Practice Questions

Chapter 1

1. People respond to incentives. Governments can alter incentives and, hence, behaviour with public policy. However, sometimes public policy generates unintended consequences by producing results that were not anticipated. Try to find an unintended consequence of each of the following public policies.

a. To help the "working poor," the government raises the minimum wage to €25 per hour.

b. To help the homeless, the government places rent controls on apartments restricting rent to €50 per month.

c. To reduce its budget deficit and limit consumption of petrol, the government raises the tax on petrol by €1.00 per litre.

d. To reduce the consumption of drugs, the government makes drugs illegal.

e. To raise the population of a rare bird of prey, the government prohibits the killing of the birds and the collecting of their eggs.

f. To improve the welfare of European sugar beet growers, the EU bans imports of sugar from South America.

2. Opportunity cost is what you give up to get an item. Since there is no such thing as a free lunch, what would likely be given up to obtain each of the items listed below?

a. Susan can work full time or go to university. She chooses university.

b. Susan can work full time or go to university. She chooses work.

c. Farmer Jones has 100 hectares of land. He can plant wheat, which yields 5 tonnes per hectare, or he can plant potatoes, which yield 35 tonnes per hectare. He chooses to plant wheat.

d. Farmer Jones has 100 hectares of land. He can plant wheat, which yields 5 tonnes per hectare, or he can plant potatoes, which yield 35 tonnes per hectare. He chooses to plant potatoes.

e. In (a) and (b) above, and (c) and (d) above, which is the opportunity cost of which – college for work or work for college? Potatoes for wheat or wheat for potatoes?

Chapter 2

1. Identify the parts of the circular-flow diagram immediately involved in the following transactions.

a. Mary buys a car from Jaguar for £40,000.

b. Jaguar pays Joe £2,500/month for work on the assembly line.

c. Joe makes £10 worth of calls on his Vodafone mobile phone.

d. Mary receives £1,000 of dividends on her Vodafone shares.

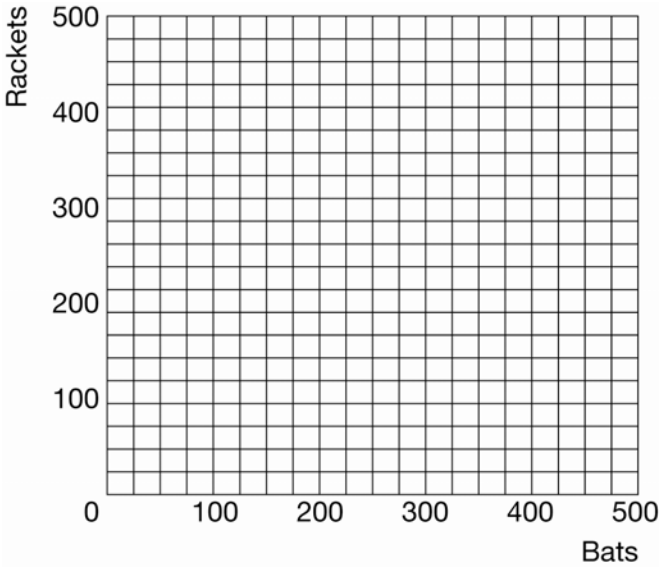
2. The following table provides information about the production possibilities frontier of Athletic Country.

Exhibit 1

Bats	Rackets
0	420
100	400
200	360
300	300
400	200
500	0

a. In Exhibit 2, plot and connect these points to create Athletic Country's production possibilities frontier.

Exhibit 2



b. If Athletic Country currently produces 100 bats and 400 rackets, what is the opportunity cost of an additional 100 bats?

c. If Athletic Country currently produces 300 bats and 300 rackets, what is the opportunity cost of an additional 100 bats?

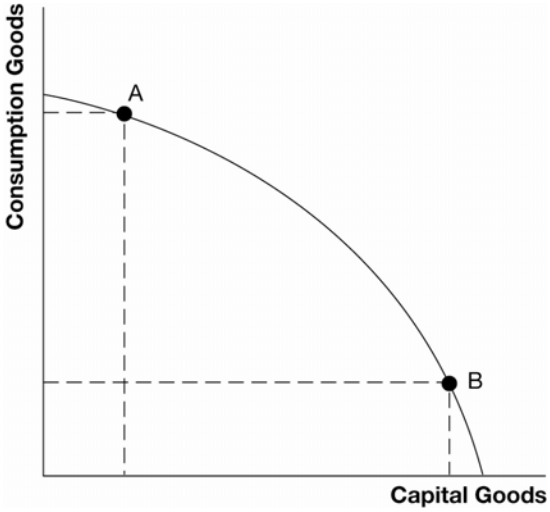
d. Why does the additional production of 100 bats in part (c) cause a greater trade-off than the additional production of 100 bats in part (b)?

e. Suppose Athletic Country is currently producing 200 bats and 200 rackets. How many additional bats could they produce without giving up any rackets? How many additional rackets could they produce without giving up any bats?

f. Is the production of 200 bats and 200 rackets efficient? Explain.

3. The production possibilities frontier in Exhibit 3 shows the available trade-offs between consumption goods and capital goods. Suppose two countries face this identical production possibilities frontier.

Exhibit 3

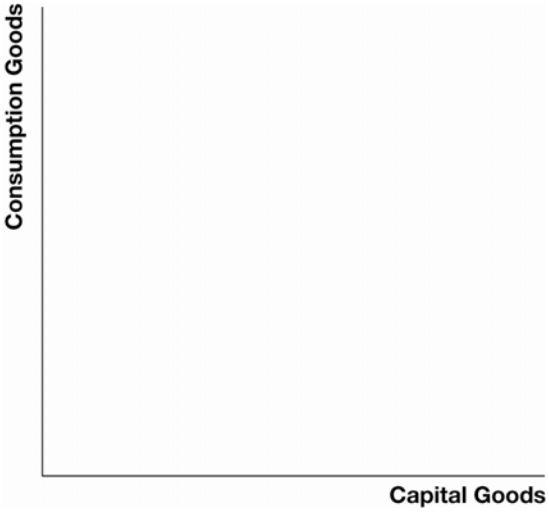


a. Suppose Party Country chooses to produce at point A while Parsimonious Country choose to produce at point B. Which country will experience more growth in the future? Why?

b. In this model, what is the opportunity cost of future growth?

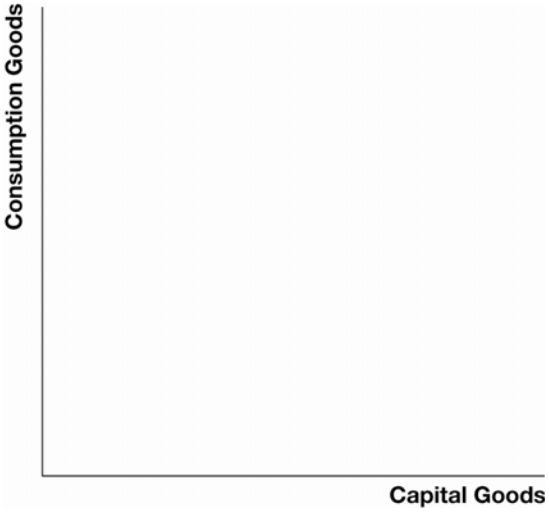
c. Demonstrate in Exhibit 4 the impact of growth on a production possibilities frontier such as the one shown above. Would the production possibilities frontier for Parsimonious Country shift more or less than that for Party Country? Why?

Exhibit 4



d. On the graph in Exhibit 5, show the shift in the production possibilities curve if there was an increase in technology that only affected the production of capital goods.

Exhibit 5



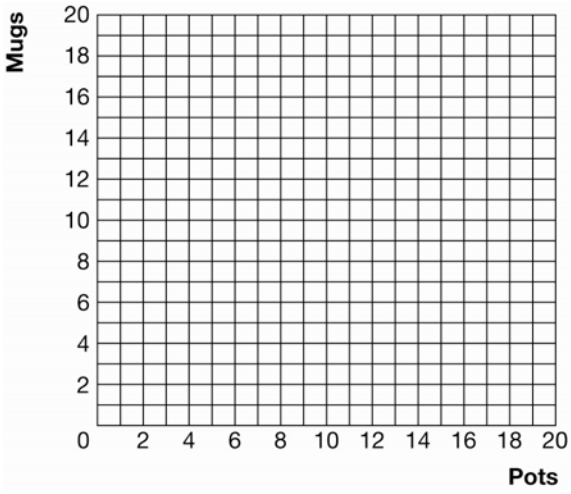
e. Does the shift in part (d) above imply that all additional production must be in the form of capital goods? Why?

Chapter 3

1. Angela is a college student. She takes a full load of classes and has only 5 hours per week for her hobby. Angela is artistic and can make 2 clay pots per hour or 4 coffee mugs per hour.

a. Draw Angela's production possibilities frontier for pots and mugs.

Exhibit 2



b. What is Angela's opportunity cost of 1 pot? 10 pots?

c. What is Angela's opportunity cost of 1 mug? 10 mugs?

d. Why is her production possibilities frontier a straight line instead of bowedout like those presented in Chapter 2?

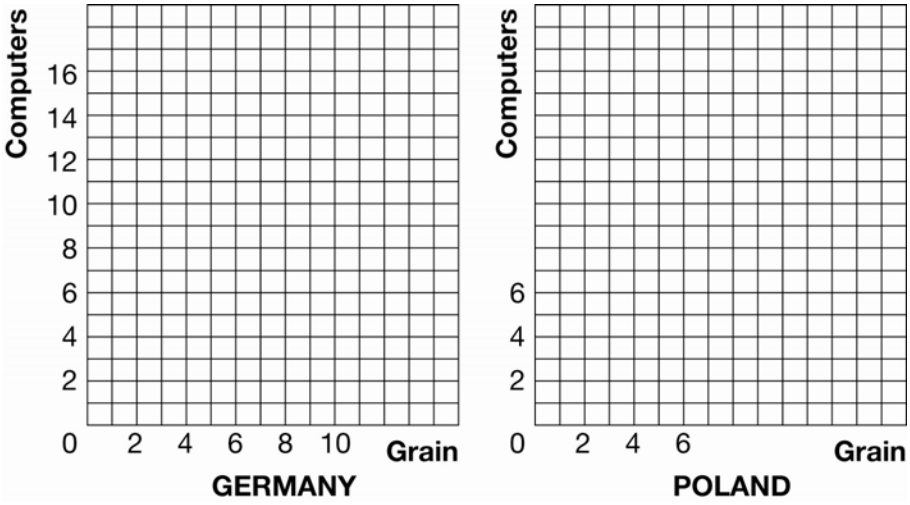
2. Suppose a worker in Germany can produce 15 computers or 5 tonnes of grain per month. Suppose a worker in Poland can produce 4 computers or 4 tonnes of grain per month. For simplicity, assume that each country has only one worker.

a. Fill out the following table:

	Computers	Grain
Germany	_____	_____
Poland	_____	_____

b. Graph the production possibilities frontier for each country in Exhibit 3.

Exhibit 3



c. What is the opportunity cost of a computer in Germany? What is the opportunity cost of a tonne of grain in Germany?

d. What is the opportunity cost of a computer in Poland? What is the opportunity cost of a ton of grain in Poland?

e. Which country has the absolute advantage in producing computers? Grain?

f. Which country has the comparative advantage in producing computers? Grain?

g. Each country should tend toward specialization in the production of which good? Why?

h. What is the range of prices for computers and grain for which both countries would benefit from trading with each other?

i. Suppose Germany and Poland settle on a price of 2 computers for 1 tonne of grain or 1/2 tonne of grain for a computer. Suppose each country specializes in production and they trade 4 computers for 2 tonnes of grain. Plot the final consumption points on the graphs you made in part (b) above. Are these countries consuming inside or outside of their production possibilities frontier?

j. Suppose the productivity of a worker in Poland doubles so that a worker can produce 8 computers or 8 tonnes of grain per month. Which country has the absolute advantage in producing computers? Grain?

k. After the doubling of productivity in Poland, which country has a comparative advantage in producing computers? Grain? Has the comparative advantage changed? Has the material welfare of either country changed?

l. How would your analysis change if you assumed, more realistically, that each country had 10 million workers?

3. Suppose a worker in the United States can produce 4 cars or 20 computers per month while a worker in Russia can produce 1 car or 5 computers per month. Again, for simplicity, assume each country has only one worker.

a. Fill out the following table:

	Cars	Computers
United States	_____	_____
Russia	_____	_____

b. Which country has the absolute advantage in the production of cars? Computers?

c. Which country has the comparative advantage in the production of cars? Computers?

d. Are there any gains to be made from trade? Why?

e. Does your answer in (d) above help you pinpoint a source for gains from trade?

f. What might make two countries have different opportunity costs of production? (Use your imagination. This was not directly discussed in Chapter 3.)

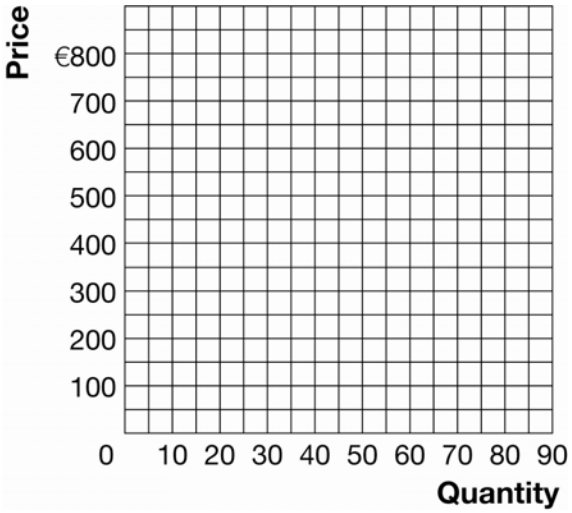
Chapter 4

1. Suppose we have the following market supply and demand schedules for bicycles:

Price	Quantity Demanded	Quantity Supplied
€100	70	30
200	60	40
300	50	50
400	40	60
500	30	70
600	20	80

a. Plot the supply curve and the demand curve for bicycles in Exhibit 1.

Exhibit 1



b. What is the equilibrium price of bicycles?

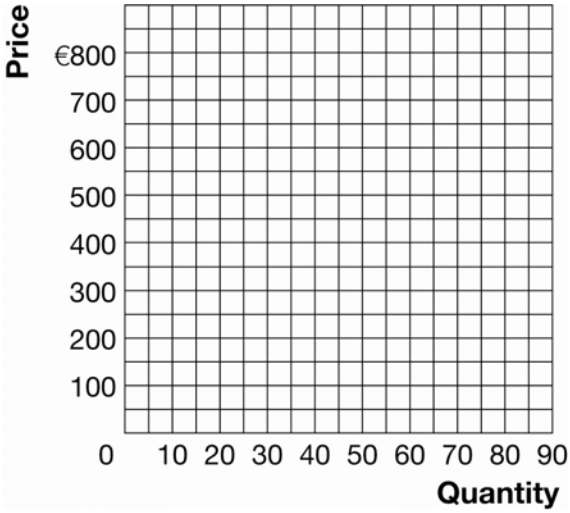
c. What is the equilibrium quantity of bicycles?

d. If the price of bicycles were €100, is there a surplus or a shortage? How many units of surplus or shortage are there? Will this cause the price to rise or fall?

e. If the price of bicycles were €400, is there a surplus or a shortage? How many units of surplus or shortage are there? Will this cause the price to rise or fall?

f. Suppose that the bicycle maker's labour union bargains for an increase in its wages. Further, suppose this event raises the cost of production, makes bicycle manufacturing less profitable, and reduces the quantity supplied of bicycles by 20 units at each price of bicycles. Plot the new supply curve and the original supply and demand curves in Exhibit 2. What is the new equilibrium price and quantity in the market for bicycles?

Exhibit 2



2. Each of the events listed below has an impact on the market for bicycles. For each event, which curve is affected (supply or demand for bicycles), what direction is it shifted, and what is the resulting impact on equilibrium price and quantity of bicycles?

a. The price of cars increases.

b. Consumers' incomes decrease, if bicycles are a normal good.

c. The price of steel used to make bicycle frames increases.

d. An environmental movement shifts tastes toward bicycling.

e. Consumers expect the price of bicycles to fall in the future.

f. A technological advance in the manufacture of bicycles occurs.

g. The price of bicycle helmets and shoes is reduced.

h. Consumers' incomes decrease, if bicycles are an inferior good

3. The following questions address a market when both supply and demand shift.

a. What would happen to the equilibrium price and quantity in the bicycle market if there were an increase in both the supply and the demand for bicycles?

b. What would happen to the equilibrium price and quantity in the bicycle market if the demand for bicycles increases more than the increase in the supply of bicycles?

Chapter 5

1. For each pair of goods listed below, which good would you expect to have the more elastic demand? Why?

a. cigarettes; a trip to Florida

b. an AIDS vaccine over the next month; an AIDS vaccine over the next five years

c. beer; Budweiser

d. insulin; aspirin

2. Suppose the Daily News estimates that if it raises the price of its newspaper from €1.00 to €1.50 then the number of subscribers will fall from 50,000 to 40,000.

a. What is the price elasticity of demand for the Daily Newspaper when elasticity is calculated using the midpoint method?

b. What is the advantage of using the midpoint method?

c. If the Daily News's only concern is to maximize total revenue, should it raise the price of a newspaper from €1.00 to €1.50? Why or why not?

3. The table below provides the demand schedule for motel rooms at Small Town Motel. Use the information provided to complete the table. Answer the following questions based on your responses in the table. Use the midpoint method to calculate the percentage changes used to generate the elasticities.

Price	Quantity Demanded	Total Revenue	% Change in Price	% Change in Quantity	Elasticity
€20	24	_____			
			_____	_____	_____
40	20	_____			
			_____	_____	_____
60	16	_____			
			_____	_____	_____
80	12	_____			
			_____	_____	_____
100	8	_____			
			_____	_____	_____
120	4	_____			

a. Over what range of prices is the demand for motel rooms elastic? To maximize total revenue, should Small Town Motel raise or lower the price within this range?

b. Over what range of prices is the demand for motel rooms inelastic? To maximize total revenue, should Small Town Motel raise or lower the price within this range?

c. Over what range of prices is the demand for motel rooms unit elastic? To maximize total revenue, should Small Town Motel raise or lower the price within this range?

4. The demand schedule from question 3 above is reproduced below along with another demand schedule when consumer incomes have risen to €60,000 from €50,000. Use this information to answer the following questions. Use the midpoint method to calculate the percentage changes used to generate the elasticities.

Price	Quantity Demanded When Income is €50,000	Quantity Demanded When Income is €60,000
€20	24	34
40	20	30
60	16	26
80	12	22
100	8	18
120	4	14

a. What is the income elasticity of demand when motel rooms rent for €40?

b. What is the income elasticity of demand when motel rooms rent for €100?

c. Are motel rooms normal or inferior goods? Why?

d. Are motel rooms likely to be necessities or luxuries? Why?

5. For each pair of goods listed below, which good would you expect to have the more elastic supply? Why?

a. televisions; beach front property

b. crude oil over the next week; crude oil over the next year

c. a painting by van Gogh; a print of the same painting by van Gogh
Top of Form

Chapter 6

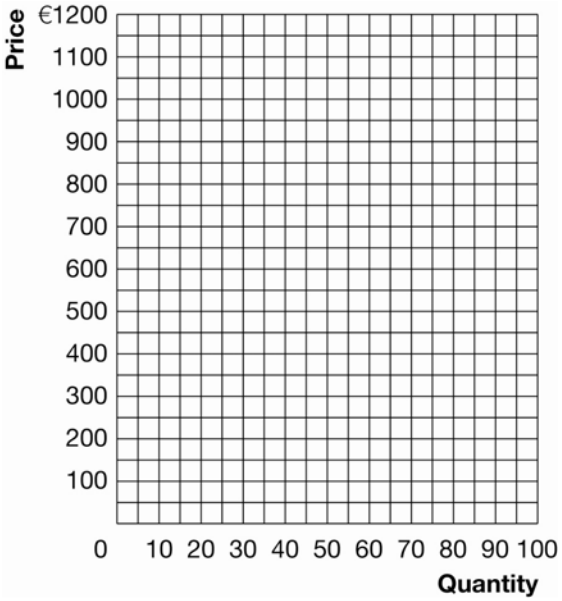
1. Use the following supply and demand schedules for bicycles to answer the questions below.

Price	Quantity demanded	Quantity supplied
€300	60	30
400	55	40
500	50	50
600	45	60
700	40	70
800	35	80

a. In response to lobbying by the Bicycle Riders Association, the government places a price ceiling of €700 on bicycles. What effect will this have on the market for bicycles? Why?

b. In response to lobbying by the Bicycle Riders Association, the government places a price ceiling of €400 on bicycles. Use the information provided above to plot the supply and demand curves for bicycles in Exhibit 1. Impose the price ceiling. What is the result of a price ceiling of €400 on bicycles?

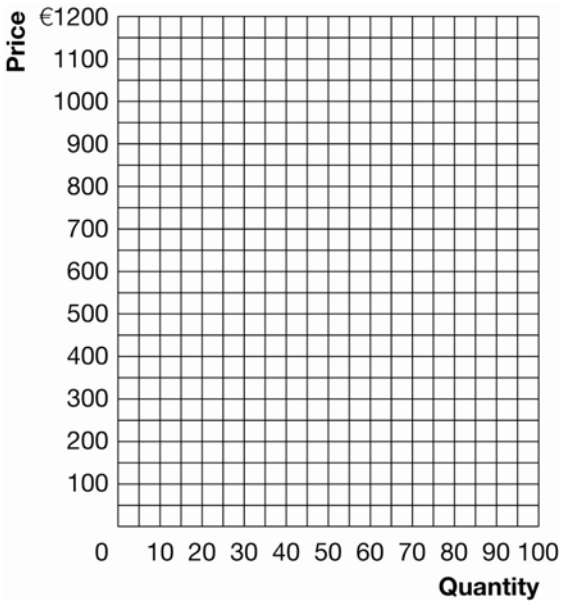
Exhibit 1



c. Does a price ceiling of €400 on bicycles make all bicycle buyers better off? Why or why not?

d. Suppose instead, in response to lobbying by the Bicycle Manufactures Association, the government imposes a price floor on bicycles of €700. Use the information provided above to plot the supply and demand curves for bicycles in Exhibit 2. Impose the €700 price floor. What is the result of the €700 price floor?

Exhibit 2

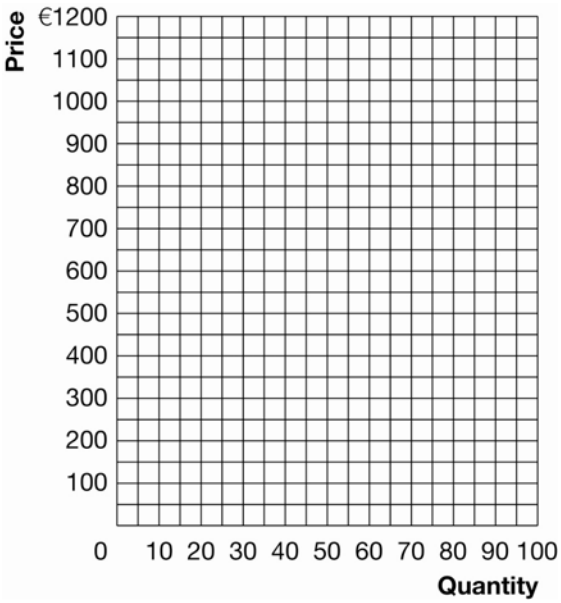


2. Use the following supply and demand schedules for bicycles to answer the questions below.

Price	Quantity demanded	Quantity supplied
€300	60	30
400	55	40
500	50	50
600	45	60
700	40	70
800	35	80

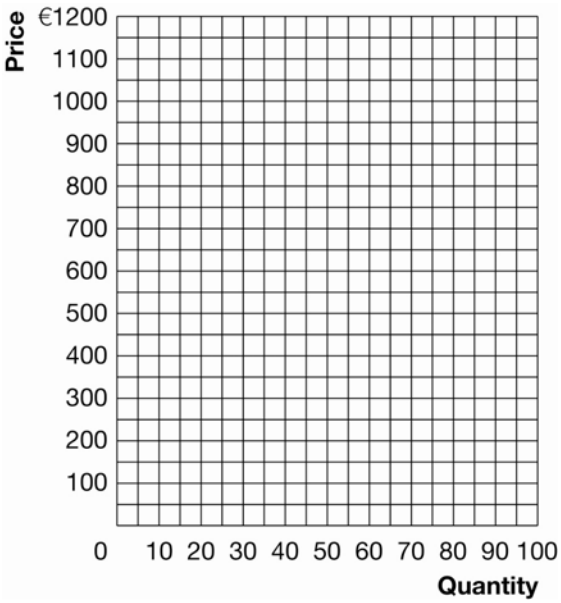
a. Plot the supply and demand curves for bicycles in Exhibit 3. On the graph, impose a tax of €300 per bicycle to be collected from the sellers. After the tax, what has happened to the price paid by the buyers, the price received by the sellers, and the quantity sold when compared to the free market equilibrium?

Exhibit 3



b. Again, plot the supply and demand curves for bicycles in Exhibit 4. On the graph, impose a tax of €300 per bicycle to be collected from the buyers. After the tax, what has happened to the price paid by the buyers, the price received by the sellers, and the quantity sold when compared to the free market equilibrium?

Exhibit 4



c. Compare your answers to questions (a) and (b) above. What conclusion do you draw from this comparison?

d. Who bears the greater burden of this tax, the buyers or the sellers? Why?

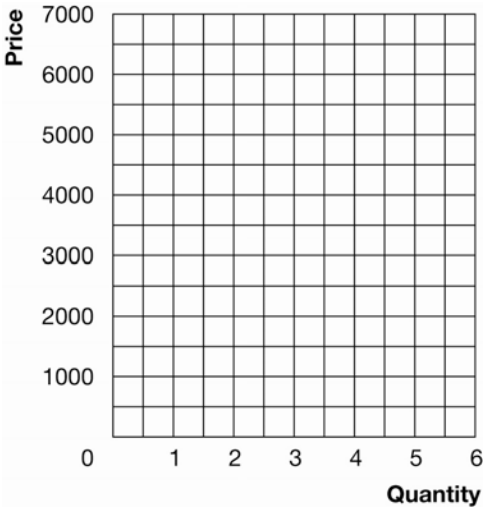
Chapter 7

1. The following information describes the value Lauren Landlord places on having her five houses repainted. She values the repainting of each house at a different amount depending on how badly it needs repainting.

Value of new paint on first apartment house	€5000
Value of new paint on second apartment house	€4000
Value of new paint on third apartment house	€3000
Value of new paint on fourth apartment house	€2000
Value of new paint on fifth apartment house	€1000

a. Plot Lauren Landlord's willingness to pay in Exhibit 1.

Exhibit 1



b. If the price to repaint her apartments is €5000 each, how many will she repaint? What is the value of her consumer surplus?

c. Suppose the price to repaint her apartments falls to €2000 each. How many apartments will Lauren choose to have repainted? What is the value of her consumer surplus?

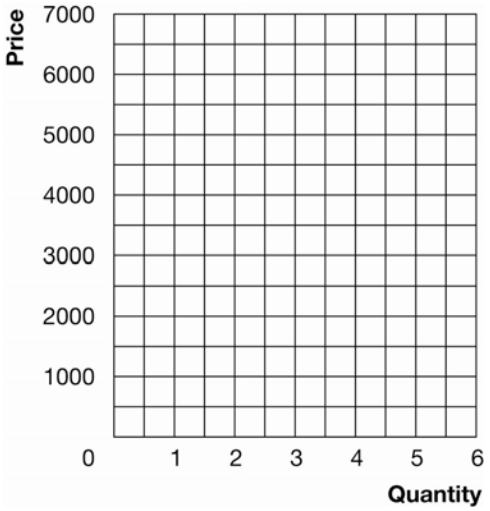
d. What happened to Ms. Landlord's consumer surplus when the price of having her apartments repainted fell? Why?

2. The following information shows the costs incurred by Peter Painter when he paints apartments. Because painting is back breaking work, the more he paints, the higher the costs he incurs in both pain and chiropractic bills.

Cost of painting first apartment house	€1000
Cost of painting second apartment house	€2000
Cost of painting third apartment house	€3000
Cost of painting fourth apartment house	€4000
Cost of painting fifth apartment house	€5000

a. Plot Peter Painter's cost in Exhibit 2.

Exhibit 2



b. If the price of painting apartment houses is €2000 each, how many will he paint? What is the value of his producer surplus?

c. Suppose the price to paint apartments rises to €4000 each. How many apartments will Peter choose to repaint? What is the value of his producer surplus?

d. What happened to Mr. Painter's producer surplus when the price to paint apartments rose? Why?

3. Use the information about willingness to pay and cost from (1) and (2) above to answer the following questions.

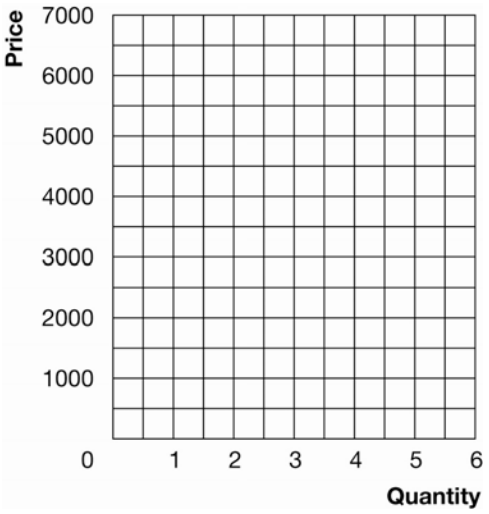
a. If a benevolent social planner sets the price for painting apartment houses at €5000, what is the value of consumer surplus? Producer surplus? Total surplus?

b. If a benevolent social planner sets the price for painting apartment houses at €1000, what is the value of consumer surplus? Producer surplus? Total surplus?

c. If the price for painting apartment houses is allowed to move to its free market equilibrium price of €3000, what is the value of consumer surplus, producer surplus, and total surplus in the market? How does total surplus in the free market compare to the total surplus generated by the social planner?

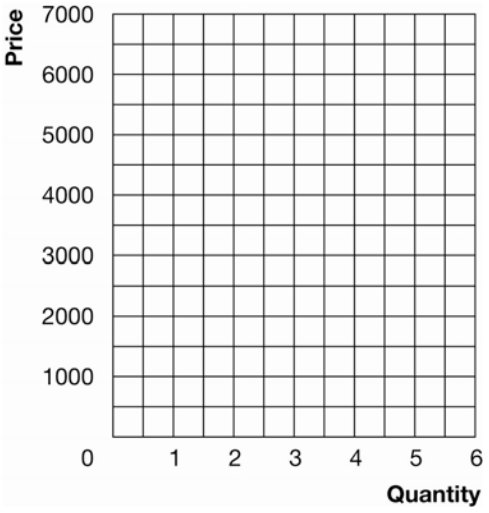
4. In Exhibit 3, plot the linear supply and demand curves for painting apartments implied by the information in questions (1) and (2) above (draw them so that they contact the vertical axis). Show consumer and producer surplus for the free market equilibrium price and quantity. Is this allocation of resources efficient? Why?

Exhibit 3



5. Suppose Lauren Landlord has difficulty renting her dilapidated houses so she increases her willingness to pay for painting by €2000 per apartment. Plot Lauren's new willingness to pay along with Peter's cost in Exhibit 4. If the equilibrium price rises to €4000, what is the value of consumer surplus, producer surplus, and total surplus? Show consumer and producer surplus on the graph. Compare your answer to the answer you found in 3 (c) above.

Exhibit 4

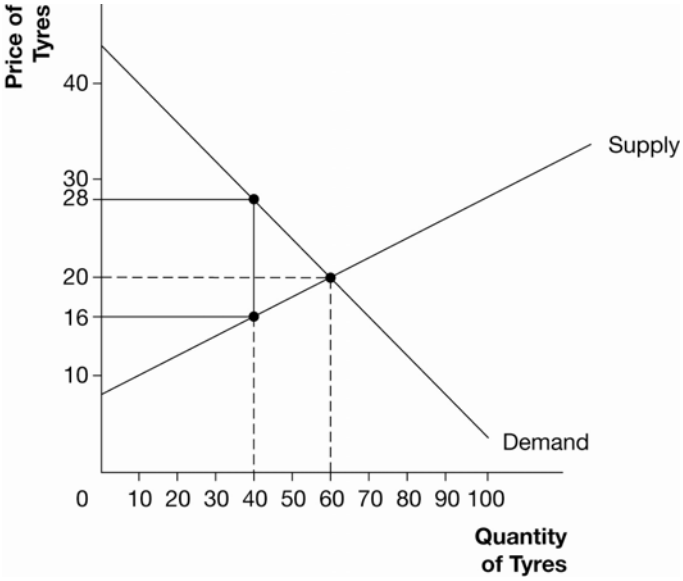


Chapter 8

1. Exhibit 2 shows the market for tyres. Suppose that a €12 road use tax is placed on each tyre sold.

a. In Exhibit 2, locate consumer surplus, producer surplus, tax revenue, and the deadweight loss.

Exhibit 2



b. Why is there a deadweight loss in the market for tyres after the tax is imposed?

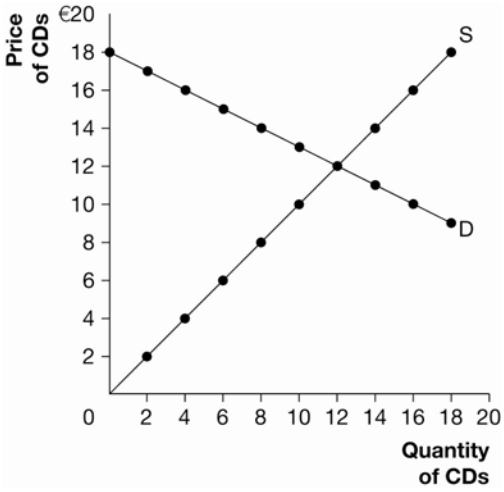
c. What is the value of the tax revenue collected by the government? Why wasn't the government able to collect €12 per tyre on 60 tyres sold (the original equilibrium quantity)?

d. What is the value of the tax revenue collected from the buyers? What is the value of the tax revenue collected from the sellers? Did the burden of the tax fall more heavily on the buyers or the sellers? Why?

e. Suppose over time, buyers of tyres are able to substitute away from car tyres (they walk and ride bicycles). Because of this, their demand for tyres becomes more price elastic. What will happen to the size of the deadweight loss in the market for tyres? Why?

2. Use Exhibit 3, which shows the market for music CDs, to answer the following questions.

Exhibit 3



a. Complete the table. (Note: to calculate deadweight loss, the area of a triangle is 1/2 base multiplied by height).

Tax per unit	Tax revenue collected	Deadweight loss
€0		
3		
6		
9		
12		
15		
18		

b. As the tax is increased, what happens to the amount of tax revenue collected? Why?

c. At a tax of €18 per CD, how much tax revenue is collected? Why?

d. If the government wanted to maximize tax revenue, what tax per unit should it impose?

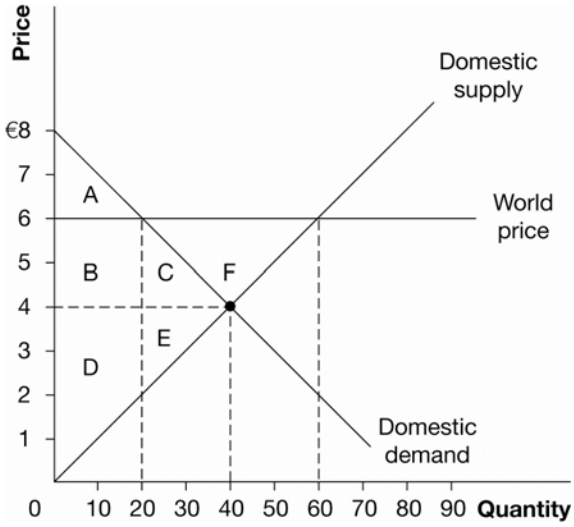
e. If the government wanted to maximize efficiency (total surplus) what tax per unit should it impose?

f. What happens to the deadweight loss due to the tax as the tax is increased? Why?

Chapter 9

1. Use Exhibit 3 to answer the following questions.

Exhibit 3



a. If trade is not allowed, what is the equilibrium price and quantity in this market?

b. If trade is allowed, will this country import or export this commodity? Why?

c. If trade is allowed, what is the price at which the good is sold, the domestic quantity supplied and demanded, and the quantity imported or exported?

d. What area corresponds to consumer surplus if no trade is allowed?

e. What area corresponds to consumer surplus if trade is allowed?

f. What area corresponds to producer surplus if no trade is allowed?

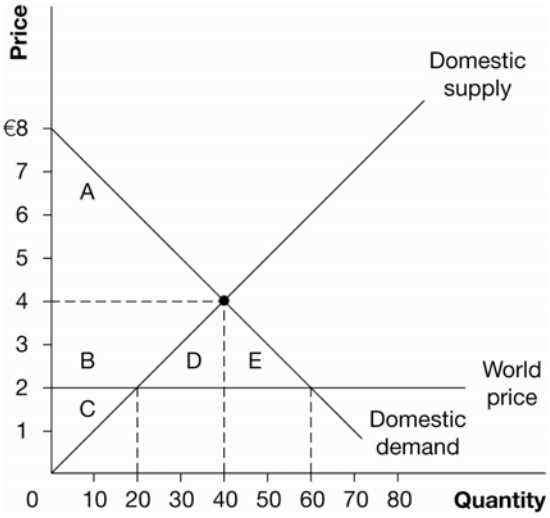
g. What area corresponds to producer surplus if trade is allowed?

h. If free trade is allowed, who gains and who loses, the consumers or the producers, and what area corresponds to their gain or loss?

i. What area corresponds to the gains from trade?

2. Use Exhibit 4 to answer the following questions.

Exhibit 4



a. If trade is not allowed, what is the equilibrium price and quantity in this market?

b. If trade is allowed, will this country import or export this commodity? Why?

c. If trade is allowed, what is the price at which the good is sold, the domestic quantity supplied and demanded, and the quantity imported or exported?

d. What area corresponds to consumer surplus if no trade is allowed?

e. What area corresponds to consumer surplus if trade is allowed?

f. What area corresponds to producer surplus if no trade is allowed?

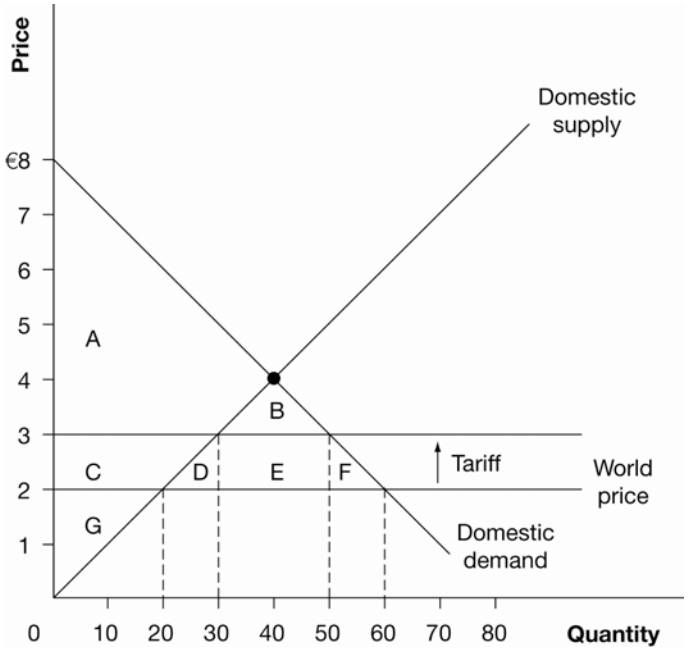
g. What area corresponds to producer surplus if trade is allowed?

h. If free trade is allowed, who gains and who loses, the consumers or the producers, and what area corresponds to their gain or loss?

i. What area corresponds to the gains from trade?

3. Use Exhibit 5 to answer the following questions.

Exhibit 5



a. If free trade is allowed, what is the domestic quantity supplied, domestic quantity demanded, and the quantity imported?

b. If a €1 tariff is placed on this good, what is the domestic quantity supplied, domestic quantity demanded, and the quantity imported?

c. What area corresponds to consumer and producer surplus before the tariff is applied?

d. What area corresponds to consumer surplus, producer surplus, and government revenue after the tariff is applied?

e. What area corresponds to the deadweight loss associated with the tariff?

f. Describe in words the sources of the deadweight loss from a tariff.

g. What is the size of the import quota that would generate results most similar to this €1 tariff?

h. What is the size of the tariff that would eliminate trade altogether (i.e. that would return the market to its no-trade domestic solution)?

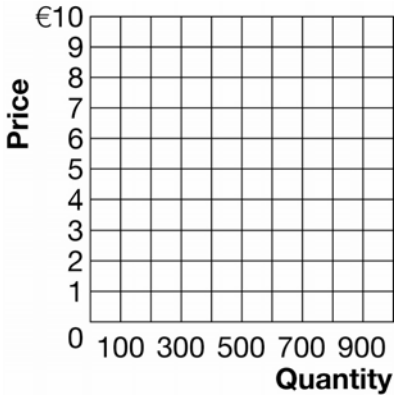
Chapter 10

1. The information below provides the prices and quantities in a hypothetical market for automobile antifreeze.

Price per Gallon	Quantity Demanded	Quantity Supplied
€1	700	300
2	600	400
3	500	500
4	400	600
5	300	700
6	200	800
7	100	900
8	0	1,000

a. Plot the supply and demand curves for antifreeze in Exhibit 1.

Exhibit 1



b. What is the equilibrium price and quantity generated by buyers and sellers in the market?

c. Suppose that the production of antifreeze generates pollution in the form of chemical runoff and that the pollution imposes a €2 cost on society for each gallon of antifreeze produced. Plot the social cost curve in Exhibit 1.

d. What is the optimal quantity of antifreeze production? Does the market overproduce or under produce antifreeze?

e. If the government were to intervene to make this market efficient, should it impose a Pigovian tax or a subsidy? What is the value of the appropriate tax or subsidy?

2. Suppose citizens living around Metropolitan Airport value peace and quiet at a value of €3 billion.

a. If it costs the airlines €4 billion to make their planes quieter (the airlines value noise at €4 billion), is it efficient for the government to require that the planes be muffled? Why?

b. If it costs the airlines €2 billion to make their planes quieter, is it efficient for the government to require that the planes be muffled? Why?

c. Suppose there are no transaction costs and suppose that people have the right to peace and quiet. If it costs the airlines €2 billion to make their planes quieter, what is the private solution to the problem?

d. Suppose there are no transaction costs and suppose that airlines have the right to make as much noise as they please. If it costs the airlines €2 billion to make their planes quieter, what is the private solution to the problem?

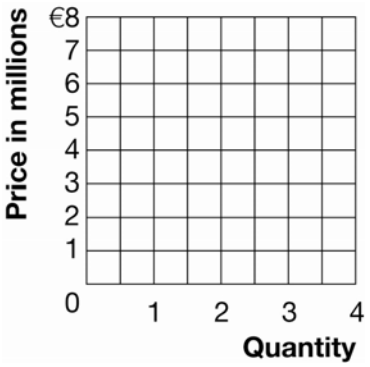
e. Compare your answers to (c) and (d) above. What are the similarities and what are the differences? What general rule can you make from the comparison?

f. Suppose it costs the airlines €2 billion to make their planes quieter. If a private solution to the noise problem requires an additional €2 billion of transaction costs (due to legal fees, the large number of affected parties, and enforcement costs) can there be a private solution to the problem? Why?

3. Suppose there are four firms that each wish to dump one barrel of waste chemicals into the river. Firm 1 produces a product that is so valued by society and sells for such a high price that it is willing to pay €8 million to dump a barrel. Firm 2 produces a somewhat less valuable product and is only willing to pay €6 million to dump a barrel. In similar fashion, suppose firm 3 is willing to pay €4 million to dump a barrel and firm 4 will pay €2 million.

a. Draw the demand for the right to pollute in Exhibit 2.

Exhibit 2



b. Suppose the government's environment protection directorate estimates that the safe level of pollutants in the river is 3 barrels. At what value should they set a Pigovian tax?

c. Suppose the government's environment protection directorate estimates that the safe level of pollutants in the river is 3 barrels. How many tradable pollution permits should they allocate? At what price will the permits trade?

d. Compare part (b) and (c) above. How many barrels are dumped in each case? What is the price paid to pollute in each case? Is there an advantage to one method of internalizing the externality compared to the other?

Chapter 11

1. Consider the rivalry and excludability of each of the following goods. Use this information to determine whether the goods are public goods, private goods, common resources, or produced by a natural monopoly. Explain.

a. Fish in a private pond

b. Fish in the ocean

c. Broadcast television signals

d. Cable television signals

e. Basic research on lifestyle and cholesterol levels

f. Specific research on a cholesterol lowering drug for which a patent can be obtained

g. An uncongested highway (no tolls)

h. A congested highway (no tolls)

i. An uncongested toll road

j. A hot dog served at a private party

k. A hot dog sold at a stand owned by the city government

2. Suppose the city of Roadville is debating whether to build a new motorway from its airport to the city centre. The city surveys its citizens and finds that, on average, each of the one million residents values the new highway at a value of €50 and the highway costs €40 million to construct.

a. Assuming the survey was accurate, is building a new motorway efficient? Why?

b. Under what conditions would private industry build the road?

c. Should the city build the road? On average, how much should it increase each resident's tax bill to pay for the road?

d. Is it certain that building the motorway is efficient? That is, what are the problems associated with using cost-benefit analysis as a tool for deciding whether to provide a public good?

Chapter 12

1. a. Fill out the table below assuming that the government taxes 20 percent of the first €30,000 of income and 50 percent of all income above €30,000.

Income	Taxes Paid	Average Tax Rate	Marginal Tax Rate
€10,000	_____	_____	_____
20,000	_____	_____	_____
30,000	_____	_____	_____
40,000	_____	_____	_____
50,000	_____	_____	_____

b. Compare the taxes for someone earning €10,000 to those of someone earning €50,000 in part (a) above. Is this tax system progressive, regressive, or proportional? Explain.

2. a. Fill out the table below assuming that the government imposes a lump-sum tax of €6,000 on all individuals.

Income	Taxes Paid	Average Tax Rate	Marginal Tax Rate
€10,000	_____	_____	_____
20,000	_____	_____	_____
30,000	_____	_____	_____
40,000	_____	_____	_____
50,000	_____	_____	_____

b. Compare the taxes for someone earning €10,000 to those of someone earning €50,000 in part (a) above. Is this tax system progressive, regressive, or proportional? Explain

3. a. Fill out the table below assuming that the government taxes 20 percent of all income.

Income	Taxes Paid	Average Tax Rate	Marginal Tax Rate
€10,000	_____	_____	_____
20,000	_____	_____	_____
30,000	_____	_____	_____
40,000	_____	_____	_____
50,000	_____	_____	_____

b. Compare the taxes for someone earning €10,000 to those of someone earning €50,000 in part (a) above. Is this tax system progressive, regressive, or proportional? Explain.

4. a. Fill out the table below assuming that the government taxes 40 percent of the first €10,000 of income and 10 percent of all income above €10,000.

Income	Taxes Paid	Average Tax Rate	Marginal Tax Rate
€10,000	_____	_____	_____
20,000	_____	_____	_____
30,000	_____	_____	_____
40,000	_____	_____	_____
50,000	_____	_____	_____

b. Compare the taxes for someone earning €10,000 to those of someone earning €50,000 in part (a) above. Is this tax system progressive, regressive, or proportional? Explain.

5. a. Suppose the only objective of the tax system is to collect €6,000 from people who earn €30,000. Which of the tax systems described in questions 1 through 4 is best? Why?

b. Suppose the only objective of the tax system is to be efficient. Which of the tax systems described in questions 1 through 4 is best? Why?

c. Suppose the only objective of the tax system is to be vertically equitable based on the ability-to-pay principle. Which of the tax systems described in questions 1 though 4 is best? Why?

Chapter 13

1. Joe runs a small boat factory. He can make ten boats per year and sell them for €25,000 each. It costs Joe €150,000 for the raw materials (fibreglass, wood, paint, and so on) to build the ten boats. Joe has invested €400,000 in the factory and equipment needed to produce the boats: €200,000 from his own savings and €200,000 borrowed at 10 percent interest. (Assume that Joe could have loaned his money out at 10 percent, too.) Joe can work at a competing boat factory for €70,000 per year.

a. What is the total revenue Joe can earn in a year?

b. What are the explicit costs Joe incurs while producing ten boats?

c. What are the total opportunity costs of producing ten boats (explicit and implicit)?

d. What is the value of Joe's accounting profit?

e. What is the value of Joe's economic profit?

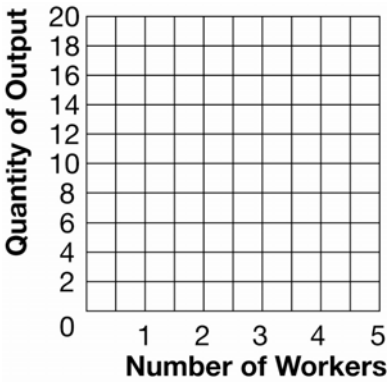
f. Is it truly profitable for Joe to operate his boat factory? Explain.

2. Complete the following table. It describes the production and cost of hamburgers at a roadside stand. All figures are measured per hour.

Number of Workers	Output	Marginal Product of Labour	Cost of Factory	Cost of Workers	Total Cost
0	0	_____	€25	€0	_____
1	6	_____	25	5	_____
2	11	_____	25	10	_____
3	15	_____	25	15	_____
4	18	_____	25	20	_____
5	20		25	25	_____

a. Plot the production function in Exhibit 1.

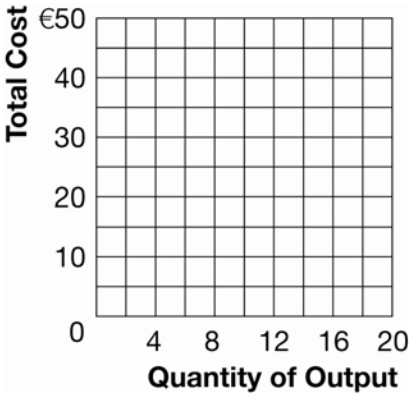
Exhibit 1



b. What happens to the marginal product of labour as more workers are added to the production facility? Why? Use this information about the marginal product of labour to explain the slope of the production function you plotted above.

c. Plot the total-cost curve in Exhibit 2.

Exhibit 2



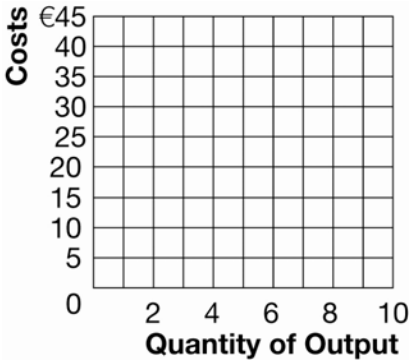
d. Explain the shape of the total cost curve.

3. The information below is for Bob's blue jeans manufacturing plant. All data is per hour. Complete the table. Note the following abbreviations: FC (fixed cost), VC (variable cost), TC (total cost), AFC (average fixed cost), AVC (average variable cost), ATC (average total cost), MC (marginal cost).

Quantity	*FC*	*VC*	*TC*	*AFC*	*AVC*	*ATC*	*MC*
0	€16	€0	_____	_____	_____	_____	
1	16	18	_____	_____	_____	_____	_____
2	16	31	_____	_____	_____	_____	_____
3	16	41	_____	_____	_____	_____	_____
4	16	49	_____	_____	_____	_____	_____
5	16	59	_____	_____	_____	_____	_____
6	16	72	_____	_____	_____	_____	_____
7	16	90	_____	_____	_____	_____	_____
8	16	114	_____	_____	_____	_____	_____
9	16	145	_____	_____	_____	_____	_____
10	16	184	_____	_____	_____	_____	

a. Plot AFC, AVC, ATC, and MC in Exhibit 3.

Exhibit 3



b. Explain the shape of each of the curves you plotted in part (a) above.

c. Explain the relationship between ATC and MC.

d. Explain the relationship between ATC, AFC, and AVC.

e. What is Bob's efficient scale? How do you find the efficient scale? Explain.

Chapter 14

1. Are the following markets likely to be perfectly competitive? Explain.

a. The market for petrol

b. The market for blue jeans

c. The market for agricultural products such as wheat and milk

d. The market for the shares of IBM

e. The market for electricity

f. The market for cable television

2. a. The following table contains information about the revenues and costs for Barry's Golf Ball Manufacturing. All data are per hour. Complete the first group of columns which correspond to Barry's production if P = €3. (TR = total revenue, TC = total cost, MR = marginal revenue, MC = marginal cost)

Q	*TR, P = €3*	*TC*	Profit	*MR*	*MC*	*TR, P = €2*	Profit	*MR*
0	_____	€1	_____			_____	_____	
				_____	_____			_____
1	_____	2	_____			_____	_____	
				_____	_____			_____
2	_____	4	_____			_____	_____	
				_____	_____			_____
3	_____	7	_____			_____	_____	
				_____	_____			_____
4	_____	11	_____			_____	_____	
				_____	_____			_____
5	_____	16	_____			_____	_____	

b. If the price is €3 per golf ball, what is Barry's optimal level of production? What criteria did you use to determine the optimal level of production?

c. Is €3 per golf ball a long-run equilibrium price in the market for golf balls? Explain. What adjustment will take place in the market for golf balls and what will happen to the price in the long run?

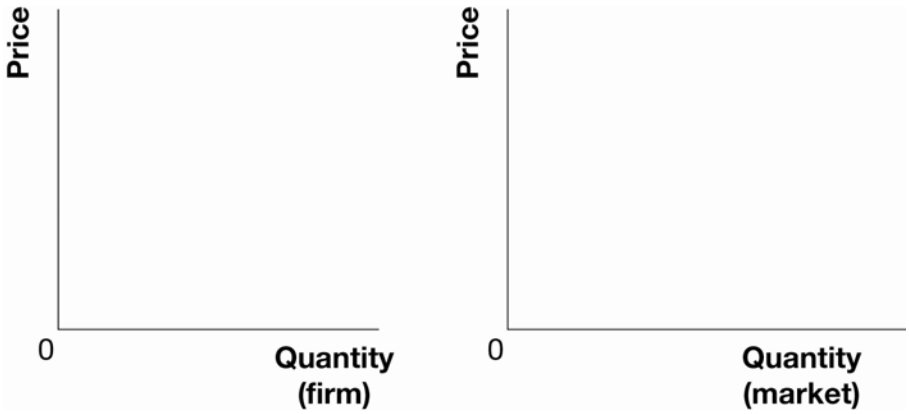
d. Suppose the price of baseballs falls to €2. Fill out the remaining three columns of the table above. What is the profit-maximizing level of output when the price is €2 per baseball? How much profit does Barry's Baseball Manufacturing earn when the price of baseballs is €2?

e. Is €2 per golf ball a long-run equilibrium price in the market for golf balls? Explain. Why would Barry continue to produce at this level of profit?

f. Describe the slope of the short-run supply curve for the market for golf balls. Describe the slope of the long-run supply curve in the market for golf balls.

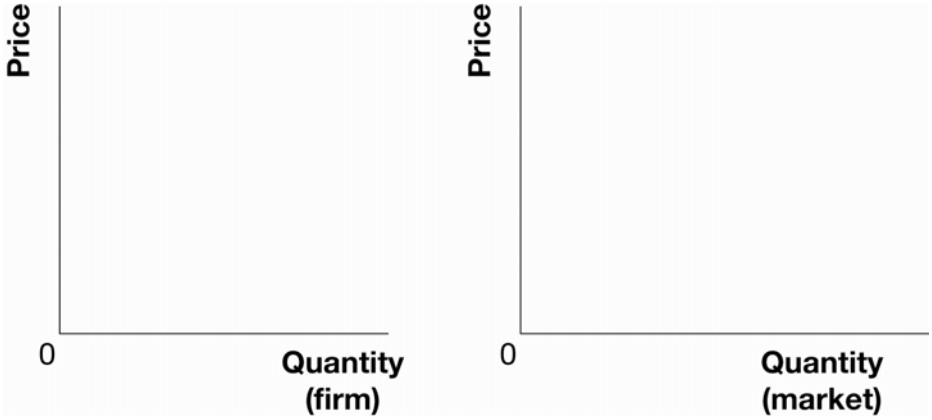
3. a. In Exhibit 1, show the cost curves of a representative firm in long-run equilibrium along side the corresponding market equilibrium.

Exhibit 1



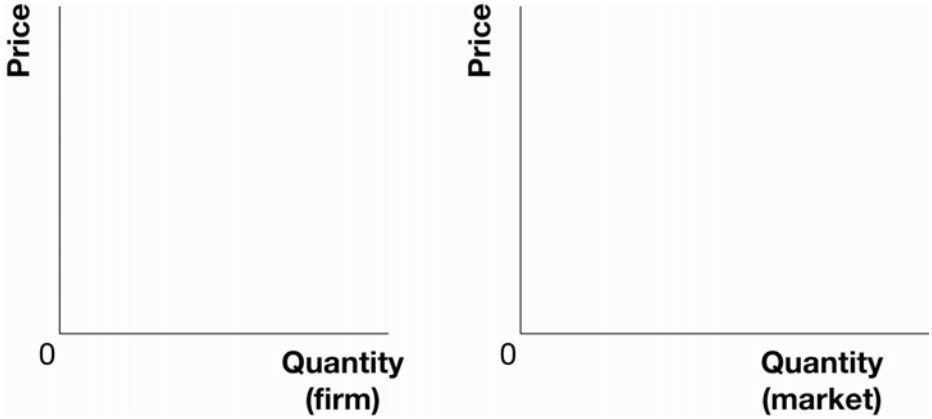
b. Suppose there is a decrease in the demand for this product. In Exhibit 2, show the shift in demand in the market for this product and the corresponding profit or loss on the cost curves of the representative firm.

Exhibit 2



c. In Exhibit 3, show the adjustment that takes place in order to return the market and firm to long-run equilibrium.

Exhibit 3



d. After the market has returned to long-run equilibrium, is the price higher, lower, or the same as the initial price? Are there more, fewer, or the same number of firms producing in the market?

Chapter 15

1. a. What are the three sources of the barriers to entry that allow a monopoly to remain the sole seller of a product?

b. What is the entry barrier that is the source of the monopoly power for the following products or producers? List some competitors that keep these products or producers from having absolute monopoly power.

1. The UK's Royal Mail (postal service)
2. Perrier Spring Water
3. Prozac (a brand name drug)
4. DeBeers Diamonds
5. *Economics*, by N. Gregory Mankiw and Mark P. Taylor (your textbook)

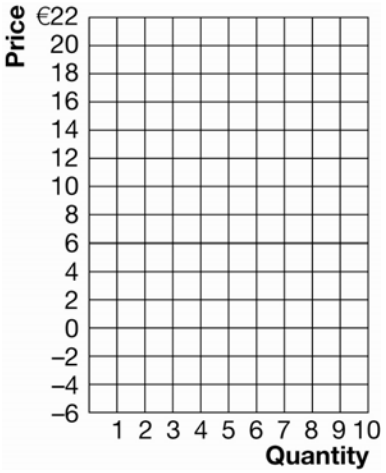
2. Suppose a firm has a patent on a special process to make a unique smoked salmon. The following table provides information about the demand facing this firm for this unique product.

Pounds of Salmon	Price	($P \times Q$) Total Revenue	($\Delta TR/\Delta Q$) Marginal Revenue
0	€20	_____	
1	18	_____	_____
2	16	_____	_____
3	14	_____	_____
4	12	_____	_____
5	10	_____	_____
6	8	_____	_____
7	6	_____	_____

a. Complete the table above.

b. Plot the demand curve and the marginal revenue curve in Exhibit 1.

Exhibit 1



c. Suppose that there are no fixed costs and that the marginal cost of production of smoked salmon is constant at €6 per kilogram. (Thus, the average total cost is also constant at €6 per kilogram.) What is the quantity and price chosen by the monopolist? What is the profit earned by the monopolist? Show your solution on the graph you created in part (b) above.

e. What is the price and quantity that maximizes total surplus?

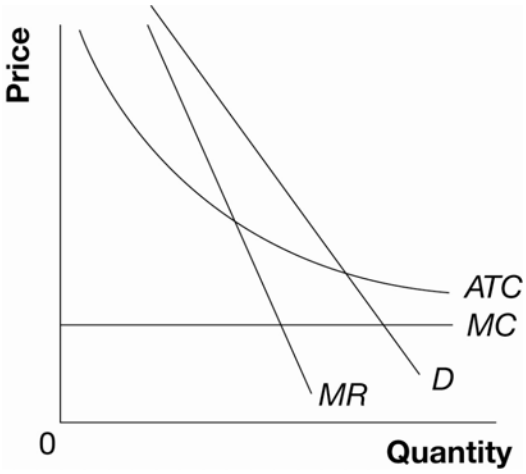
f. Compare the monopoly solution and the efficient solution. That is, is the monopolist's price too high or too low? Is the monopolist's quantity too high or too low? Why?

g. Is there a deadweight loss in this market if the monopolist charges the monopoly price? Explain.

h. If the monopolist is able to costlessly and perfectly price discriminate, is the outcome efficient? Explain. What is the value of consumer surplus, producer surplus, and total surplus? Explain.

3. a. What type of market is represented in Exhibit 2: perfect competition, monopoly, or natural monopoly? Explain.

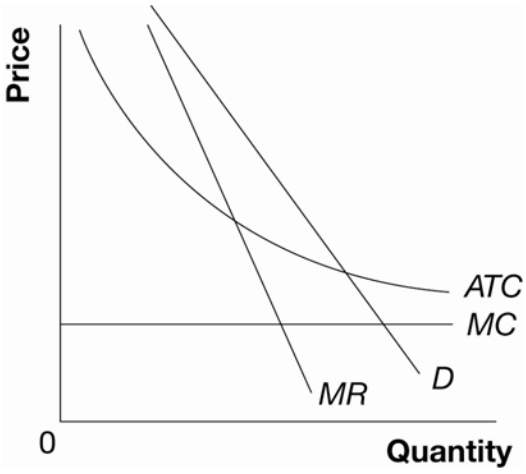
Exhibit 2



b. Show the profit or loss generated by this firm in Exhibit 2 assuming that the firm maximizes profit.

c. Suppose government regulators force this firm to set the price equal to its marginal cost in order to improve efficiency in this market. In Exhibit 3 show the profit or loss generated by this firm.

Exhibit 3



d. In the long run, will forcing this firm to charge a price equal to its marginal cost improve efficiency? Explain.

Chapter 16

1. In which market structure would you place each of the following products: monopoly, oligopoly, monopolistic competition, or perfect competition? Why?

a. Retail market for water and sewerage services

b. Economics textbooks

c. *Economics*, by N. Gregory Mankiw and Mark P. Taylor

d. Photographic film

e. Restaurants in a large city

f. Car tyres

g. Breakfast cereal

h. Gold bullion

i. Air travel from any one airport

2. The following information describes the demand schedule for a unique type of apple. This type of apple can only be produced by two firms because they own the land on which these unique trees spontaneously grow. As a result, the marginal cost of production is zero for these duopolists, causing total revenue to equal profit.

a. Complete the following table.

Price per box	Quantity (in boxes)	Total revenue (profit)
€12	0	_____
11	5	_____
10	10	_____
9	15	_____
8	20	_____
7	25	_____
6	30	_____
5	35	_____
4	40	_____
3	45	_____
2	50	_____
1	55	_____

b. If the market were perfectly competitive, what price and quantity would be generated by this market? Explain.

c. If these two firms colluded and formed a cartel, what price and quantity would be generated by this market? What is the level of profit generated by the market? And what is the level of profit generated by each firm?

d. If one firm cheats and produces one additional increment (five units) of production, what is the level of profit generated by each firm?

e. If both firms cheat and each produces one additional increment (five units) of production (compared to the cooperative solution), what is the level of profit generated by each firm?

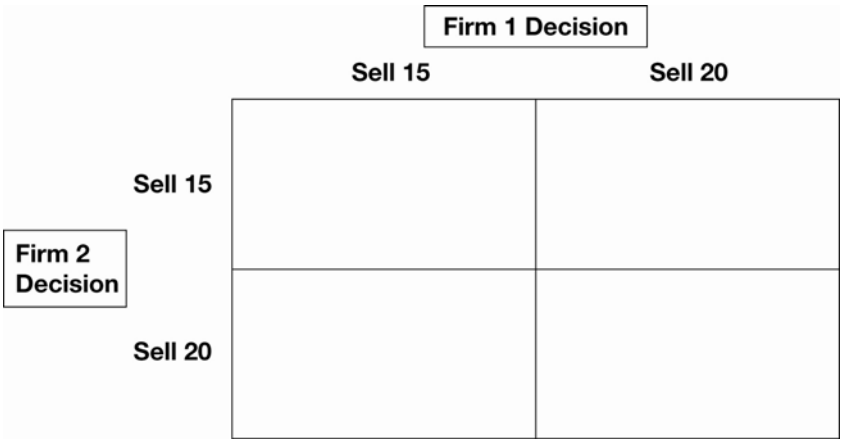
f. If both firms are cheating and producing one additional increment of output (five additional units compared to the cooperative solution), will either firm choose to produce an additional increment (five more units)? Why? What is the value of the Nash equilibrium in this duopoly market?

g. Compare the competitive equilibrium to the Nash equilibrium. In which situation is society better off? Explain.

h. Describe what would happen to the price and quantity in this market if an additional firm were able to grow these unique apples. (Do not attempt to calculate quantitative changes – the direction of change is all that's required.)

i. Use the data from the duopoly example above to fill in the boxes of the prisoners' dilemma. Place the value of the profits earned by each duopolist in the appropriate box in Exhibit 1.

Exhibit 1



j. What is the solution to this prisoners' dilemma? Explain.

k. What might the solution be if the participants were able to repeat the "game?" Why? What simple strategy might they use to maintain their cartel?

Chapter 17

1. Categorize each of the following markets as one of: competitive, monopolistic, or monopolistically competitive. Explain.

a. toothpaste

b. local newspapers

c. magazines

d. wheat

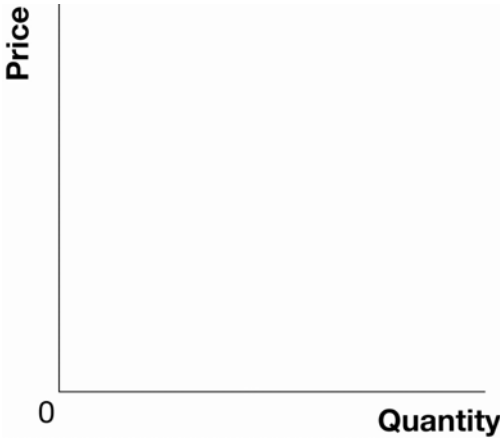
e. video games

f. beer

2. Suppose that there are many restaurants in the city and that each has a somewhat different menu.

a. In Exhibit 1, draw the diagram of the cost curves (average total cost and marginal cost), demand curve, and marginal revenue curve for Mario's Pizza when it is in long-run equilibrium.

Exhibit 1



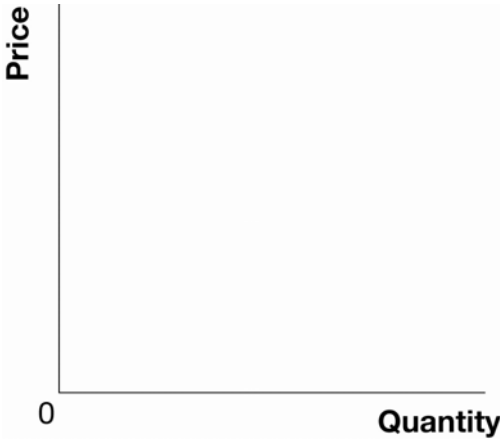
b. Is Mario's Pizza profitable in the long run? Explain

c. Is Mario's Pizza producing at the efficient scale? Explain. Why doesn't Mario's expand its output if it has excess capacity?

d. In Exhibit 1, show the deadweight loss associated with Mario's level of output. Does this deadweight loss occur because the price is higher than a competitive firm would charge or because the quantity is smaller than a competitive firm would produce? Explain.

e. Suppose that Mario's engages in an advertising campaign that is a huge success. In Exhibit 2, draw the diagram of Mario's cost curves, demand curve, and marginal revenue curve and show Mario's profit in the short run. Can this situation be maintained in the long run? Explain.

Exhibit 2



3. For each of the following pairs of firms, which firm would likely spend a higher proportion of its revenue on advertising? Explain.

a. the maker of Disprin or the maker of a generic aspirin pill

b. a firm introducing a low quality ice cream or a firm introducing a high quality ice cream that each cost about the same to make

c. the bakery that bakes Hovis bread or a wheat farmer

Chapter 18

1. Suppose that labour is the only variable input in the production process for a competitive profit-maximizing firm that produces coffee mugs. The firm's production function is shown below.

Labour (number of workers)	Output per Hour	Marginal Product of Labour	Value of MPL when P = €3	Value of MPL when P = €5
0	0			
1	9	_____	_____	_____
2	17	_____	_____	_____
3	24	_____	_____	_____
4	30	_____	_____	_____
5	35	_____	_____	_____
6	39	_____	_____	_____
7	42	_____	_____	_____
8	44	_____	_____	_____

a. Fill out columns three and four of the table above (the marginal product of labour and the value of the marginal product of labour when the price of output equals €3 per mug).

b. Suppose that the competitive wage for workers who can make coffee mugs is €19 per hour. How many workers should this firm hire? Why?

c. Suppose that colleges that teach pottery skills increase the supply of workers that can make coffee mugs and that this lowers the competitive wage for coffee mug workers to €13 per hour. How many workers should this firm hire? Why? Does this represent a shift in the firm's demand for labour or a movement along the firm's demand for labour? Explain.

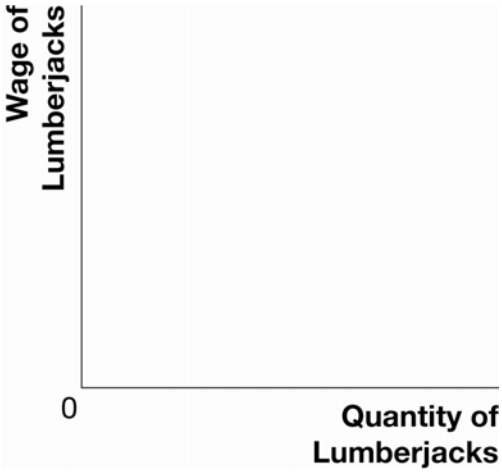
d. Suppose there is an increase in the demand for coffee mugs and that the price of coffee mugs rises to €5 per mug. Fill out the last column of the table above to show the value of the marginal product of labour when the price of mugs is €5 per mug.

e. Suppose that the competitive wage for coffee mug workers remains at €13 per hour and the price of mugs is €5 per mug. How many workers should this firm now hire? Why? Does this represent a shift in the firm's demand for labour or a movement along the firm's demand for labour? Explain.

2. Suppose there is an increase in the demand for lumber, which raises the price of lumber.

a. Show the impact of the increase in the price of lumber on the market for lumberjacks in Exhibit 1.

Exhibit 1



b. What did the increase in the price of lumber do to the value of the marginal product of lumberjacks and the wage of lumberjacks? Explain.

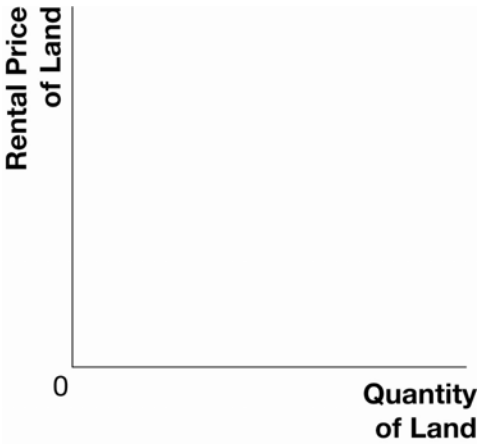
c. What will happen to the value of the marginal product and the rental rate for timber-growing land and for capital that is used for cutting and shipping timber? Explain.

d. How has this development affected the prosperity of the firm and the owners of the factors of production employed by the firm? Explain.

3. Suppose that an enormous amount of forest land is cleared for agricultural use in Brazil.

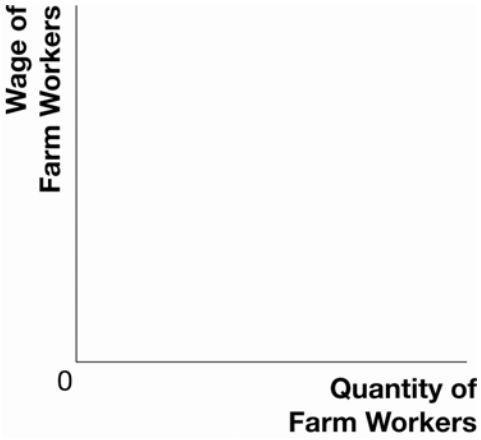
a. Show the impact of this event on the market for agricultural land in Brazil in Exhibit 2. What has happened to the marginal product of land and the rental price of land in Brazil?

Exhibit 2



b. Show the impact of this event on the market for Brazilian farm workers in Exhibit 3. What has happened to the marginal product of farm labour and the wage of farm labour?

Exhibit 3



4. Describe the impact of the following events on the market for car workers in Swindon, England. (Note that Honda operates a factory in Swindon.)

a. Honda expands its factory in Swindon.

b. *Which?* magazine declares Honda to be the best-made cars in its class.

c. Migrants with manufacturing skills from Poland and Romania relocate to Swindon.

Chapter 19

1. Within each of the following pairs of workers, which worker is likely to earn more and why? (It may be obvious which one is paid more. The real issue is to explain why one is paid more than the other.)

a. A carpenter working at the top of a 600-foot cooling tower of a nuclear power plant or a carpenter who frames houses?

b. A shop assistant in a supermarket store or a lawyer?

c. A lawyer with one year of experience or a lawyer with six years of experience?

d. A worker in a car factory who works the day shift or a worker in a car factory who works the night shift?

e. An economics professor or a corporate economist?

f. A history professor or an economics professor?

g. Someone trained as a key-punch operator (typist who types input commands on cards to be read by a mainframe computer prior to the existence of computer terminals) or someone trained as a personal computer specialist?

h. Your favourite local blues band that plays regularly at a nearby campus bar or David Bowie?

i. A lazy, stupid plumber or a hardworking, bright plumber?

j. The best carpenter on the planet or the best writer on the planet?

2. a. Explain the human capital view of education and the signalling view of education.

b. What are the implications for education policy under each view?

c. Which of the above is true? Explain.

3. a. How can a competitive market eliminate discrimination in the labour market?

b. What limits a competitive market's ability to reduce discrimination? Explain.

Chapter 20

1. Use Table 20.2 from Chapter 20 in your text to answer this question.

a. In the most recent year available, what percentage of income did the bottom fifth of the income distribution receive? What percent of income did the top fifth of the distribution receive? Roughly, what is the relationship between what the bottom fifth received and what the top fifth received?

b. What is the range of the percentage of income received by the bottom fifth of the income distribution over the last 33 years? What is the range for the top fifth? Describe the trend for each group over the last 33 years.

c. Describe three reasons why the measure of income distribution used in Table 20.2 in Chapter 20 may not truly measure someone's ability to maintain a certain standard of living. As a result, are the standard measures of income distribution likely to exaggerate or understate the true distribution of the standard of living? Explain.

d. What is permanent income? Why might we wish to use permanent income when measuring the distribution of income? If we used permanent income instead of current annual income when measuring the distribution of income, would this tend to exaggerate or understate the true distribution of the standard of living? Explain. (Hint: If you are a full-time student, can you borrow as much as you want in order to perfectly smooth out your lifetime consumption?)

2. Susan earns five times as much as Joe.

a. What would the political philosophy of utilitarianism, liberalism, and libertarianism likely suggest should be done in this situation? Explain.

b. Compare the degree of redistribution each suggests.

3. Suppose the government has to choose between two anti-poverty programs. Each program guarantees that every family has at least €15,000 of income. One scheme establishes a negative income tax where: Taxes = (0.50 of income) - €15,000. The other scheme is for the government to guarantee every family at least €15,000 to spend and if a family falls short, the government will simply make up the difference.

a. Using the negative income tax scheme described above, fill out the following table.

Earned Income	Taxes Paid	After-tax Income
€0	_____	_____
5,000	_____	_____
10,000	_____	_____
20,000	_____	_____
30,000	_____	_____
40,000	_____	_____

b. What is the value of income for which this family neither receives a subsidy nor pays any tax? (That is, how high does income have to be for the family to stop receiving a subsidy?

c. Under the second scheme where the government simply guarantees at least €15,000 to every family, what is the level of income at which a family stops receiving a subsidy? Explain.

d. Which plan is likely to be more expensive to the government? Explain

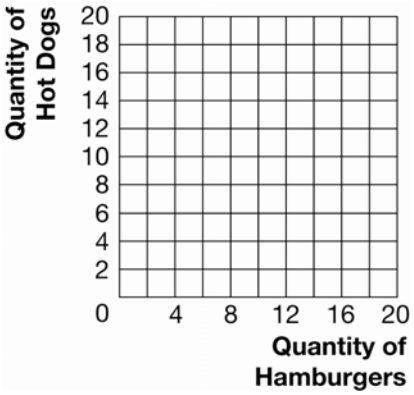
e. Suppose a poor family that only earns €5,000 per year decides to plant a garden and sell the produce in a "farmer's market" in the city. Suppose the family earns an additional €5,000 selling the produce. What is the family's final income under each scheme? What is the effective tax rate on the €5,000 earned by family under each scheme? Which scheme promotes a work ethic among the poor and which one discourages work? Explain.

Chapter 21

1. Suppose a consumer only buys two goods: hot dogs and hamburgers. Suppose the price of hot dogs is €1, the price of hamburgers is €2, and the consumer's income is €20.

a. Plot the consumer's budget constraint in Exhibit 1. Measure the quantity of hot dogs on the vertical axis and the quantity of hamburgers on the horizontal axis. Explicitly plot the points on the budget constraint associated with the even numbered quantities of hamburgers (0, 2, 4, 6 . . .).

Exhibit 1



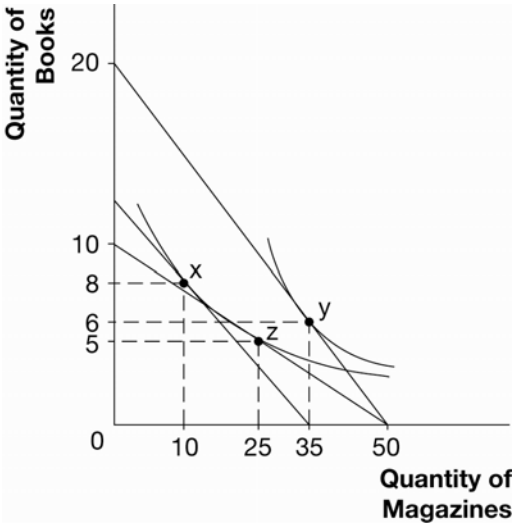
b. Suppose the individual chooses to consume six hamburgers. What is the maximum amount of hot dogs that he can afford? Draw an indifference curve on the figure above that establishes this bundle of goods as the optimum.

c. What is the slope of the budget constraint? What is the slope of the consumer's indifference curve at the optimum? What is the relationship between the slope of the budget constraint and the slope of the indifference curve at the optimum? What is the economic interpretation of this relationship?

d. Explain why any other point on the budget constraint must be inferior to the optimum.

2. Use Exhibit 2 to answer the following questions.

Exhibit 2



a. Suppose the price of a magazine is €2, the price of a book is €10, and the consumer's income is €100. Which point on the graph represents the consumer's optimum: X, Y, or Z? What are the optimal quantities of books and magazines this individual chooses to consume?

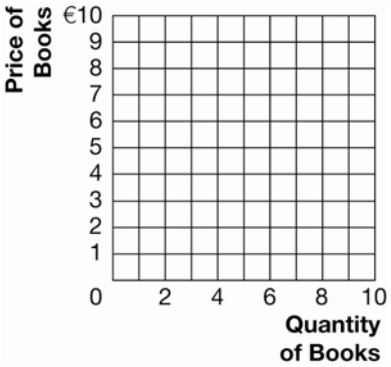
b. Suppose the price of books falls to €5. What are the two optimum points on the graph that represent the substitution effect (in sequence)? What is the change in the consumption of books due to the substitution effect?

c. Again, suppose the price of books falls to €5. What are the two optimum points on the graph that represent the income effect (in sequence)? What is the change in the consumption of books due to the income effect? Is a book a normal good or an inferior good for this consumer? Explain.

d. For this consumer, what is the total change in the quantity of books purchased when the price of books fell from €10 to €5?

e. Use the information in this problem to plot the consumer's demand curve for books in Exhibit 3.

Exhibit 3



Chapter 22

1. For each of the following situations, identify the principal and the agent, describe the information asymmetry involved, and explain how moral hazard has been reduced.

a. Dental insurance companies offer free annual check-ups

b. Firms compensate travelling salespersons with commissions (a percentage of the value of the sales)

c. Agricultural seed companies pay migrant workers bonuses if they work the entire summer season

d. McDonald's pays twice the minimum wage to high school students

2. For each of the following situations, describe the information asymmetry involved, name the type of action that has been taken to reduce adverse selection (signalling or screening), and explain how adverse selection has been reduced.

a. McDonald's only hires high school students with good grades

b. Hyundai (a Korean car manufacturer) provides a 100,000 kilometre warranty on its new cars

c. A health insurance company requires prospective customers to take a physical examination

d. Budweiser sponsors the Super Bowl half-time show

3. Answer the questions regarding the Condorcet paradox for the three sets of voting preferences below.

Case 1

	Voter Type		
	Type 1	**Type 2**	**Type 3**
Percent of electorate	15	40	45
First Choice	C	A	B
Second Choice	A	B	C
Third Choice	B	C	A

a. If voters must choose between A and B, what are the percentages of votes that each outcome receives and which outcome wins?

b. If voters must choose between B and C, what are the percentages of votes that each outcome receives and which outcome wins?

c. If voters must choose between C and A, what are the percentages of votes that each outcome receives and which outcome wins?

d. Do these preferences exhibit transitivity? Explain.

e. If the voters choose between A and B and then compare to C, which outcome wins?
If the voters choose between B and C and then compare to A, which outcome wins?
If the voters choose between A and C, and then compare to B which outcome wins?

Does the order in which items are voted on matter in this case? Why?

Case 2

	Voter Type		
	Type 1	**Type 2**	**Type 3**
Percent of electorate	30	15	55
First Choice	A	B	C
Second Choice	B	C	A
Third Choice	C	A	B

a. If voters must choose between A and B, what are the percentages of votes that each outcome receives and which outcome wins?

b. If voters must choose between B and C, what are the percentages of votes that each outcome receives and which outcome wins?

c. If voters must choose between C and A, what are the percentages of votes that each outcome receives and which outcome wins?

d. Do these preferences exhibit transitivity? Explain.

e. If the voters choose between A and B and then compare to C, which outcome wins?
If the voters choose between B and C and then compare to A, which outcome wins?
If the voters choose between A and C and then compare to B, which outcome wins?
Does the order in which items are voted on matter in this case? Why?

Case 3

	Voter Type		
	Type 1	**Type 2**	**Type 3**
Percent of electorate	25	35	40
First Choice	A	B	C
Second Choice	B	A	A
Third Choice	C	C	B

a. If voters must choose between A and B, what are the percentages of votes that each outcome receives and which outcome wins?

b. If voters must choose between B and C, what are the percentages of votes that each outcome receives and which outcome wins?

c. If voters must choose between C and A, what are the percentages of votes that each outcome receives and which outcome wins?

d. Do these preferences exhibit transitivity? Explain.

e. If the voters choose between A and B and then compare to C, which outcome wins?
If the voters choose between B and C and then compare to A, which outcome wins?
If the voters choose between A and C and then compare to B, which outcome wins?
Does the order in which items are voted on matter in this case? Why?
Is the winning outcome the first choice of a large portion of the population? How can this be?

4. a. For Case 1 in problem 3 above, which outcome wins if you use a Borda count to determine the winner among outcomes A, B, and C, and what are the scores for each outcome?

b. For Case 1 in problem 3 above, eliminate outcome C and use a Borda count to find the winner from the remaining choices of A and B. What property required of a perfect voting system has been violated? Explain

c. Compare the results of Case 1 in problem 3 under simple majority rule, a Borda count with three choices, and a Borda count with two choices. What conclusions can you draw from these results?

5. In each of the following situations, describe the behaviour that suggests that people may not always behave as self-interested rational maximizers.

a. Workers agree to a labour contract that gives them a 5 per cent raise for each of the next three years. After one year passes, they discover that the firm's profits have increased by 100 per cent. The workers go on strike and receive no income during the strike.

b. A worker plans to start saving 20 per cent of his income starting three months from now because he has to first pay off some overdue bills. After three months passes, the worker saves nothing and instead spends all of his monthly income.

c. After a famous rock star dies in a plane crash, many people decide to travel by train rather than fly.

d. Joe wants to go on a fishing trip to Ireland and his wife, Sue, wishes to take a different type of trip. The newspaper reports that the size and number of fish being caught in the area where Joe hopes to fish is greater than normal because the temperature has become unseasonally cool. Joe is more sure about his choice of the fishing trip and Sue is more sure about her desire to go on a different type of trip.

Chapter 23

1. a. Complete the following table.

	Type 1	Type 2	Type 3
Gross Domestic Product	4,532	4,804	
Consumption		3,320	3,544
Investment	589	629	673
Government Purchases	861		977
Net Exports	–45	–58	–54

b. What is the largest expenditure component of GDP?

c. Does investment include the purchase of company shares and bonds? Why?

d. Do government purchases include government spending on unemployment benefit? Why?

e. What does it mean to say that net exports are negative?

2. Suppose the base year in the following table is 2004.

Year	Production of X	Price per Unit of X
2004	20 units	€5
2005	20 units	10
2006	20 units	20

a. What is nominal GDP for 2004, 2005, and 2006?

b. What is real GDP for 2004, 2005, and 2006?

3. Suppose the following table records the total output and prices for an entire economy. Further, suppose the base year in the following table is 2004.

Year	Price of Soda	Quantity of Soda	Price of Jeans	Quantity of Jeans
2004	€1.00	200	€10.00	50
2005	1.00	220	11.00	50

a. What is the value of nominal GDP in 2004?

b. What is the value of real GDP in 2004?

c. What is the value of nominal GDP in 2005?

d. What is the value of real GDP in 2005?

e. What is the value of the GDP deflator in 2004?

f. What is the value of the GDP deflator in 2005?

g. From 2000 to 2001, prices rose approximately what percentage?

h. Was the increase in nominal GDP from 2000 to 2001 mostly due to an increase in real output or due to an increase in prices?

4. Complete the following table.

Year	Nominal GDP	Real GDP	GDP deflator
1		€100	100
2	€120		120
3	150	125	

a. What year is the base year? How can you tell?

b. From year 1 to year 2, did real output rise or did prices rise? Explain?

c. From year 2 to year 3, did real output rise or did prices rise? Explain?

Chapter 24

1. The following table shows the prices and the quantities consumed in the country known as the University States. Suppose the base year is 2003. This is the year the typical consumption basket was determined so the quantities consumed during 2003 are the only quantities needed to calculate the CPI in every year.

Year	Price of Books	Quantity of Books	Price of Pencils	Quantity of Pencils	Price of Pens	Quantity of Pens
2003	€50	10	€1	100	€5	100
2004	50	12	1	200	10	50
2005	60	12	1.50	250	20	20

a. What is the value of the CPI in 2003?

b. What is the value of the CPI in 2004?

c. What is the value of the CPI in 2005?

d. What is the inflation rate in 2004?

e. What is the inflation rate in 2005?

f. What type of bias do you observe in the CPI and corresponding inflation rates you generated above? Explain.

g. If you had a clause in your wage contract that increased your wage by the rate of inflation as measured by the CPI calculated above, would your standard of living increase, decrease, or stay the same over the years 2003–2005? Why?

h. Again, suppose you had a clause in your wage contract that increased your wage by the rate of inflation as measured by the CPI calculated above. If you personally only consume pens (no paper or pencils), would your standard of living increase, decrease, or stay the same over the years 2003–2005? Why?

2. Suppose that you lend your flatmate €100 for one year at 9 per cent nominal interest.

a. How many dollars of interest will your flatmate pay you at the end of the year?

b. Suppose at the time you both agreed to the terms of the loan, you both expected the inflation rate to be 5 per cent during the year of the loan. What do you both expect the real interest rate to be on the loan?

c. Suppose at the end of the year, you are surprised to discover that the actual inflation rate over the year was 8 percent. What was the actual real interest rate generated by this loan?

d. In the case described above, actual inflation turned out to be higher than expected. Which of the two of you had the unexpected gain or loss? Your flatmate (the borrower), or you (the lender)? Why?

e. What would the real interest rate on the loan have been if the actual inflation rate had turned out to be 11 per cent?

f. Explain what it means to have a negative real interest rate.

Chapter 25

1.

Country	Current real GDP/person	Current Growth Rate
Northcountry	€15,468	1.98 %
Southcountry	13,690	2.03
Eastcountry	6,343	3.12
Westcountry	1,098	0.61

a. Which country is richest? How do you know?

b. Which country is advancing most quickly? How do you know?

c. Which country would probably see the greatest benefit from an increase in capital investment? Why?

d. Referring to (c): Would this country continue to see the same degree of benefits from an increase in capital investment forever? Why?

e. Referring to (d): Why might investment in human capital and research and development fail to exhibit the same degree of diminishing returns as investment in physical capital?

f. Which country has the potential to grow most quickly? List some reasons why it may not be living up to potential.

g. If real GDP per person in Northcountry next year is $15,918, what is its annual growth rate?

2. Imagine a kitchen. It contains a cook, the cook's diploma, a recipe book, a stove and utensils, and some rabbit meat harvested from the open countryside.

a. Link each object in the kitchen to a general category within the factors of production.

b. While the different factors of production exhibit different levels of durability, which one is special in that it does not wear out?

3. a. List the policies governments might pursue to increase the productivity of their citizens.

b. Which one is, at the very least, fundamentally necessary as a background in which the other policies may operate? Why?

c. Does a growing population enhance or inhibit growth in productivity? Explain.

Chapter 26

1. Fly-by-night Corporation is in need of capital funds to expand its production capacity. It is selling short- and long-term bonds and is issuing shares. You are considering the prospect of helping finance their expansion.

a. If you were to buy both short- and long-term bonds from Fly-by-night, from which bond would you demand a higher rate of return: short or long term? Why?

b. If Standard and Poor's lowered the credit worthiness of Fly-by-night, would this affect the rate of return you would demand when buying their bonds? Why?

c. If Fly-by-night is issuing both shares and bonds, from which would you expect to earn the higher rate of return over the long run? Why?

d. Which would be safer: putting all of your personal saving into Fly-by-night shares, or putting all of your personal saving into an investment fund that has some Fly-by-night shares in its portfolio? Why?

2. Use the saving and investment identities from the National Income Accounts to answer the following questions. Suppose the following values are from the national income accounts of a country with a closed economy (all values are in billions).

Y = €6,000
T = €1,000
C = €4,000
G = €1,200

a. What is the value of saving and investment in this country?

b. What is the value of private saving?

c. What is the value of public saving?

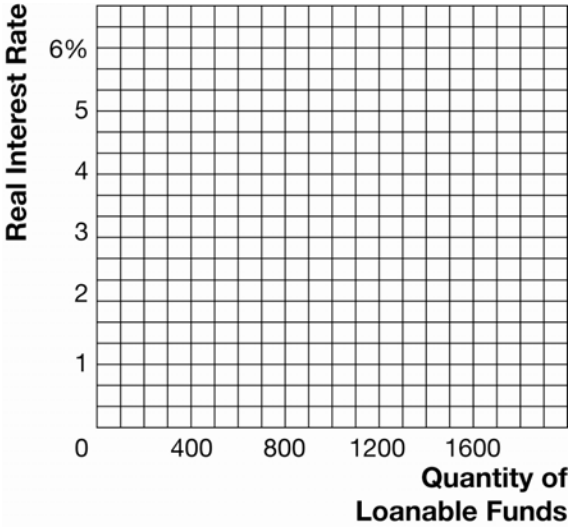
d. Is the government's budget policy contributing to growth in this country or harming it? Why?

3. The following information describes a loanable funds market. Values are in billions.

Real Interest Rate	Quantity of Loanable Funds Supplied	Quantity of Loanable Funds Demanded
6%	€1,300	€700
5	1,200	800
4	1,000	1,000
3	800	1,200
2	600	1,500

a. Plot the supply and demand for loanable funds in Exhibit 1. What is the equilibrium real interest rate and the equilibrium level of saving and investment?

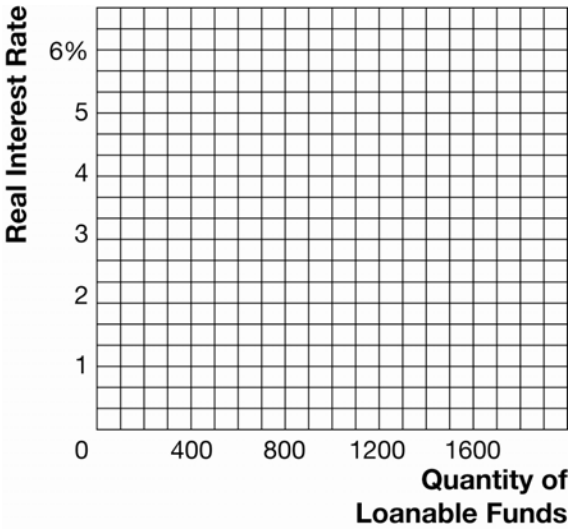
Exhibit 1



b. What "market forces" will not allow 2 per cent to be the real interest rate?

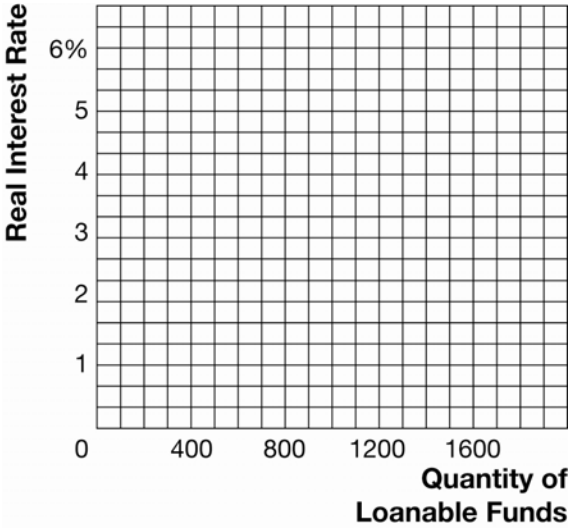
c. Suppose the government suddenly increases its budget deficit by €400 billion. What is the new equilibrium real interest rate and equilibrium level of saving and investment? (Show graphically in Exhibit 2.)

Exhibit 2



d. Starting at the original equilibrium, suppose the government introduces an investment tax credit that stimulates the demand for loanable funds for capital investment by €400 billion at any real interest rate. What is the new equilibrium real interest rate and equilibrium level of saving and investment? (Show graphically in Exhibit 3.)

Exhibit 3



e. With regard to (c) and (d), which policy is most likely to increase growth? Why?

Chapter 27

1. Whitewater Raft Tour Company can purchase rafts today for €100,000. They will earn a €40,000 return on the rafts at the end of each of the next three years.

a. If the interest rate were 12 per cent, what is the present value of each of the future returns that Whitewater Raft expects to receive?

b. If the interest rate were 12 per cent, should Whitewater Raft invest in the rafts? Explain.

c. If the interest rate were 7 per cent, should Whitewater Raft invest in the rafts? Explain.

d. Compare your answers to parts (b) and (c) above. What general principle about the relationship between investment and the interest rate is demonstrated?

2. Use the rule of 70 to answer the following questions. Suppose that real GDP/person in Fastcountry grows at an annual rate of 2 per cent and that real GDP/person in Slowcountry grows at an annual rate of 1 per cent.

a. How many years does it take for real GDP/person to double in Fastcountry?

b. If real GDP/person in Fastcountry is €2000 in 1935, how much will it be in the year 2005?

c. How many years does it take for real GDP/person to double in Slowcountry?

d. If real GDP/person in Slowcountry is €2000 in 1935, how much will it be in the year 2005?

e. Use the numbers you calculated above to help explain the concept of compound growth.

f. If Fastcountry stopped growing in the year 2005, how many years would it take for the standard of living in Slowcountry to catch that of Fastcountry?

3. For each of the following, determine the type of problem from which the insurance market suffers (adverse selection or moral hazard) and explain.

a. Susan buys health insurance at the non-smoker rate. After she obtains the insurance, she begins smoking again.

b. Bruce discovers that he has a liver condition that will shorten his life. He seeks life insurance to help pay for his children's college expenses.

c. After Lisa gets fire insurance on her house, she burns fires in the fireplace without placing a fireguard in front of it.

4. Rachel is an extremely picky eater. When choosing a restaurant, she always chooses to eat at a buffet. At a buffet, she doesn't have to order off a menu so she doesn't have to risk ordering something she may not like. Rachel knows that buffet food is very ordinary and, because she avoids nice restaurants, she misses the chance to eat some exceptional foods that she would enjoy very much. On the other hand, she never has a meal that she is unwilling to eat.

a. Does Rachel gain as much utility from a truly great meal as she loses from eating a meal she dislikes? Explain.

b. What can you say about Rachel's utility function with regard to her preferences toward risk? Explain.

c. How does the availability of a buffet help Rachel reduce her risk? Explain.

Chapter 28

1. Use the following information about Employment Country to answer question 1. Numbers are in millions.

	2004	2005
Population	223.6	226.5
Adult population	168.2	169.5
Number of unemployed	7.4	8.1
Number of employed	105.2	104.2

a. What is the labour force in 2004 and 2005?

b. What is the labour force participation rate in 2004 and 2005?

c. What is the unemployment rate in 2004 and 2005?

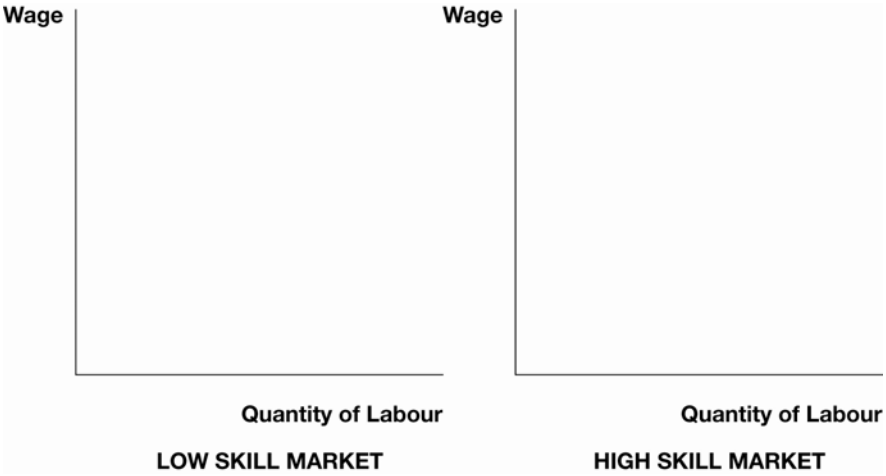
d. From 2004 to 2005, the adult population went up while the labour force went down. Provide a number of explanations why this might have occurred.

e. If the natural rate of unemployment in Employment Country is 6.6 per cent, how much is cyclical unemployment in 2004 and 2005? Is Employment Country likely to be experiencing a recession in either of these years?

2. Suppose the labour market is segmented into two distinct markets: the market for low-skill workers and the market for high-skill workers. Further, suppose the competitive equilibrium wage in the low-skill market is €3.00/hour while the competitive equilibrium wage in the high-skill market is €15.00/hour.

a. If the minimum wage is set at €5.00/hour, which market will exhibit the greatest amount of unemployment? Demonstrate it graphically in Exhibit 1.

Exhibit 1



b. Does the minimum wage have any impact on the high skill market? Why?

c. Do your results seem consistent with labour market statistics? Explain.

d. Suppose the high-skill market becomes unionised and the new negotiated wage is €18.00/hour. Will this have any affect on the low skill market? Explain.

3. Answer the following questions about the composition of unemployment.

a. What are some of the sources of unemployment?

b. Which type of unemployment is initiated by the firm?

c. Why might a firm pay wages in excess of the competitive equilibrium?

d. Which type of efficiency wage is unlikely to be relevant in the west European economies? Why?

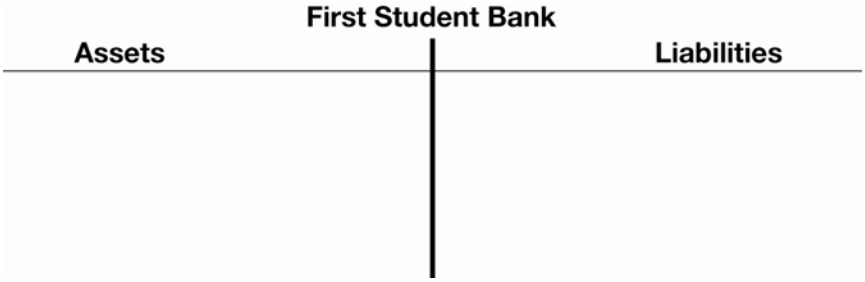
e. How does frictional unemployment differ from the other sources of unemployment?

Chapter 29

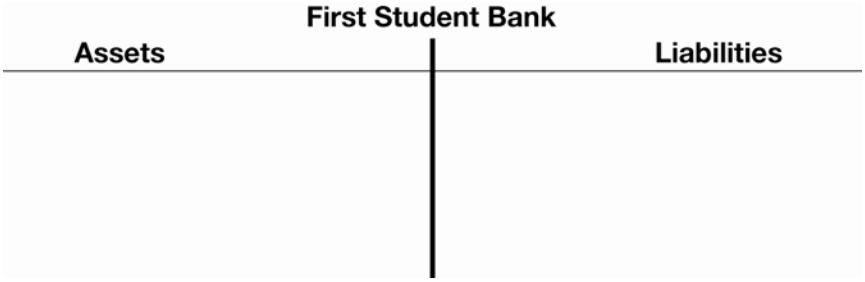
1. Suppose the Bank of England purchases a UK government bond from you for £10,000.

a. What is the name of the Bank's action?

b. Suppose you deposit the £10,000 in First Student Bank. Show this transaction on First Student Bank's T-account.



c. Suppose the reserve requirement is 20 per cent. Show First Student Bank's T-account if they loan out as much as they can.



d. At this point, how much money has been created from the Bank of England's policy action?

e. What is the value of the money multiplier?

f. After infinite rounds of depositing and lending, how much money could be created from the Bank of England's policy action?

g. If during the rounds of depositing and lending some people keep extra currency and fail to deposit all of their receipts, will there be more or less money created from the Bank of England's policy action than you found in part (f)? Why?

h. If during the rounds of depositing and lending, some banks fail to loan the maximum amount of reserves allowed but instead keep excess reserves, will there be more or less money created from the Bank of England's policy action than you found in part (f)? Why?

2. Suppose the entire economy contains €1,000 worth of one euro notes.

a. If people fail to deposit any of the euro notes but instead hold all €1,000 as currency, how large is the money supply? Explain.

b. If people deposit the entire €1,000 worth of euro notes in banks that are required to observe a 100 per cent reserve requirement, how large is the money supply? Explain.

c. If people deposit the entire €1,000 worth of euro notes in banks that are required to observe a 20 per cent reserve requirement, how large could the money supply become? Explain.

d. In part (c), what portion of the money supply was created due to the banks? (Hint: €1,000 of euro notes already existed).

e. If people deposit the entire €1,000 worth of euro notes in banks that are required to observe a 10 per cent reserve requirement, how large could the money supply become?

f. Compare your answer in part (e) to part (c). Explain why they are different.

g. If people deposit the entire €1,000 worth of bills in banks that are required to observe a 10 per cent reserve requirement, but they choose to hold another 10 per cent as excess reserves, how large could the money supply become?

h. Compare your answer in part (c) to part (g). Are these answers the same? Why?

Chapter 30

1. Use the quantity equation for this problem. Suppose the money supply is €200, real output is 1,000 units, and the price per unit of output is €1.

a. What is the value of velocity?

b. If velocity is fixed at the value you solved for in part (a), what does the quantity theory of money suggest will happen if the money supply is increased to €400?

c. Is your answer in part (b) consistent with the classical dichotomy? Explain.

d. Suppose that when the money supply is doubled from €200 to €400, real output grows a small amount (say 2 per cent). Now what will happen to prices? Do prices more than double, less than double, or exactly double? Why?

e. When inflation gets very high, people do not like to hold money because it is losing value quickly. Therefore, they spend it faster. If, when the money supply is doubled, people spend money more quickly, what happens to prices? Do prices more than double, less than double, or exactly double? Why?

f. Suppose the money supply at the beginning of this problem refers to M1. That is, the M1 money supply is €200. What would the M2 quantity equation look like if the M2 money supply were €500 (and all other values were as stated at the beginning of the problem)?

2. The following questions are related to the Fisher effect.

a. To demonstrate your understanding of the Fisher effect, complete the following table.

Real interest rate	Nominal interest rate	Inflation rate
3%	10%	
	6	2%
5		3

The following questions about the Fisher effect are unrelated to the table above.

b. Suppose people expect inflation to be 3 per cent and suppose the desired real interest rate is 4 per cent. What is the nominal rate?

c. Suppose inflation turns out to be 6 per cent. What is the actual real interest rate on loans that were signed based on the expectations in part (b)?

d. Was wealth redistributed to the lender from the borrower or to the borrower from the lender when inflation was expected to be 3 per cent, but in fact, turned out to be 6 per cent?

e. What would have happened had inflation turned out to be only 1 per cent?

3. Income taxes treat nominal interest earned on savings as income even though much of the nominal interest is simply to compensate for inflation.

a. To see what this does to the incentive to save, complete the following table for both the low inflation and high inflation country.

	Low inflation country	**High inflation country**
Real interest rate	5%	5%
Inflation rate	3	11
Nominal interest rate		
Reduced interest rate due to a 25% tax		
After-tax nominal interest rate		
After-tax real interest rate		

b. In which country is there a greater incentive to save? Why?

c. What could the government do to eliminate this problem?

Chapter 31

1. How would each of the following transactions affect UK *NCO* (net capital outflow)? Does the transaction affect direct investment or portfolio investment?

a. UK bank Barclays buys shares in South African bank Absa.

b. UK firm JCB buys steel from a Japanese manufacturer to use in the production of its diggers, excavators and trucks.

c. French car manufacturer Peugeot expands its plant in Coventry in England.

d. An American investment fund buys shares in UK aerospace and defence firm BAE Systems.

e. UK oil company BP builds a plant in Venezuela.

2. Suppose a resident of Portugal buys a set of golf clubs from a UK manufacturer using euros.

a. If the UK manufacturer holds on to the euros, does UK *NX* = *NCO* in this case? Explain.

b. Suppose the UK manufacturer uses the euros to help build a factory in Portugal. Does *NX* = *NCO* in this case? Explain. What kind of foreign investment is this?

c. Suppose the UK manufacturer uses the euros to buy shares in a Portuguese company. Does *NX* = *NCO* in this case? Explain. What kind of foreign investment is this?

d. Suppose the UK manufacturer uses the euros to buy leather made in Portugal. Does NX = NCO in this case? Explain.

3. Suppose the nominal exchange rate is 1,000 Chilean pesos per UK pound. Further, suppose the price of a bushel of UK wine is £5 per bottle and the price of a bottle of Chilean wine is 7,500 pesos.

a. What is the real exchange rate between Chile and the UK in terms of wine?

b. Does a pound have purchasing power parity in the UK and Chile? Explain.

c. Is there a profit opportunity that you could exploit with arbitrage? Where would you buy and where would you sell?

d. If the nominal exchange rate stayed the same, what should happen to the price of wine in the UK and Chile? Explain.

e. Suppose prices move as you have suggested in part (d). What has happened to the real exchange rate?

4. Suppose the price of a pair of Levi's jeans is €40 in Spain and 400 pesos in the Philippines.

a. What is the nominal peso/euro exchange rate if purchasing-power parity holds?

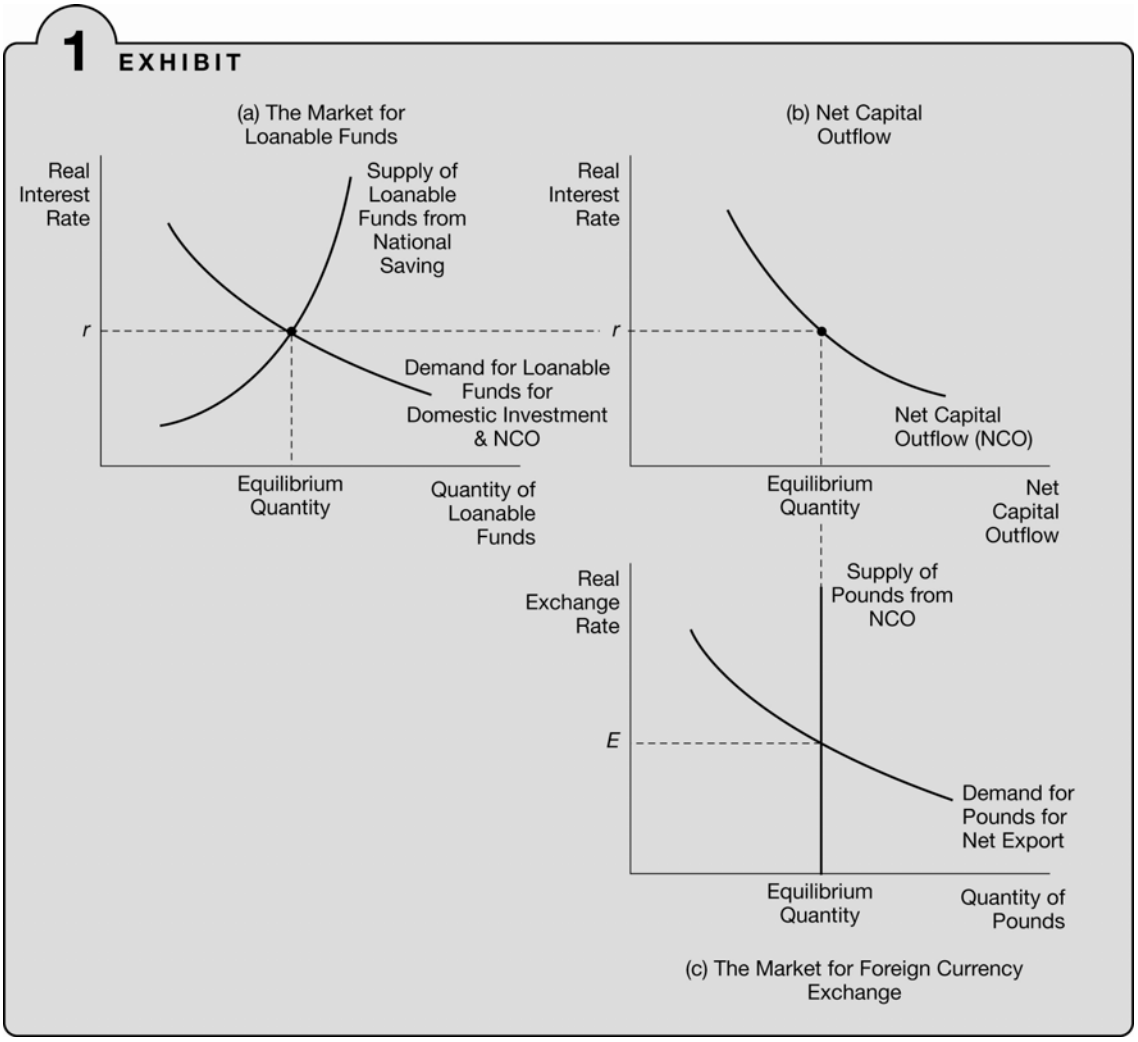
b. Suppose the central bank in the Philippines is politically pressured to double the country's money supply, which doubles the price level in the Philippines. If purchasing-power parity holds, what is the new peso/euro exchange rate? Did the peso appreciate or depreciate?

c. Suppose the ECB now doubles the Eurozone money supply, which doubles the price level in the Eurozone, including, of course, Spain. If purchasing power parity holds, what is the new value of the peso/euro exchange rate? Did the euro appreciate or depreciate?

d. Compare your answer to part (a) and part (c). What has happened to the exchange rate? Why?

Chapter 32

1. This problem is composed of the examples found in the chapter except the direction of the change in each case has been reversed. Use the model described by Exhibit 1 to answer the following questions.



a. Suppose the government reduces its budget deficit. Describe the sequence of events in the model by describing the shifts in the curves in Exhibit 1 and discuss the movements in the relevant macroeconomic variables.

b. Suppose an existing quota on the importing of Japanese cars is removed. Describe the sequence of events in the model by describing the shifts in the curves in Exhibit 1 and discuss the movements in the relevant macroeconomic variables.

c. Suppose there is a sudden inflow of capital into the United Kingdom because the country is believed to be more politically stable than other countries. Describe the sequence of events in the model by describing the shifts in the curves in Exhibit 1 and discuss the movements in the relevant macroeconomic variables.

2. a. Suppose private saving increased at each real interest rate. What would happen to the important macroeconomic variables in our model of an open economy?

b. Is there any difference between your answer above and the answer you would write if the government had reduced its deficit? Why?

c. Suppose the government were to introduce an investment subsidy that increases domestic investment at each real interest rate. How would this change the important economic variables in the model?

d. Compare your answer in part (a) (an increase in saving at each real interest rate) to your answer in part (c) (an increase in domestic investment at each real interest rate). Are there any differences?

3. Suppose that UK consumers' taste for Japanese cars increases. Answer this question using the open economy model from the Japanese perspective.

a. What happens to the demand for yen in the foreign currency exchange market?

b. What happens to the value of yen in the foreign currency exchange market?

c. What happens to Japanese net exports? Why?

d. If the Japanese are selling more cars, what must be true about Japanese imports and exports of other items?

e. Keeping in mind your answers to (a) through (c), do you think Japan runs an overall trade surplus with the rest of the world because its cars are better built or because of its domestic saving and NCO? Explain.

4. Suppose the United Kingdom is perceived to be politically unstable, which induces capital flight to the United States.

a. Describe what happens in the foreign currency exchange market from the perspective of the United Kingdom.

b. Describe what happens in the foreign currency exchange market from the perspective of the United States.

c. Are your answers to part (a) and (b) above consistent with one another? Why?

d. If the economy of United Kingdom is small when compared to the economy of the United States, what should this event do to each country's balance of trade?

d. Which country will tend to grow faster in the future? Why?

Chapter 33

1. For the following four cases, trace the impact of each shock in the aggregate demand and aggregate supply model by answering the following three questions for each: What happens to prices and output in the short run? What happens to prices and output in the long run if the economy is allowed to adjust to long-run equilibrium on its own? If policy makers had intervened to move output back to the natural rate instead of allowing the economy to self-correct, in which direction should they have moved aggregate demand?

a. aggregate demand shifts left

b. aggregate demand shifts right

c. short-run aggregate supply shifts left

d. short-run aggregate supply shifts right

2. The following events have their *initial* impact on which of the following: aggregate demand, short-run aggregate supply, long-run aggregate supply, or both short-run and long-run aggregate supply? Do the curves shift to the right or left?

a. The government repairs aging roads and bridges.

b. OPEC raises oil prices.

c. The government raises unemployment benefits, which raises the natural rate of unemployment.

d. People feel more secure in their jobs and become more optimistic.

e. A technological advance takes place in the application of computers to the manufacture of steel.

f. The government increases the minimum wage.

g. Because price expectations are reduced, wage demands of new university graduates fall.

h. The central bank decreases the money supply.

i. A drought dramatically reduces the country's agricultural output.

3. Suppose the economy is in long-run equilibrium. Then, suppose the central bank suddenly increases the money supply.

a. Describe the initial impact of this event in the model of aggregate demand and aggregate supply by explaining which curve shifts which way.

b. What happens to the price level and real output in the short run?

c. If the economy is allowed to adjust to the increase in the money supply, what happens to the price level and real output in the long run? (compared to their original levels)

d. Does an increase in the money supply move output above the natural rate indefinitely? Why?

4. Suppose the economy is in long-run equilibrium. Then, suppose workers and firms suddenly come to expect higher prices in the future and agree to an increase in wages.

a. Describe the initial impact of this event in the model of aggregate demand and aggregate supply by explaining which curve shifts which way.

b. What happens to the price level and real output in the short run?

c. What name do we have for this combination of movements in output and prices?

d. If policy makers wanted to move output back to the natural rate of output, what should they do?

e. If policy makers were able to move output back to the natural rate of output, what would the policy do to prices?

f. If policy makers had done nothing at all, what would have happened to the wage rate as the economy self-corrected or adjusted back to the natural rate of output on its own?

g. Is it likely that an increase in price expectations and wages alone can cause a permanent increase in the price level? Why?

5. Suppose the economy is at a point such as point B in Exhibit 2. That is, aggregate demand has decreased and the economy is in a recession. Describe the adjustment process necessary for the economy to adjust on its own to point C for each of the three theoretical short-run aggregate-supply curves.

a. the sticky wage theory:

b. the sticky price theory:

c. the misperceptions theory:

d. Do you think the type of adjustments described above would take place more quickly from a recession or from a period when output was above the long-run natural rate? Why?

Chapter 34

1. If a country's central bank were to engage in activist stabilization policy, in which direction should it move the money supply in response to the following events?

a. A wave of optimism boosts business investment and household consumption.

b. To balance its budget, the government raises taxes and reduces expenditures.

c. OPEC raises the price of crude oil.

d. The taste for the country's products amongst the residents of other countries declines.

e. The stock market falls.

2. If a country's central bank were to engage in activist stabilization policy, in which direction should it move interest rates in response to the same events listed in the previous question?

a. A wave of optimism boosts business investment and household consumption.

b. To balance its budget, the government raises taxes and reduces expenditures.

c. OPEC raises the price of crude oil.

d. The taste for the country's products amongst the residents of other countries declines.

e. The stock market falls.

f. Explain the relationship between central bank policy in terms of the money supply and policy in terms of the interest rate.

3. If policy makers were to use fiscal policy to actively stabilize the economy, in which direction should they move government spending and taxes?

a. A wave of pessimism reduces business investment and household consumption.

b. An increase in price expectations causes unions to demand higher wages.

c. The taste for the country's products amongst the residents of other countries declines.

d. OPEC raises the price of crude oil.

4. Suppose the economy is in a recession. Policy makers estimate that aggregate demand is €100 billion short of the amount necessary to generate the long-run natural rate of output. That is, if aggregate demand were shifted to the right by €100 billion, the economy would be in long-run equilibrium.

a. If the government chooses to use fiscal policy to stabilize the economy, by how much should they increase government spending if the marginal propensity to consume (MPC) is 0.75 and there is no crowding out?

b. If the government chooses to use fiscal policy to stabilize the economy, by how much should they increase government spending if the marginal propensity to consume (MPC) is 0.80 and there is no crowding out?

c. If there is crowding out, will the government need to spend more or less than the amounts you found in (a) and (b) above? Why?

d. If investment is very sensitive to changes in the interest rate, is crowding out more of a problem or less of a problem? Why?

e. If policy makers discover that the lag for fiscal policy is two years, should that make them more likely to employ fiscal policy as a stabilization tool or more likely to allow the economy to adjust on its own? Why?

5. a. What does an increase in the money supply do to interest rates in the short run? Explain.

b. What does an increase in the money supply do to interest rates in the long run? Explain.

c. Are these results inconsistent? Explain.

Chapter 35

1. Describe the initial effect of the following events on the short-run and long-run Phillips curve. That is, describe the movements along a given curve or the direction of the shift in the curve.

a. An increase in expected inflation

b. An increase in the price of imported oil

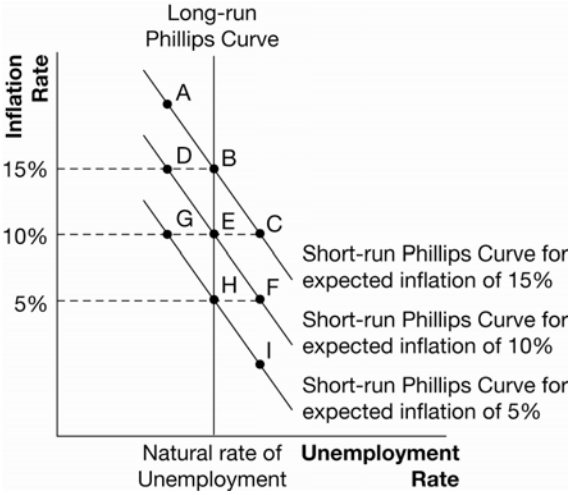
c. An increase in the money supply

d. A decrease in government spending

e. A decrease in the minimum wage, which lowers the natural rate

2. Use the Phillips curves in Exhibit 1 to answer the following questions.

Exhibit 1



a. At what point is the economy located if people expect 10 per cent inflation and inflation actually is 10 per cent?

b. Referring to (a) above, is unemployment above, below, or equal to the natural rate?

c. At what point is the economy located if people expect 10 per cent inflation and the actual rate of inflation is 15 per cent?

d. Suppose the economy is operating at point D. Over time, in which direction will people revise their expectations of inflation: up or down?

e. Suppose the economy is operating at point D. As people revise their expectations of inflation, in which direction will the short-run Phillips curve shift-right or left?

f. Suppose the economy is operating at point E. In the short run, a sudden decrease in aggregate demand will move the economy toward which point?

g. Suppose the economy is operating at point E. In the long run, a decrease in government spending will tend to move the economy toward which point?

h. Suppose people expect 5 per cent inflation. If inflation actually ends up being 10 per cent, in which direction will unemployment move: above or below the natural rate?

3. Use a Phillips curve graph to answer the following questions. Assume the economy is initially in long-run equilibrium.

a. What happens to an economy's unemployment and inflation rate in the short run if the central bank increases the growth rate of the money supply?

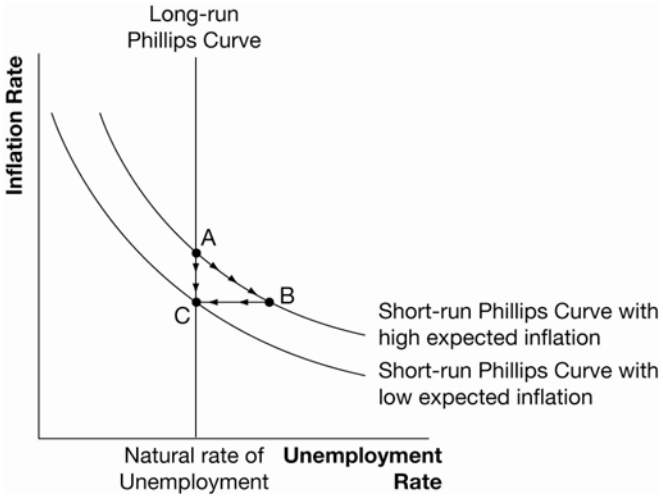
b. What happens to an economy's unemployment and inflation rate in the long run if the central bank increases the growth rate of the money supply?

c. Can printing money keep unemployment below the natural rate? Explain.

d. What is the end result of a central bank repeatedly attempting to hold unemployment below the natural rate with expansionary monetary policy? Explain.

4. Suppose the economy is operating at the natural rate of unemployment with a high rate of inflation (point A in Exhibit 2). Suppose the central bank announces a sudden monetary contraction to reduce inflation. Shown below are two possible paths the economy might take to adjust to the new lower rate of money growth. Choose the path that best depicts what might happen in each of the following cases and explain your reasoning.

Exhibit 2



a. The central bank's announcement is not believed.

b. The central bank's announcement is believed and expectations of inflation are adjusted quickly.

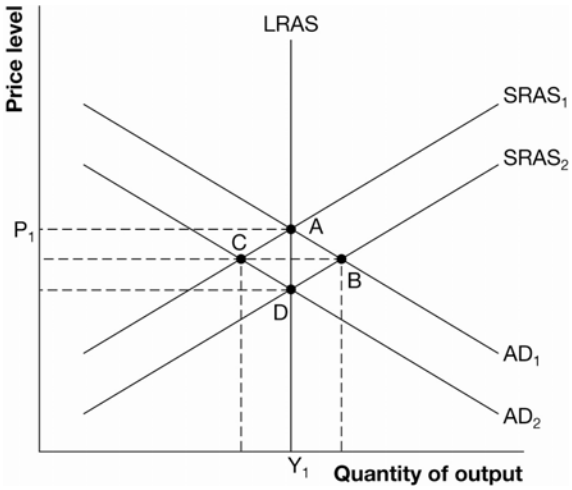
c. The central bank's announcement is believed but all workers have long-term wage contracts that cannot be renegotiated.

d. Which of the above cases (a, b, or c) best describes what would happen if, in the past, the central bank had repeatedly announced that inflation was its number one priority, but it had failed to actually engage in the threatened monetary contraction? Why?

Chapter 36

1. Use the aggregate supply and aggregate demand diagram in Exhibit 1 to answer the following questions.

Exhibit 1



a. Suppose the economy is at long-run equilibrium at point A. Suppose that the economy suffers a macroeconomic shock in the form of a reduction in demand for its exports, but the shock is asymmetric – other economies are not affected similarly. If the exchange rate can adjust, what is the path followed by the economy as a result of this shock?

b. Suppose the same macroeconomic shock occurs but this time the economy concerned has joined a currency union that includes all its main trading partners. What is the path followed by the economy as a result of the macroeconomic shock now?

c. Referring to part (b) above, why might the government of the country illustrated in Exhibit 1 find itself in disagreement with the other countries in the currency union over monetary policy?

2. Suppose that the German economy is experiencing a recession while other countries in the Eurozone are in long-run macroeconomic equilibrium.

a. What would happen to interest rates on long-term government bonds issued by Eurozone governments if the German government were to increase its budget deficit dramatically to finance additional government spending? Explain your answer.

b. What might the members of a currency union do to counter this problem?

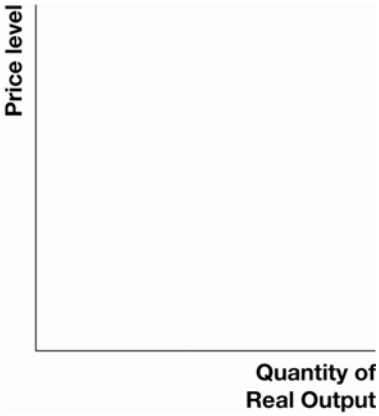
c. What might reduce the need for the German government to increase its budget deficit in these circumstances?

Chapter 37

1. Suppose a wave of pessimism engulfs consumers and firms, causing them to reduce their expenditures.

a. Demonstrate this event in Exhibit 1 using the model of aggregate demand and aggregate supply and assuming that the economy was originally in long-run equilibrium.

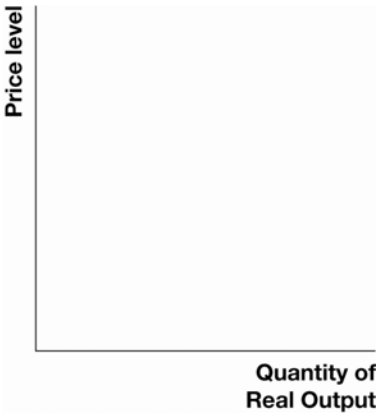
Exhibit 1



b. What is the appropriate activist policy response for monetary and fiscal policy? In which direction would the activist policy shift aggregate demand?

c. Suppose the economy can adjust on its own in two years from the recession described in part (a). Suppose policy makers choose to use fiscal policy to stabilize the economy but the political battle over taxes and spending takes more than two years. Demonstrate these events in Exhibit 2 using the model of aggregate demand and aggregate supply.

Exhibit 2



d. Describe the sequence of events shown in the graph you created in part (c) above.

e. Did the activist fiscal policy stabilize or destabilize the economy? Explain.

2. Suppose a country's central bank repeatedly announces that it desires price stability and that it is aiming for zero per cent inflation. However, it consistently generates 3 per cent inflation.

a. Will this type of behaviour on the part of the central bank reduce unemployment below the natural rate in the long run? Why?

b. Once people have formed expectations of 3 per cent inflation, what would happen in the short-run if the central bank actually did target zero inflation?

c. Would it help if the country's government passed a law requiring the central bank to target zero inflation?