.
- A. To reduce the risk associated with the portfolio, it is better to diversify. This means that the stocks should be of companies from different industries as well as located in different countries.
- Ch28 6. Are the following workers more likely to experience short-term or long-term unemployment? Explain.
- a) a construction worker laid off because of bad weather
 - b) a manufacturing worker who loses her job at a plant in an isolated area
 - c) a stagecoach-industry worker laid off because of competition from railroads
 - d) a short-order cook who loses his job when a new restaurant opens across the street
 - e) an expert welder with little formal education who loses her job when the company installs automatic welding machinery
- A. a. A construction worker who is laid off because of bad weather is likely to experience short-term unemployment, since the worker will be back to work as soon as the weather clears up.
- b. A manufacturing worker who loses her job at a plant in an isolated area is likely to experience long-term unemployment, since there are probably few other employment opportunities in the area. She may need to move somewhere else to find a suitable job, which means she will be out of work for some time.
- c. A worker in the stagecoach industry who was laid off because of the growth of railroads is likely to be unemployed for a long time. The worker will have a lot of trouble finding another job when his entire industry is shrinking. He will probably need to gain additional training or skills to get a job in a different industry.
- d. A short-order cook who loses his job when a new restaurant opens is likely to find another job fairly quickly, perhaps even at the new restaurant, and thus he will probably have only a short

spell of unemployment.

- e. An expert welder with little education who loses her job when the company installs automatic welding machinery is likely to be without a job for a long time, since she lacks the technological skills to keep up with the latest equipment. To remain in the welding industry, she may need to go back to school and learn the newest techniques.

Ch28 7. Using a diagram of the labour market, show the effect of an increase in the minimum wage on the wage paid to workers, the number of workers supplied, the number of workers demanded, and the amount of unemployment.

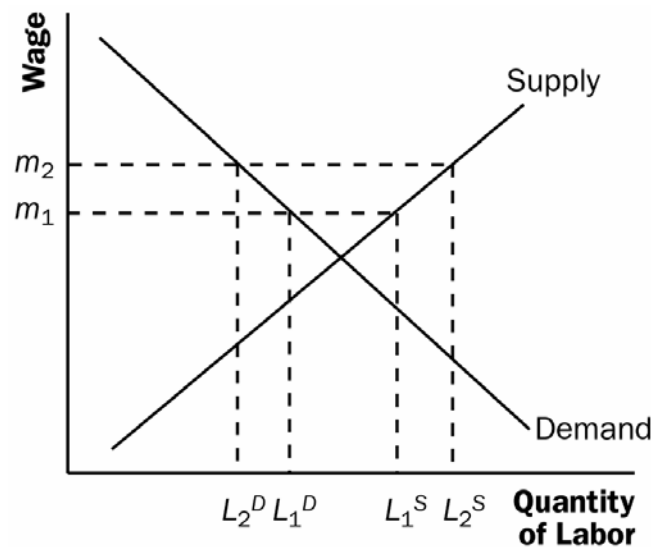


Figure 2

- A. Figure 2 shows a diagram of the labor market with a binding minimum wage. The initial equilibrium with minimum wage m_1 has quantity of labor supply L_1^S greater than the quantity of labor demanded L_1^D , with unemployment equal to $L_1^S - L_1^D$. An increase in the minimum wage to m_2 leads to an increase in the quantity of labor supplied to L_2^S and a decrease in the quantity of labor demanded to L_2^D . As a result, unemployment increases as the minimum wage rises.

Ch28 11. Some workers in the economy are paid a flat salary and some are paid by commission. Which compensation scheme would require more monitoring by supervisors? In which case do firms have an incentive to pay more than the equilibrium level (as in the worker-effort variant of efficiency-wage theory)? What factors do you think determine the type of compensation firms choose?

- A. Workers need to be monitored if they earn a flat salary but little monitoring is needed under a commission structure. Under a system with flat salaries, the wage needs to exceed the equilibrium wage to encourage greater effort by workers. The wage need not exceed the equilibrium wage under a system with commissions, since workers can choose their level of effort and get paid in proportion to their effort. The factors that determine the type of compensation scheme include the cost of monitoring, the willingness of workers to bear risk under the commission scheme, and the interdependence of tasks.

Ch19 4. At some colleges and universities, economics professors receive higher salaries than professors in some other fields.

- Why might this be true?
- Some other colleges and universities have a policy of paying equal salaries to professors in all fields. At some of these schools, economics professors have lighter teaching loads

than professors in some other fields. What role do the differences in teaching loads play?

- A.
 - a. Economics professors may receive higher salaries than professors in some other fields because they have better opportunities outside academia. For example, they could find jobs in the private sector or the government.
 - b. Differences in teaching loads can make up for lower pay. If professors in all fields are paid the same, the pay level is probably below what economics professors could earn elsewhere. To attract economics professors, the university would have to offer them some other compensation, such as a lower teaching load.

Ch19 5. Sara works for Gianni, whom she dislikes profoundly because of his snobbish attitude. Yet when she looks for other jobs, the best she can do is find a job paying £10,000 less than her current salary. Should she take the job? Analyse Sara's situation from an economic point of view.

- A. Sara should take the other job if Gianni's attitude problem is worth £10,000 or more to her. She should view the £10,000 difference in salary as a compensating differential for putting up with Gianni. The question Sara must answer is this: Is £10,000 enough of a compensating differential? If so, she will stay in her current job. If not, she will take the new job.

Ch19 7. When recording devices were first invented almost 100 years ago, musicians could suddenly supply their music to large audiences at low cost. How do you suppose this development affected the income of the best musicians? How do you suppose it affected the income of average musicians?

- A. The development of recording devices led to a superstar phenomenon in which the best musicians were paid significantly more than average musicians. So the incomes of the best musicians rose and the income of the average musician fell.

Ch19 8. When Alan Greenspan (future chairman of the US Federal Reserve) ran an economic consulting firm in the 1960s, he hired primarily female economists. He once told *The New York Times*, "I always valued men and women equally, and I found that because others did not, good women economists were cheaper than men." Is Greenspan's behaviour profit-maximising? Is it admirable or despicable? If more employers were like Greenspan, what would happen to the wage differential between men and women? Why might other economic consulting firms at the time not have followed Greenspan's business strategy?

- A. Yes, his behavior is profit maximizing. He is hiring labor at a lower cost. You might claim that Alan is despicable because he is discriminating against men. Some might claim that Alan was admirable, though, since he is maximizing profit and giving women a better opportunity to find a job. If more employers were like Alan, the wage differential between men and women would shrink, as employers would be competing for women workers, so women would have as many job options as men. Ultimately, the wage differential could disappear. Other firms at the time may not have followed his strategy because their customers may have preferred male consultants.

Ch19 12. Chapter 19 considers the economics of discrimination by employers, customers, and governments. Now consider discrimination by workers. Suppose that some brunette workers did not like working with blonde workers. Do you think this worker discrimination could explain lower wages for blonde workers? If such a wage differential existed, what would a profit-maximising entrepreneur do? If there were many such entrepreneurs, what would happen over time?

- A. If brunette workers do not like working with blonde workers, a blonde worker's marginal product of labor is likely to be lower, since the firm's output will not be as high compared to the case if the firm

had a brunette worker instead. Thus firms might find that blonde workers are not worth as much and may reduce their wages relative to brunette workers. A profit-maximizing entrepreneur could create a firm using all blonde workers, so there would be no frictions between brunette and blonde workers. If there were many such entrepreneurs, the wage differential between brunette and blonde workers would disappear over time.

Suggested Answers.

Ch20 4. Chapter 20 discusses the importance of economic mobility.

- a) What policies might the government pursue to increase economic mobility *within* a generation?
- b) What policies might the government pursue to increase economic mobility *across* generations?
- c) Do you think we should reduce spending on current welfare programs in order to increase spending on programs that enhance economic mobility? What are some of the advantages and disadvantages of doing so?

- A.
- a. To increase economic mobility within a generation, the government could support training programs (to provide skills to unskilled workers) and workfare instead of welfare (to help the poor increase their incomes).
 - b. To increase economic mobility across generations, the government might increase its support for education.
 - c. The advantage of reducing spending on welfare to increase spending on programs that enhance economic mobility is that it gives people greater incentive to work hard to get ahead. The disadvantages are that such programs are expensive and are hard on those who do not make it.

Ch20 7. Suppose there are two possible income distributions in a society of ten people. In the first distribution, nine people would have incomes of £30,000 and one person would have an income of £10,000. In the second distribution, all ten people would have incomes of £25,000.

- a) If the society had the first income distribution, what would be the utilitarian argument for redistributing income?
- b) Which income distribution would Rawls consider more equitable? Explain.
- c) Which income distribution would Nozick consider more equitable? Explain.

- A.
- a. A utilitarian would argue that the marginal utility of income for the person with an income of £10,000 is higher than the marginal utility of income for someone with an income of £30,000, so income should be redistributed.
 - b. Rawls would prefer the second distribution since the worst-off person is better off than in the first distribution.
 - c. Nozick would not find either more equitable. He would think the most equitable distribution is the one in which people got what they deserved. If the rules of the game are fair, either distribution is quite acceptable.

Ch20 11. Do you agree or disagree with each of the following statements?

- a) "Every parent has the right to work hard and save in order to give his or her children a better life."
- b) "No child should be disadvantaged by the sloth or bad luck of his or her parents."

- A.
- a. If you agree with the statement that "Every parent has the right to work hard and save in order to give his or her children a better life," then you will think that inheritance taxes should be low. If you disagree, you will think that inheritance taxes should be high.
 - b. If you agree with the statement that "No child should be disadvantaged by the sloth or bad luck of his or her parents," then you will think that inheritance taxes should be high. If you disagree, you will think that inheritance taxes should be low.

Ch12 8. Suppose that your state raises its sales tax from 5 percent to 6 percent. The state revenue commissioner forecasts a 20 percent increase in sales tax revenue. Is this plausible? Explain.

- A. If the state raises its sales tax from 5 percent to 6 percent, it isn't plausible that sales tax revenue will increase 20 percent. The increase in the tax rate is 20 percent, so the only way tax revenue could increase 20 percent would be if total spending didn't fall in response to the tax increase, which is unlikely. Instead, the higher tax would raise the price of goods, so people would spend less. Thus tax revenue might go up, because the tax rate is higher, but by less than 20 percent. There is even some possibility that tax revenues will fall.

Ch12 11. Categorise each of the following funding schemes as examples of the benefits principle or the ability-to-pay principle.

- a) Visitors to many national parks pay an entrance fee.
- b) Local property taxes support elementary and secondary schools.
- c) An airport trust fund collects tax on each plane ticket sold and uses the money to improve airports and the air traffic control system.

- A. a. The fact that visitors to many national parks pay an entrance fee is an example of the benefits principle, since people are paying for the benefits they receive.
- b. The fact that local property taxes support elementary and secondary schools is an example of the ability-to-pay principle, since if you own more expensive property you must pay more tax.
- c. The setup of airport trust funds is an example of the benefits principle, since use of the airport generates a tax that pays for upkeep of the airport.

Ch12 13. What is the efficiency justification for taxing consumption rather than income? If the UK were to adopt a consumption tax, do you think that would make the UK tax system more or less progressive? Explain.

- A. The efficiency justification for taxing consumption rather than income is that taxing income discourages saving. If the United States were to adopt a consumption tax, the U.S. tax system would become less progressive because the poor spend a greater proportion of their income than the rich. However, tax rates could be modified or deductions increased to make the tax more progressive.

Ch29 6. Your uncle repays a £1000 loan from NatWest Bank by writing a £1000 check from his NatWest Bank current account. Use T-accounts to show the effect of this transaction on your uncle and on NatWest Bank. Has your uncle's wealth changed? Explain.

- A. When your uncle repays a £100 loan from NatWest by writing a check from his NatWest checking account, the result is a change in the assets and liabilities of both your uncle and NatWest, as shown in these T-accounts:

Your Uncle			
Assets		Liabilities	
Before:			
Current Account	£100	Loans	£100
After:			
Current Account	£0	Loans	£0

NatWest			
Assets		Liabilities	
Before:			
Loans	£100	Deposits	£100
After:			

Loans	£0	Deposits	£0
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By paying off the loan, your uncle simply eliminated the outstanding loan using the assets in his checking account. Your uncle's wealth has not changed; he simply has fewer assets and fewer liabilities.

Ch29 9. The Bank of England conducts a £10 million open-market purchase of government bonds. If the required reserve ratio is 10 percent, what is the largest possible increase in the money supply that could result? Explain. What is the smallest possible increase? Explain.

- A. With a required reserve ratio of 10 percent, the money multiplier could be as high as $1/.10 = 10$, if banks hold no excess reserves and people do not keep some additional currency. So the maximum increase in the money supply from a £10 million open-market purchase is £100 million. The smallest possible increase is £10 million if all of the money is held by banks as excess reserves.

Ch29 13. (This problem is challenging.) The economy of Elmendyn contains 2,000 £1 bills.

- If people hold all money as currency, what is the quantity of money?
- If people hold all money as demand deposits and banks maintain 100 percent reserves, what is the quantity of money?
- If people hold equal amounts of currency and demand deposits and banks maintain 100 percent reserves, what is the quantity of money?
- If people hold all money as demand deposits and banks maintain a reserve ratio of 10 percent, what is the quantity of money?
- If people hold equal amounts of currency and demand deposits and banks maintain a reserve ratio of 10 percent, what is the quantity of money?

- A.
- If people hold all money as currency, the quantity of money is £2,000.
 - If people hold all money as demand deposits at banks with 100 percent reserves, the quantity of money is £2,000.
 - If people have £1,000 in currency and £1,000 in demand deposits, the quantity of money is £2,000.
 - If banks have a reserve ratio of 10 percent, the money multiplier is $1/.10 = 10$. So if people hold all money as demand deposits, the quantity of money is $10 \times £2,000 = £20,000$.
 - If people hold equal amounts of currency (C) and demand deposits (D) and the money multiplier for reserves is 10, then two equations must be satisfied:
 (1) $C = D$, so that people have equal amounts of currency and demand deposits; and (2) $10 \times (£2,000 - C) = D$, so that the money multiplier (10) times the number of dollar bills that are not being held by people ($£2,000 - C$) equals the amount of demand deposits (D). Using the first equation in the second gives $10 \times (£2,000 - D) = D$, or $£20,000 - 10D = D$, or $£20,000 = 11D$, so $D = £1,818.18$. Then $C = £1,818.18$. The quantity of money is $C + D = £3,636.36$.

Ch30 4. The economist John Maynard Keynes wrote: "Lenin is said to have declared that the best way to destroy the capitalist system was to debauch the currency. By a continuing process of inflation, governments can confiscate, secretly and unobserved, an important part of the wealth of their citizens." Justify Lenin's assertion.

- A. Lenin is right that governments can confiscate the wealth of citizens with inflation. Inflation acts like a tax on people who hold money, by reducing its value. The government can finance its expenditures by printing money and using it to buy things, which results in a higher money supply and inflation. The result is a transfer of wealth from money-holders to the government.

Ch30 6. Hyperinflations are extremely rare in countries whose central banks are independent of the rest of the government. Why might this be so?

- A. Hyperinflations usually arise when governments try to finance much of their expenditures by printing money. This is unlikely to occur if the central bank (which is responsible for controlling the level of the money supply) is independent of the government.

Ch30 12. Explain one harm associated with unexpected inflation that is *not* associated with expected inflation. Then explain one harm associated with both expected and unexpected inflation.

- A. The redistribution from creditors to debtors is something that happens when inflation is unexpected, not when it is expected. The problems that occur with both expected and unexpected inflation include shoeleather costs associated with reduced money holdings, menu costs associated with more frequent adjustment of prices, increased variability of relative prices, unintended changes in tax liabilities due to non-indexation of the tax code, and the confusion and inconvenience resulting from a changing unit of account.

Ch30 13. Explain whether the following statements are true, false, or uncertain.

- a) "Inflation hurts borrowers and helps lenders, because borrowers must pay a higher rate of interest."
- b) "If prices change in a way that leaves the overall price level unchanged, then no one is made better or worse off."
- c) "Inflation does not reduce the purchasing power of most workers."

- A.
- a. The statement that "Inflation hurts borrowers and helps lenders, because borrowers must pay a higher rate of interest," is false. Higher expected inflation means borrowers pay a higher nominal rate of interest, but it is the same real rate of interest, so borrowers are not worse off and lenders are not better off. Higher unexpected inflation, on the other hand, makes borrowers better off and lenders worse off.
 - b. The statement that "If prices change in a way that leaves the overall price level unchanged, then no one is made better or worse off," is false. Changes in relative prices can make some people better off and others worse off, even though the overall price level does not change. See problem 7 for an illustration of this.
 - c. The statement that "Inflation does not reduce the purchasing power of most workers" is true. Most workers' incomes keep up with inflation reasonably well.

Suggested Answers.

Ch31 2. International trade in each of the following products has increased over time. Suggest some reasons why this might be so.

- a) wheat
- b) banking services
- c) computer software
- d) automobiles

- A.
- a. Wheat is traded more internationally than in the past because shipping costs have declined, as have trade restrictions.
 - b. Banking services are traded more internationally than in the past because communications costs have declined, as have trade restrictions.
 - c. Computer software is traded more internationally than in the past because the computer industry has grown and the software is easier to transport (since it can now be downloaded electronically).
 - d. Automobiles are traded more internationally than in the past because transportation costs have declined, as have tariffs and quotas.

Ch31 3. Describe the difference between foreign direct investment and foreign portfolio investment. Who is more likely to engage in foreign direct investment – a corporation or an individual investor? Who is more likely to engage in foreign portfolio investment?

- A.
- Foreign direct investment requires actively managing an investment, for example, by opening a retail store in a foreign country. Foreign portfolio investment is passive, for example, buying corporate stock in a retail chain in a foreign country. As a result, a corporation is more likely to engage in foreign direct investment, while an individual investor is more likely to engage in foreign portfolio investment.

Ch31 7. Would each of the following groups be happy or unhappy if the euro appreciated? Explain.

- a) UK pension funds holding euro denominated bonds
- b) German manufacturing industries
- c) Australian tourists planning a trip to Italy
- d) A French firm trying to purchase property overseas

- A.
- a. UK pension funds holding euro denominated bonds would be happy if the euro appreciated. They would then get more UK pounds for each euro they earned on their European investment. In general, if you have an investment in a foreign country, you are better off if that country's currency appreciates.
 - b. German manufacturing industries would be unhappy if the euro appreciated because their prices would be higher in terms of foreign currencies, which will reduce their sales.
 - c. Australian tourists planning a trip to Italy would be unhappy if the euro appreciated because they would get fewer euros for each Australian dollar, so their vacation will be more expensive.
 - d. A French firm trying to purchase property overseas would be happy if the euro appreciated because it would get more units of the foreign currency and could thus buy more property.

Ch31 9. List three goods for which the law of one price is likely to hold, and three goods for which it is not. Justify your choices.

- A. Three goods for which the law of one price is likely to hold are farm goods like wheat, which are nearly identical no matter where they are produced, technological goods like computer software, which have low shipping costs because they are light, and clothing, which also has low shipping costs. Three goods for which the law of one price is not likely to hold are real estate, because you can't move land or buildings from one country to another; goods that are mainly consumed in one country and so are not traded, like frog legs in France; and services like haircuts, which cannot be arbitrated even if the price is very different in different countries.

Ch32 1. Japan generally runs a significant trade surplus. Do you think this is most related to high foreign demand for Japanese goods, low Japanese demand for foreign goods, a high Japanese saving rate relative to Japanese investment, or structural barriers against imports into Japan? Explain your answer.

- A. Japan generally runs a trade surplus because the Japanese saving rate is high relative to Japanese domestic investment. The result is high net capital outflow, which is matched by high net exports, resulting in a trade surplus. The other possibilities (high foreign demand for Japanese goods, low Japanese demand for foreign goods, and structural barriers against imports into Japan) would affect the real exchange rate, but not the trade surplus.

Ch32 2. An article in *The New York Times* (Apr. 14, 1995) regarding a decline in the value of the dollar reported that “the president was clearly determined to signal that the United States remains solidly on a course of deficit reduction, which should make the dollar more attractive to investors.” Would deficit reduction in fact raise the value of the dollar? Explain.

- A. A reduction in the U.S. government budget deficit would increase national saving, shifting the supply curve of loanable funds to the right in Figure 3. This would reduce the real interest rate in the United States, thus increasing net capital outflow, and reducing the real exchange rate. Thus the real value of the dollar would decline, not increase as the president suggested.

Ch32 6. However unlikely this might be, suppose the French suddenly develop a strong taste for California wines. Answer the following questions in words and using a diagram.

- What happens to the demand for dollars in the market for foreign-currency exchange?
- What happens to the value of dollars in the market for foreign-currency exchange?
- What happens to the quantity of net exports?

- A.
- When the French develop a strong taste for California wines, the demand for dollars in the foreign-currency market increases at any given real exchange rate, as shown in Figure 6.
 - The result of the increased demand for dollars is a rise in the real exchange rate.
 - The quantity of net exports is unchanged.

Ch33 1. Why do you think that investment is more variable over the business cycle than consumer spending? Which category of consumer spending do you think would be most volatile: durable goods (such as furniture and car purchases), nondurable goods (such as food and clothing), or services (such as haircuts and medical care)? Why?

- A. Investment is more variable than consumer spending over the business cycle because firms can curtail investment spending more easily than households can curtail consumption spending. In recessions, firms know they will not be able to sell as many goods, so they want to produce less and therefore they put off buying capital (they do not expand factories or buy new equipment). Much of consumer spending is on necessities, like food, which cannot decline as much in recessions. So, investment

spending is more variable over the business cycle than consumer spending. For similar reasons, durable goods spending is the most volatile sector of consumer spending. Durable goods, such as furniture and car purchases, are more volatile over the business cycle than nondurable goods, such as food and clothing, or services, such as haircuts and medical care, for the same reason. People put off buying durable goods and just make do with older cars and furniture when economic times are bad.

Ch33 5. Explain why the following statements are false.

- a) "The aggregate-demand curve slopes downward because it is the horizontal sum of the demand curves for individual goods."
- b) "The long-run aggregate-supply curve is vertical because economic forces do not affect long-run aggregate supply."
- c) "If firms adjusted their prices every day, then the short-run aggregate-supply curve would be horizontal."
- d) "Whenever the economy enters a recession, its long-run aggregate-supply curve shifts to the left."

- A.
 - a. The statement that "the aggregate-demand curve slopes downward because it is the horizontal sum of the demand curves for individual goods" is false. The aggregate-demand curve slopes downward because a fall in the price level raises the overall quantity of goods and services demanded through the wealth effect, the interest-rate effect, and the exchange-rate effect.
 - b. The statement that "the long-run aggregate-supply curve is vertical because economic forces do not affect long-run aggregate supply" is false. Economic forces of various kinds (such as population and productivity) do affect long-run aggregate supply. The long-run aggregate-supply curve is vertical because the price level does not affect long-run aggregate supply.
 - c. The statement that "if firms adjusted their prices every day, then the short-run aggregate-supply curve would be horizontal" is false. If firms adjusted prices quickly and if sticky prices were the only possible cause for the upward slope of the short-run aggregate supply curve, then the short-run aggregate-supply curve would be vertical, not horizontal. The short-run aggregate supply curve would be horizontal only if prices were completely fixed.
 - d. The statement that "whenever the economy enters a recession, its long-run aggregate-supply curve shifts to the left" is false. An economy could enter a recession if the aggregate-demand curve or the short-run aggregate-supply curve shift to the left.

Ch33 9. Suppose workers and firms suddenly believe that inflation will be quite high over the coming year. Suppose also that the economy begins in long-run equilibrium, and the aggregate-demand curve does not shift.

- a) What happens to the nominal wages? What happens to real wages?
- b) Using an aggregate-demand/aggregate-supply diagram, show the effect of the change in expectations on both the short-run and long-run levels of prices and output.
- c) Were the expectations of high inflation accurate? Explain.

- A.
 - a. If people believe that inflation will be high over the next year, workers will want higher nominal wages. If the price level does not rise as much as wages do, real wages will increase, so firms will not hire as many workers.
 - b. Figure 9 shows the economy starting out at point A on short-run aggregate-supply curve AS_1 . With higher nominal wages, the short-run aggregate-supply curve will shift to the left to AS_2 . The new equilibrium is at point B, with output less than long-run aggregate supply. In the short run, the price level rises and output falls. In the long-run, the economy will return to point A, as the decline in output eventually leads to a decline in the price level and the short-run aggregate-supply curve returns to AS_1 .

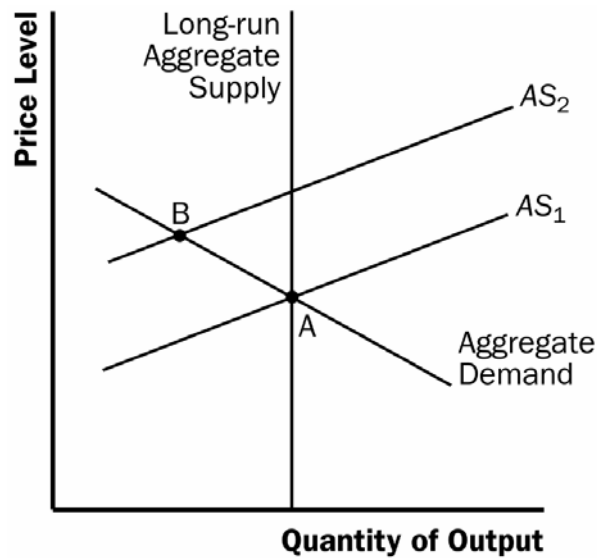


Figure 9

- c. In the short-run, expectations of higher inflation were somewhat accurate, as the price level is higher at point B than at point A (however, the price level at point B is not as high as was expected). But inflation expectations were wrong in the long run.

Ch33 10. Explain whether each of the following events shifts the short-run aggregate-supply curve, the aggregate-demand curve, both, or neither. For each event that does shift a curve, use a diagram to illustrate the effect on the economy.

- Households decide to save a larger share of their income.
- Florida orange groves suffer a prolonged period of below-freezing temperatures.
- Increased job opportunities overseas cause many people to leave the country.

A. a. If households decide to save a larger share of their income, they must spend less on consumer goods, so the aggregate-demand curve shifts to the left, as shown in Figure 10. The equilibrium changes from point A to point B, so the price level declines and output declines.

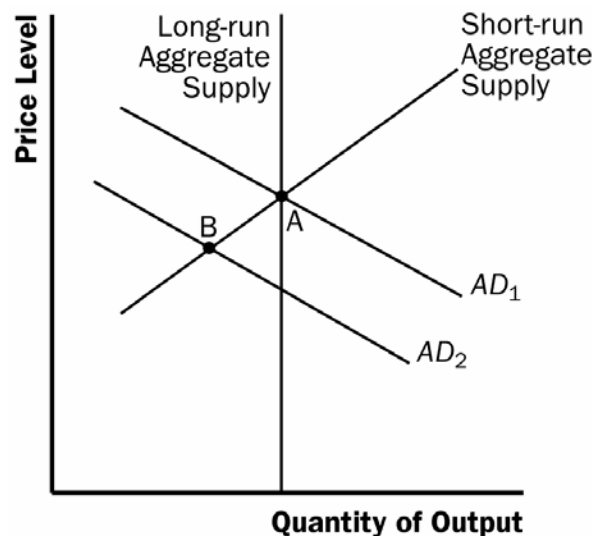


Figure 10

- If Florida orange groves suffer a prolonged period of below-freezing temperatures, the orange harvest will be reduced. This is represented in Figure 11 by a shift to the left in the short-run aggregate-supply curve. The equilibrium changes from point A to point B, so the price level rises and output declines.

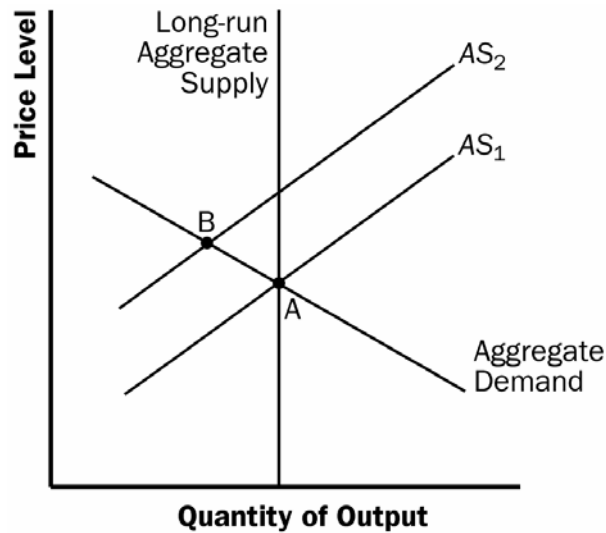


Figure 11

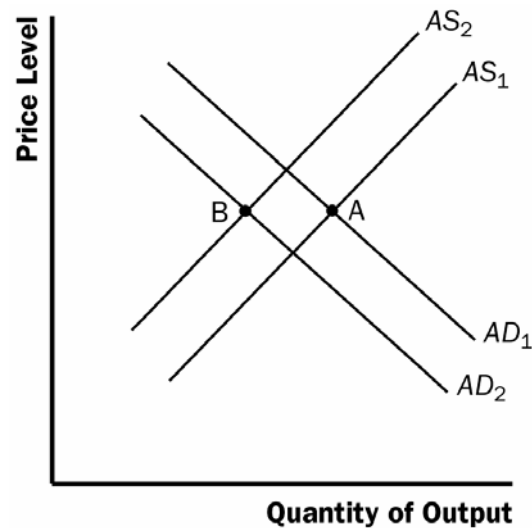


Figure 12

- c. If increased job opportunities cause people to leave the country, the short-run aggregate-supply curve will shift to the left because there are fewer people producing output. The aggregate-demand curve will shift to the left because there are fewer people consuming goods and services. The result is a decline in the quantity of output, as Figure 12 shows. Whether the price level rises or declines depends on the size of the shifts in the aggregate-demand curve and the short-run aggregate-supply curve.

Ch34 2. Suppose banks install automatic teller machines on every block and, by making cash readily available, reduce the amount of money people want to hold.

- Assume the Bank of England does not change the money supply. According to the theory of liquidity preference, what happens to the interest rate? What happens to aggregate demand?
- If the Bank of England wants to stabilise aggregate demand, how should it respond?

- When more ATMs are available, money demand is reduced and the money-demand curve shifts to the left from MD_1 to MD_2 , as shown in Figure 4. If the Bank of England does not change the money supply, which is at MS_1 , the interest rate will decline from r_1 to r_2 . The decline in the interest rate shifts the aggregate demand curve to the right, as consumption and investment increase.
 - If the Bank of England wants to stabilize aggregate demand, it should reduce the money supply

to MS_2 , so the interest rate will remain at r_1 and aggregate demand will not change.

Ch34 4. The economy is in recession with high unemployment and low output.

- Use a graph of aggregate demand and aggregate supply to illustrate the current situation. Be sure to include the aggregate-demand curve, the short-run aggregate-supply curve, and the long-run aggregate-supply curve.
- Identify an open-market operation that would restore the economy to its natural rate.
- Use a graph of the money market to illustrate the effect of this open-market operation. Show the resulting change in the interest rate.
- Use a graph similar to the one in part (a) to show the effect of the open market operation on output and the price level. Explain in words why the policy has the effect that you have shown in the graph.

A. a. The current situation is shown in Figure 5.

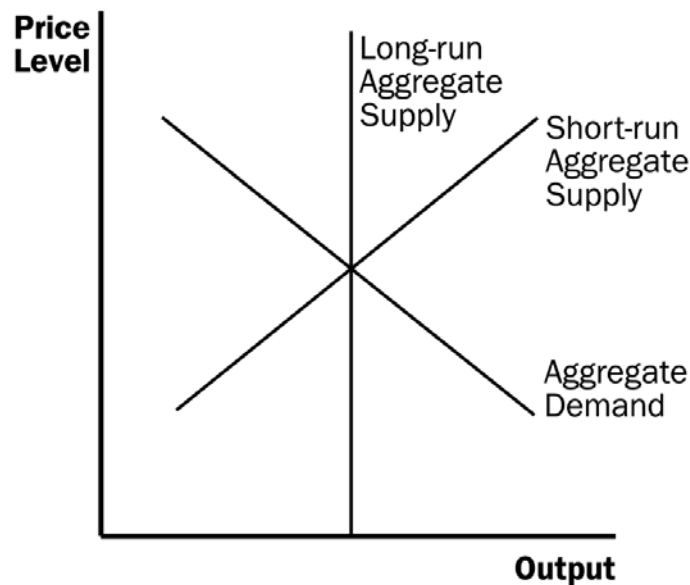


Figure 5

- b. The Fed will want to stimulate aggregate demand. Thus, it will need to lower the interest rate by increasing the money supply. This could be achieved if the Fed purchases government bonds from the public.

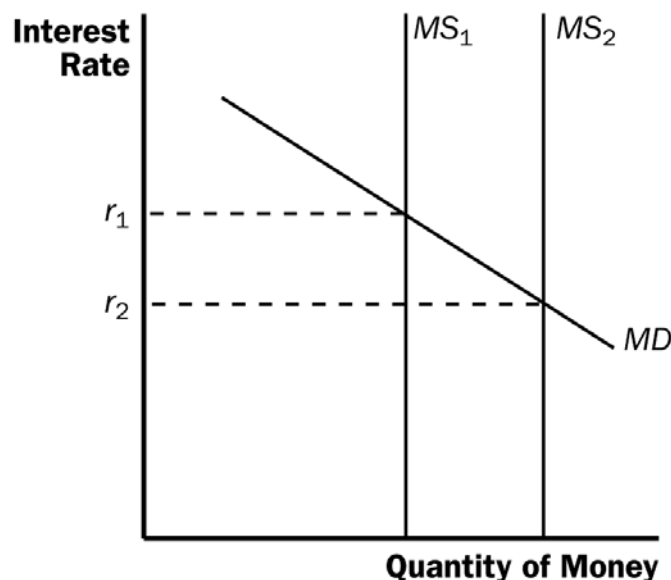


Figure 6

- c. As shown in Figure 6, the Fed's purchase of government bonds shifts the supply of money to the right, lowering the interest rate.

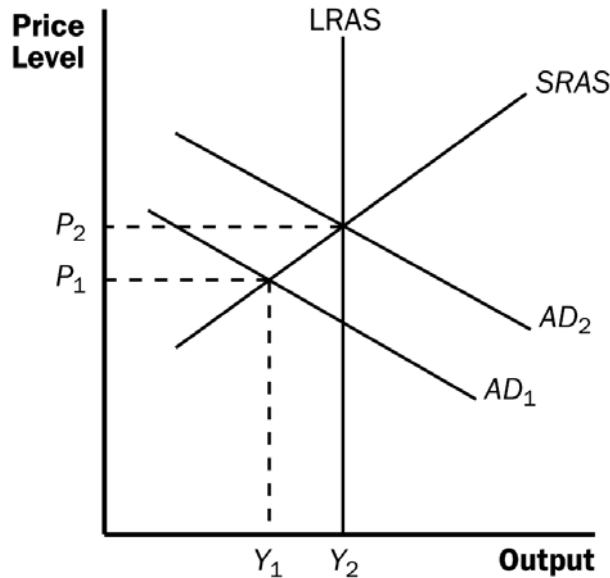


Figure 7

- d. The Fed's purchase of government bonds will increase aggregate demand as consumers and firms respond to lower interest rates. Output and the price level will rise as shown in Figure 7.
- Ch34 8. Suppose the government reduces taxes by £20 billion, that there is no crowding out, and that the marginal propensity to consume is $\frac{3}{4}$.
- What is the initial effect of the tax reduction on aggregate demand?
 - What additional effects follow this initial effect? What is the total effect of the tax cut on aggregate demand?
 - How does the total effect of this £20 billion tax cut compare to the total effect of a £20 billion increase in government purchases? Why?
- A.
- The initial effect of the tax reduction of £20 billion is to increase aggregate demand by £20 billion $\times \frac{3}{4}$ (the *MPC*) = £15 billion.
 - Additional effects follow this initial effect as the added incomes get spent. The second round leads to increased consumption spending of £15 billion $\times \frac{3}{4}$ = £11.25 billion. The third round gives an increase in consumption of £11.25 billion $\times \frac{3}{4}$ = £8.44 billion. The effects continue indefinitely. Adding them all up gives a total effect that depends on the multiplier. With an *MPC* of $\frac{3}{4}$, the multiplier is $\frac{1}{1 - \frac{3}{4}} = 4$. So the total effect is £15 billion $\times 4$ = £60 billion.
 - Government purchases have an initial effect of the full £20 billion, since they increase aggregate demand directly by that amount. The total effect of an increase in government purchases is thus £20 billion $\times 4$ = £80 billion. So government purchases lead to a bigger effect on output than a tax cut does. The difference arises because government purchases affect aggregate demand by the full amount, but a tax cut is partly saved by consumers, and therefore does not lead to as much of an increase in aggregate demand.

Ch34 11. Assume the economy is in a recession. Explain how each of the following policies would affect consumption and investment. In each case, indicate any direct effects, any effects resulting from changes in total output, any effects resulting from changes in the interest rate, and the overall effect. If there are conflicting effects making the answer ambiguous, say so.

- a) an increase in government spending
- b) a reduction in taxes
- c) an expansion of the money supply

- A.
- a. An increase in government spending would shift the aggregate demand curve to the right, increasing output. The rise in output would raise consumption spending, since people would have higher incomes, and raise investment spending through the accelerator. But money demand would also increase, raising the interest rate. This would tend to reduce consumption, as people would save more, and reduce investment, since the cost of investing would be higher. Overall, the changes in both consumption and investment are ambiguous.
 - b. A reduction in taxes would directly increase consumption spending, since people would have higher after-tax incomes. Also, since the reduction in taxes increases consumption spending, aggregate demand increases, so total output increases. The rise in output would raise consumption spending further, since people would have higher incomes, and raise investment spending through the accelerator. But money demand would also increase, raising the interest rate. This would tend to reduce consumption, as people would save more, and reduce investment, since the cost of investing would be higher. Overall, consumption must increase (otherwise aggregate demand would not have increased at all) while the change in investment is ambiguous.
 - c. An expansion in the money supply reduces the interest rate, thus increasing aggregate demand and output. The rise in output would raise consumption spending, since people would have higher incomes, and raise investment spending through the accelerator. The lower interest rate would increase consumption, as people would save less, and increase investment, since the cost of investing would be lower. Overall, both consumption and investment would increase.

The following question should be addressed only in groups that take place after the relevant lecture.

Ch35 2. Illustrate the effects of the following developments on both the short-run and long-run Phillips curves. Give the economic reasoning underlying your answers.

- a) a rise in the natural rate of unemployment
- b) a decline in the price of imported oil
- c) a rise in government spending
- d) a decline in expected inflation

- A.
- a. A rise in the natural rate of unemployment shifts the long-run Phillips curve to the right, as shown in Figure 9. The economy is initially on $LRPC_1$ and $SRPC_1$ at an inflation rate of 3 percent, which is also the expected rate of inflation. The increase in the natural rate of unemployment shifts the long-run Phillips curve to $LRPC_2$ and the short-run Phillips curve to $SRPC_2$, with the expected rate of inflation remaining equal to 3 percent.

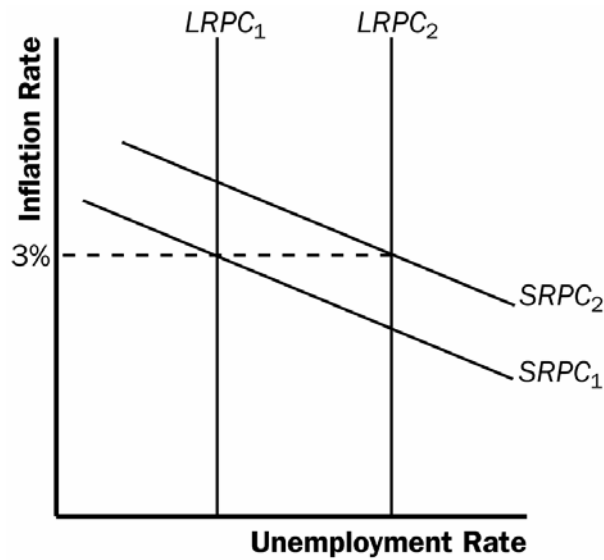


Figure 9

- b. A decline in the price of imported oil shifts the short-run Phillips curve down, as shown in Figure 10, from $SRPC_1$ to $SRPC_2$. For any given unemployment rate, the inflation rate is lower, since oil is such a significant aspect of production costs in the economy.

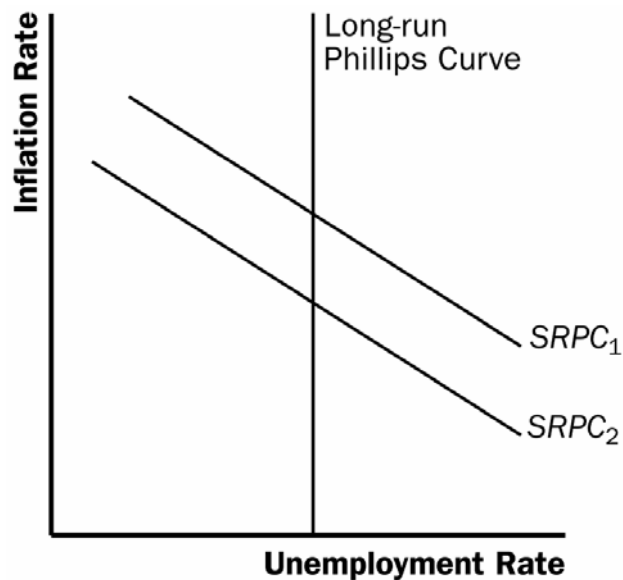


Figure 10

- c. A rise in government spending represents an increase in aggregate demand, so it moves the economy along the short-run Phillips curve, as shown in Figure 11. The economy moves from point A to point B, with a decline in the unemployment rate and an increase in the inflation rate.

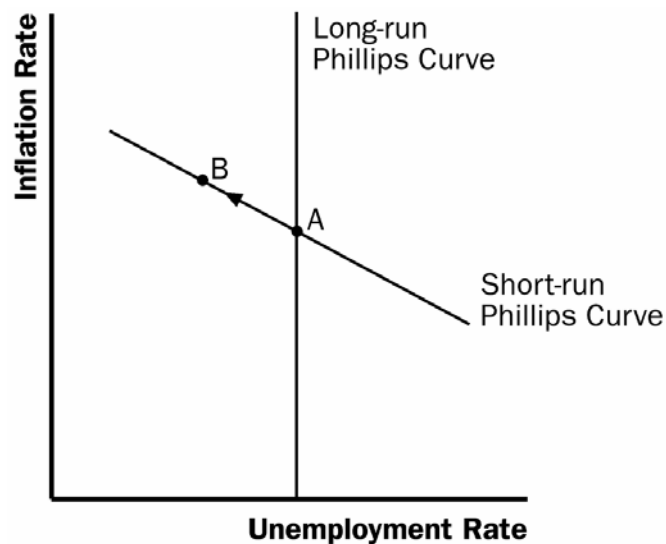


Figure 11

- d. A decline in expected inflation causes the short-run Phillips curve to shift down, as shown in Figure 12. The lower rate of expected inflation shifts the short-run Phillips curve from $SRPC_1$ to $SRPC_2$.

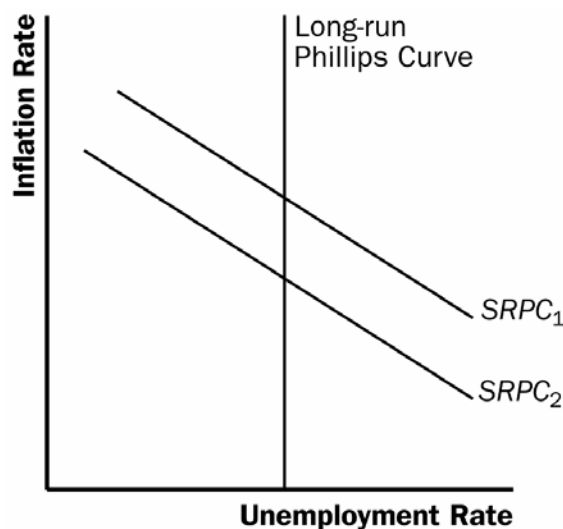


Figure 12

- Ch35 9. Imagine an economy in which all wages are set in three-year contracts. In this world, the Fed announces a disinflationary change in monetary policy to begin immediately. Everyone in the economy believes the Fed's announcement. Would this disinflation be costless? Why or why not? What might the Fed do to reduce the cost of disinflation?
- A. If the Fed announces a disinflation, but nominal wages have been set in three-year contracts, then the lower rate of inflation will mean real wages are too high until the contracts can be renegotiated in three years. As a result, firms will not hire as much labor and the unemployment rate will exceed the natural rate, so the disinflation would be costly. To reduce the cost of disinflation, the Fed could announce that it would reduce inflation three years from now, so contracts could be adjusted. Alternatively, the Fed could reduce inflation very slowly, so real wages wouldn't be too high for long, and the costs of disinflation would be lower.
- Ch35 10. Given the unpopularity of inflation, why don't elected leaders always support efforts to reduce inflation? Economists believe that countries can reduce the cost of disinflation by letting their central banks make decisions about monetary policy without interference from politicians. Why might this be so?

- A. Even though inflation is unpopular, elected leaders do not always support efforts to reduce inflation because of the short-run costs associated with disinflation. In particular, as disinflation occurs, the unemployment rate rises, and when unemployment is high people tend not to vote for incumbent politicians, blaming them for the bad state of the economy. Thus politicians tend not to support disinflation.

Economists believe that countries with independent central banks can reduce the cost of disinflation because in those countries politicians cannot interfere with central banks' disinflation efforts. People will believe the central bank when it announces a disinflation because they know politicians cannot stop the disinflation. In countries with central banks that are not independent, people know that politicians who are worried they will not be reelected could stop a disinflation. As a result, the credibility of the central bank is lower and thus the costs of disinflation are higher.

Ch36 5. Explain, giving reasons, whether the following statements are true or false.

- a. 'A high degree of trade among a group of countries implies that there would be benefits from them adopting a common currency and forming a currency union.'
 - b. 'A high degree of trade among a group of countries implies that they should definitely adopt a common currency and form a currency union.'
- a. True. A high degree of trade among a group of countries suggests that there would be substantial cost savings from adopting a common currency.
 - b. False. There are other factors that must be considered. If labour mobility is low, labour markets are rigid, business cycles are not synchronized, and financial capital mobility is low then the costs of adopting a common currency might outweigh the benefits.

Ch36 7. What is the function of the European Commission? What are the other five main institutions of the European Union and what are their respective roles? What are the other important EU bodies and what are their respective roles? (Hint: go to the European Union website: www.europa.eu.int.)

- a. 'The European Commission was created to represent the European interest common to all Member States of the Union. So that it can play its role as guardian of the Treaties and defender of the general interest, the Commission has been given a right of initiative in the legislative process, proposing the legislation on which the European Parliament and the Council decide.

The Commission is also responsible for implementing common policies (like the common agricultural policy); it administers the budget and manages the Union's programmes.

Although the Commission has the right to take any initiative it considers appropriate to attain the objectives of the Treaties, most proposals are a response to legal obligations, technical requirements or to a specific request for action from another institution, a Member State or from the interested parties.'

Source: http://europa.eu.int/comm/atwork/basicfacts/index_en.htm#comm accessed December 2005.

The other five main institutions of the EU are: the European Parliament; the Council of the European Union; the European Central Bank; the Court of Justice of the European Communities; and the European Court of Auditors. (Source: http://europa.eu.int/index_en.htm accessed December 2005.) Students may perhaps select some other of the institutions and bodies mentioned on the website.

'The European Parliament is the only supranational institution whose members are democratically elected by direct universal suffrage. It represents the people of the Member States. The European Parliament, which is elected every five years, is involved in drafting numerous laws (directives, regulations etc.) that affect the daily life of every citizen.'

Source: <http://www.euoparl.eu.int/parliament/public/staticDisplay.do?language=EN&id=45> accessed December 2005.

‘The Council is the main decision-making body of the European Union. The ministers of the member states meet within the Council of the European Union. Depending on the issue on the agenda, each country will be represented by the minister responsible for that subject (foreign affairs, finance, social affairs, transport, agriculture, etc.). The Presidency of the Council is held for six months by each member state on a rotational basis.’

Source: <http://ue.eu.int/showPage.ASP?lang=en> accessed December 2005.

‘The ECB is the central bank for Europe's single currency, the euro. The ECB’s main task is to maintain the euro's purchasing power and thus price stability in the euro area.’

Source: <http://www.ecb.int/ecb/html/index.en.html> accessed December 2005.

‘It is the responsibility of the Court of Justice to ensure that the law is observed in the interpretation and application of the Treaties establishing the European Communities and of the provisions laid down by the competent Community institutions.’

Source: http://curia.eu.int/en/instit/presentationfr/index_cje.htm accessed December 2005.

‘The European Court of Auditors is the institution which audits the accounts. It examines the accounts of the Union’s revenue and expenditure and checks whether the financial management has been sound.’

Source: http://www.eca.eu.int/index_en.htm accessed December 2005.