

TABLE OF CONTENTS

Introduction A Brief History of Economics.....	1
CHAPTER 1 Introduction to Economics	5
Introduction	5
Key Assumptions About Human Behaviour Used in Economics.....	6
Basic Economic Concepts	6
Resources in Economics.....	7
Illustration Exercise.....	9
Types of Economic Systems.....	12
Chapter Review Exercise.....	13
CHAPTER 2 Production Possibility Curves.....	15
Introduction.....	15
Drawing the Production Possibility Curve.....	16
Illustration Exercise.....	17
Concepts Shown on the Production Possibility Curve	18
Illustration Exercise.....	19
The Shape of a Production Possibility Frontier.....	20
Illustration Exercise.....	20
Shifts in the Production Possibility Frontier	22
Using the Production Possibility Frontier to Illustrate Economic Efficiency	24
Chapter Review Exercise.....	26
CHAPTER 3 The Demand Side of the Market	31
Introduction.....	31
Building the Demand Side of the Market.....	32
Introducing Marginal Analysis	32
Illustration Exercise.....	33
The Optimum Purchase Rule.....	36
Illustration Exercise.....	37
Demand and Marginal Utility	38
The Law of Demand.....	38
The Paradox of Value	39
Consumer Equilibrium.....	39
Illustration Exercise.....	40
Individual Versus Market Demand	43
Illustration Exercise.....	43
Chapter Review Exercise.....	44
CHAPTER 4 The Supply Side of the Market.....	47
Introduction.....	47
Costs of Production in Economics.....	48
Profit in Economics.....	49
Illustration Exercise.....	50

Key Definitions	51
Chapter Review Exercise	51
CHAPTER 5 The Supply Side of the Market Continued ...	53
Introduction	53
Types of Costs	55
Illustration Exercise	56
Market Supply	63
Chapter Review Exercise	64
CHAPTER 6 Bringing Demand and Supply Together – The Market.....	71
Introduction	71
The Economic Model of a Market	72
The Function of a Market.....	72
Market Equilibrium.....	74
Disequilibrium.....	75
Changes in Market Equilibrium.....	77
The Law of Supply.....	79
Changes in the Supply of a Good or Service	79
The Law of Demand	81
Describing a Change in Equilibrium.....	82
Illustration Exercise	83
Chapter Review Exercise	84
CHAPTER 7 Markets and Allocative Efficiency.....	93
Introduction	93
Consumer and Producer Surplus.....	94
Allocative Efficiency and Consumer and Producer Surplus.....	96
Chapter Review Exercise	100
CHAPTER 8 Price Elasticity of Demand	103
Introduction	103
Types of Price Elasticity	104
Price Elasticity and Producer Revenue.....	104
Illustration Exercise	105
Calculating a Coefficient of Price Elasticity	106
Factors Affecting Price Elasticity of Demand	108
Applications of Price Elasticity of Demand.....	108
Chapter Review Exercise	112
CHAPTER 9 Income and Cross Elasticity of Demand	117
Introduction	117
Income Elasticity of Demand	118
Cross Elasticity of Demand.....	120
Chapter Review Exercise	121
CHAPTER 10 Price Elasticity of Supply	123
Introduction	123
Price Elasticity of Supply	124

Factors Affecting Price Elasticity of Supply	125
Chapter Review Exercise	129
CHAPTER 11 Introduction to the Behaviour of Firms in Different Types of Markets	133
Introduction	133
The Goals of Firms	134
Costs of Firms	134
Illustration Exercise	135
Revenue of Firms	136
Illustration Exercise	137
Market Structure - Perfect Competition	140
Chapter Review Exercise	143
CHAPTER 12 Imperfect Competition.....	151
Introduction	151
Market Structure - Monopolistic Competition	152
Key Definitions	152
The Behaviour of a Firm in Monopolistic Competition	153
Equilibrium for a Firm in Monopolistic Competition	154
Illustration Exercise	156
Market Structure - Oligopoly	157
Market Structure - Duopoly	158
Illustration Exercise	159
Market Structure - Monopoly	162
Illustration Exercise	164
Market Structure - Monopsony	165
Chapter Review Exercise	166
CHAPTER 13 Applications of Supply and Demand Analysis	171
Introduction	171
Key Points	172
Indirect Taxes	172
Subsidies	173
Review Exercise	174
International Trade and Supply and Demand Analysis	177
Review Exercise	181
The Market for Labour and Supply and Demand Analysis	184
Review Exercise	192
CHAPTER 14 Glossary Review	197
Introduction	197
Overview Diagram	198
Glossary Exercise	199

Table of Contents

7

Markets and Allocative Efficiency

Introduction

Capitalism or the free market economic system is regarded as the most efficient type of economic system. Efficiency in economics means getting the most output from a given level of resources and technology as well as producing the combination of output that meets consumer demand, i.e. maximises consumer satisfaction.

Productive efficiency occurs when output is maximised for a given level of resources and technology.

Allocative efficiency means productive efficiency is occurring and output is determined by consumer demand.

This section will examine how a competitive market will tend to achieve allocative efficiency. It will also explore how government intervention in a market may mean that allocative efficiency is not achieved.

Consumer and Producer Surplus

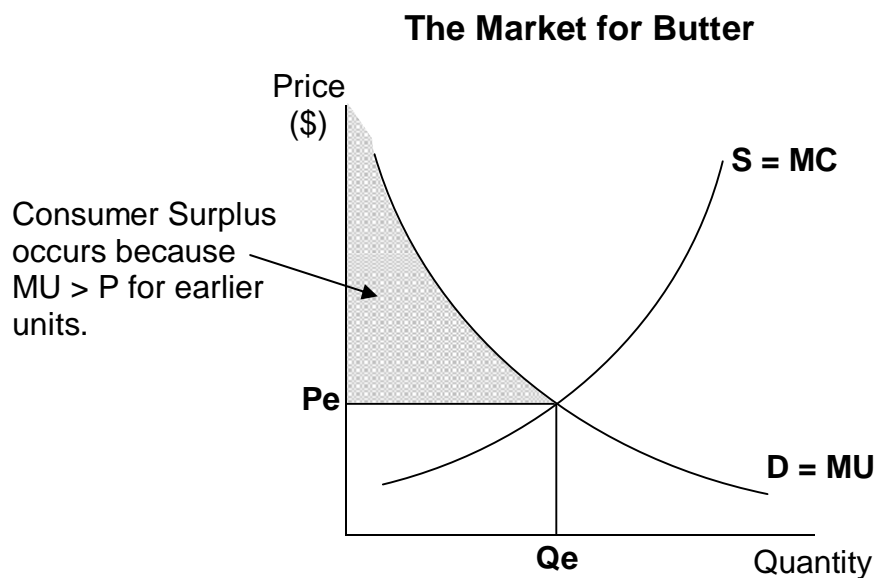
It is possible to use the concepts of consumer and producer surplus to explain allocative efficiency in a market.

Consumer Surplus

Demand for an item is based on a consumer's marginal utility. The earlier units consumed by a person give marginal satisfaction above the market price that is paid for them. This extra satisfaction above the price paid is called consumer surplus.

Consumer surplus is the difference between the total amount spent on the good and the total amount of satisfaction consumers get from using the good.

Illustration of Consumer Surplus

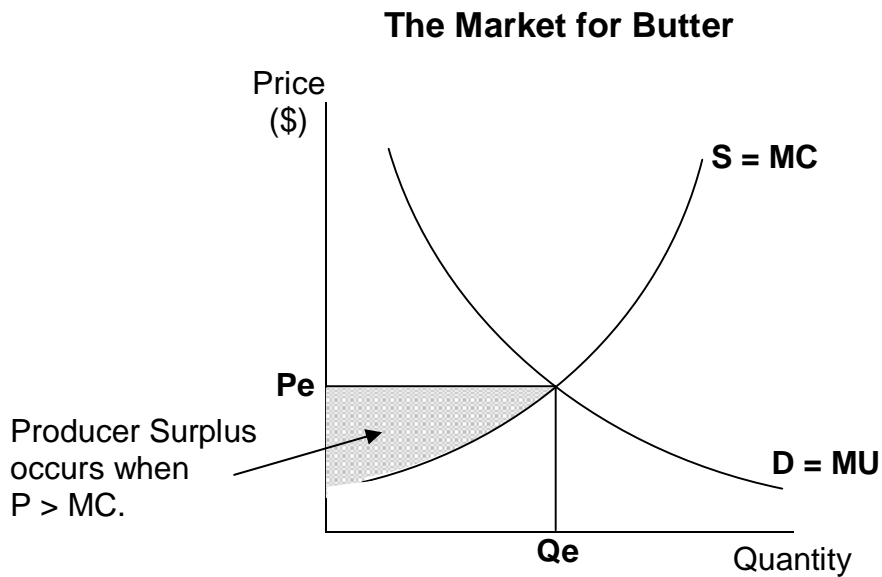


Producer Surplus

The supply curve for a producer is based on the marginal cost curve. The earlier units supplied have a marginal cost below the market price. Producers supply extra units up to the point where $\text{Price} = \text{MC}$.

Producer surplus occurs because the marginal cost of earlier units supplied was less than the market price received. The producers gained a surplus on these earlier units.

Illustration of Producers' Surplus



Allocative Efficiency and Consumer and Producer Surplus

Allocative efficiency in a market can be described as when producer and consumer surplus are maximised. When this is occurring the producers must be producing the maximum output at least possible cost and the output level is determined by consumer demand.

Allocative efficiency can also be described as Pareto optimality. This means no one can be made better off without someone being made worse off. This is because resources are being used to produce the maximum level of output that has been demanded by consumers.

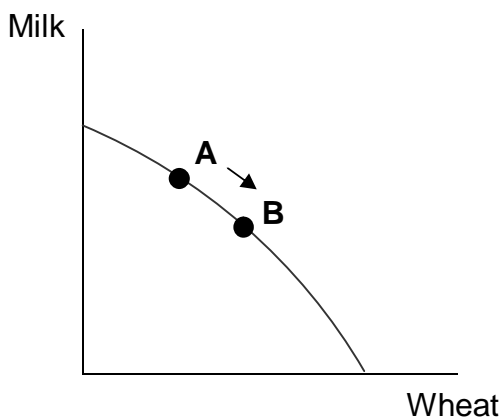
Illustrating a Change in Allocative Efficiency

The point of allocative efficiency in a market and an economy will change based on changes in demand and supply.

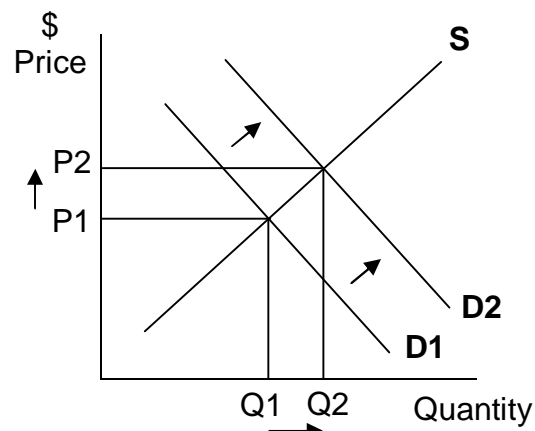
Simple Illustration

The economy of Frugalia can produce wheat and milk as shown on the production possibility curve below. A study shows that wheat is beneficial for the heart. This leads to an increase in demand for wheat. This causes the market price for wheat to increase. Some producers will shift resources from milk production to wheat production. The economy moves to a new point of allocative efficiency as shown on the production possibility frontier.

Production Frontier for Frugalia



Market for Wheat



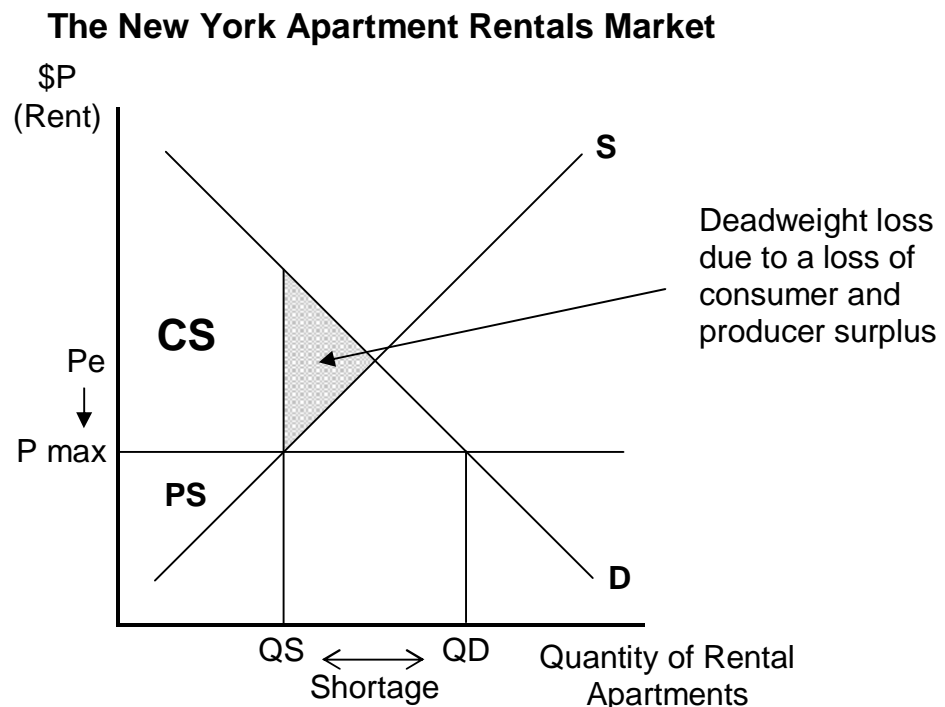
Government Intervention in the Market and the Effect on Allocative Efficiency

A government may intervene in a market to try to influence the price of a good or service. They may use price controls or legislation to achieve a desired outcome. The two main types of price controls are a minimum price (price floor) or maximum price (price ceiling).

Maximum Price (Price Ceiling)

This is when a government sets a maximum price that producers are able to charge for a good or service. They are usually doing this to try to protect consumers.

If the maximum price is below the market price then it will cause the quantity supplied to fall because producers make less profit. The quantity demanded will increase because consumers can now afford to buy more with their income. The effect will be to create a shortage in the market as illustrated below.



Effect of Maximum Rent Controls

- Price (rents) decreases.
- Quantity Supplied decreases and Quantity Demanded increases which creates a shortage.
- Deadweight loss.

Market for Apartments in New York

When the government sets a maximum price below equilibrium there is a loss of allocative efficiency (deadweight loss).

The New York authorities introduced maximum rents for apartments in New York in the 1970s to try to make accommodation more affordable. The effect was to create a major shortage of rental accommodation.

Some landlords sold their rental properties because it was no longer profitable to rent them out. Some landlords cut back on maintenance because their rental returns had dropped. This led to a growth in slum areas. Those people who managed to rent an apartment paid lower rents even if they were very rich. The rent controls led to overcrowding in many areas due to the lack of rental accommodation.

The likely results of an effective maximum price in a market are:

1. Shortages because quantity supplied falls and quantity demanded increases.
2. A black market where some sellers try to sell at an illegal higher price.
3. Long queues as consumers wait to get access to the limited amount available.
4. A deadweight loss of consumer and producer surplus, i.e. a loss of allocative efficiency because output is not being maximised to meet consumer demand.

Deadweight loss is the loss of consumer and producer surplus created by an interference in a competitive market. This disruption means output is not being maximised to meet consumer demand.

Minimum Price (Price Floor)

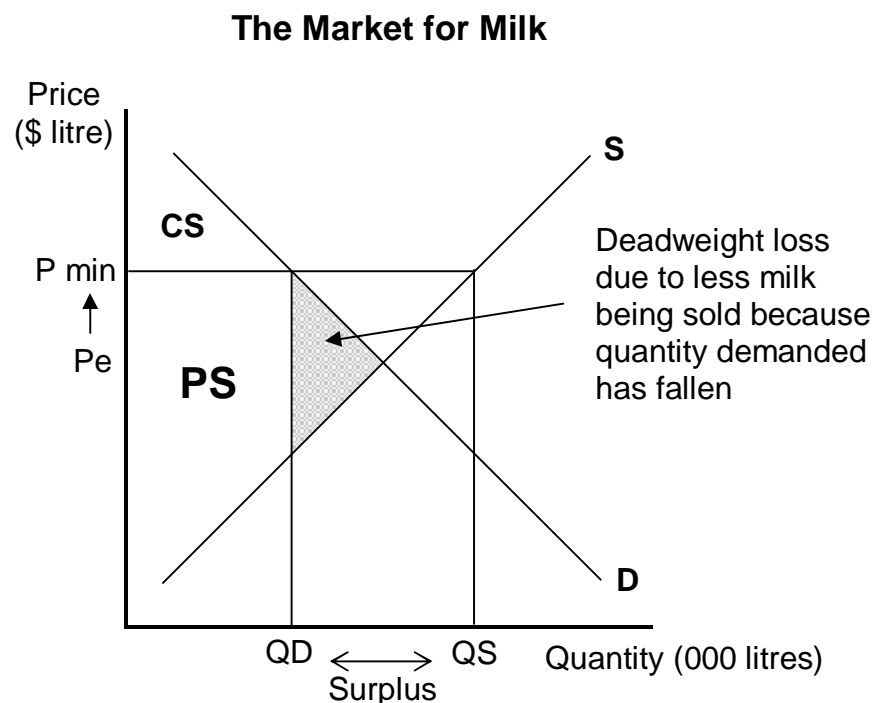
A minimum price is used to assist producers. Some countries use minimum prices particularly on agricultural goods or commodities to ensure that producers do not have large fluctuations in the prices that they receive.

If the minimum price is set above equilibrium it will cause quantity supplied to increase as producers seek to gain more profit. It will cause quantity demanded to fall as consumers cannot afford as much. This will create a surplus.

The amount that is actually sold will be the quantity demanded. This is less than if the market was at equilibrium therefore there is a loss of allocative efficiency, i.e. a deadweight loss.

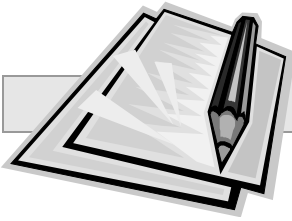
In the 1970s the New Zealand government maintained a minimum price for milk to assist dairy farmers. The government ended up paying for the surpluses using taxpayers' money.

Illustration of a Minimum Price Set Above Equilibrium in the Market for Milk



Effects of a Minimum Price

- Price increases.
- Quantity Demanded decreases and Quantity Supplied increases which creates a surplus.
- Less milk sold → deadweight loss.



Chapter Review Exercise

1. Complete the following:

Allocative efficiency occurs when _____ is maximised for a given level of _____ and _____. Output is also determined by _____. Competitive markets tend to achieve _____. This will mean that producer and consumer surplus are _____ and that no one can be made better off without _____.

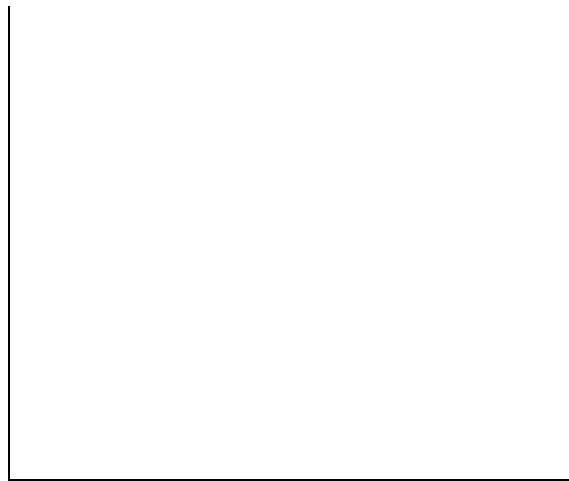
2. Complete the following glossary (the first one is done for you):

- (a) **Productive Efficiency:** Output is maximised for a given level of resources and technology.
- (b) _____: Output is maximised for a given level of resources and technology and is determined by consumer demand.
- (c) _____: The extra satisfaction a consumer gets above the price that they pay for a good.
- (d) _____: This occurs because earlier units of a good are produced at marginal cost below the market price received.
- (e) _____: When producer and consumer surplus are maximised.
- (f) _____: A loss of producer and consumer surplus caused by interference in a competitive market.

3. (a) Draw the market for milk using the data below:

Price \$ Litre	Quantity Demanded 000 Litres	Quantity Supplied 000 Litres
0.50	20	4
1.00	16	8
1.50	12	12
2.00	8	16
2.50	4	20

The Market for Milk



- (b) Show on your graph the effect of the government introducing a minimum price of \$2 per litre (label clearly).
- (c) Calculate the change in:
- (i) Quantity demanded: _____
- (ii) Quantity supplied: _____
- (iii) Consumer spending: _____
- (d) Shade the following areas on your graph:
- (i) New consumer surplus.
- (ii) New producer surplus.
- (iii) Deadweight loss.
- (e) Calculate the \$ value of deadweight loss: \$ _____

4. Draw the market for bike helmets from the information below:

Price \$	Quantity Demanded	Quantity Supplied
10	10,000	1,000
20	8,000	2,000
30	6,000	3,000
40	4,000	4,000
50	2,000	5,000

The Market for Bike Helmets



- (a) Show the effect of the government imposing a maximum price of \$20.
- (b) Shade the following:
- (i) New consumer surplus.
 - (ii) New producer surplus.
 - (iii) Deadweight loss.
- (c) Calculate the following:
- (i) Producer revenue after the maximum price:
\$ _____
 - (ii) The approximate value of the deadweight loss:
\$ _____

8

Price Elasticity of Demand

Introduction

Alfred Marshall of the University of Cambridge developed the model of the market using supply and demand to show how the price of an item is determined. He also developed the concept of elasticity. Elasticity means responsiveness. This section looks at the responsiveness of quantity demanded for an item to changes in price.

Elasticity = Responsiveness.

Price elasticity of demand is the responsiveness of quantity demanded of a good or service to changes in its price.

Types of Price Elasticity

1. Elastic demand is when the price of a good changes by a certain percentage and quantity demanded changes by a greater percentage e.g. price of a good rises by 10% and quantity demanded falls by 40%. **Quantity demanded is very responsive to price changes.**
2. Inelastic demand is when price changes by a certain percentage and quantity demanded changes by a smaller percentage e.g. the price of a good rises by 10% and quantity demanded falls by 2%. **Quantity demanded is not very responsive to price changes.**
3. Unitary demand is when price changes by a certain percentage and quantity demanded changes in the opposite direction by the same percentage e.g. price rises by 10% and quantity demanded falls by 10%.

Price Elasticity and Producer Revenue

It is possible to determine the type of price elasticity of a good or service by looking at the effect of a price change on the producer's revenue.

Producer Revenue = Price x Quantity Sold

1. If price rises and total revenue falls then the demand for the good is elastic because the % increase in price has been offset by a greater % fall in quantity demanded?
2. If the price rises and total revenue rises then the demand is inelastic because the % increase in price has led to a smaller % fall in quantity demanded.
3. If price rises and revenue stays the same then the good has unitary price elasticity. The % increase in price has been offset by the same % decrease in quantity demanded.

Illustration Exercise



1. Complete the following table:

Price Change %	Quantity Demanded Change %	Change in Revenue	Types of Price Elasticity
Increase 10%	Falls by 25%	Decrease	Elastic
Increase 10%	Falls by 4%		
Increase 10%	Falls by 10%		
Decrease 10%	Rises by 18%		
Decrease 10%	Rises by 5%		
Decreases 10%	Rises by 10%		

2. Complete the following:

- (a) If price rises and total revenue rises then demand is _____.
- (b) If price rises and total revenue falls then demand is _____.
- (c) If price rises and total revenue stays the same then demand is _____.
- (d) If price falls the total revenue falls then demand is _____.
- (e) If price falls and total revenue rises then demand is _____.
- (f) If price falls and total revenue stays the same then demand is _____.

It is possible to determine the type of price elasticity by looking at what happens to producer revenue as the price changes.

Calculating a Coefficient of Price Elasticity

It is possible to calculate a number (coefficient) that shows the type of price elasticity of a good or service.

Coefficient of Elasticity (Ep)	Type of Price Elasticity
0	Perfectly Inelastic
<1	Inelastic
1	Unitary
>1	Elastic
Infinite	Perfectly Elastic

Arc Elasticity - The Shorthand Method

$$E_p = \frac{\text{Percentage change in Quantity Demanded}}{\text{Percentage Change in Price}}$$

OR

$$E_p = \frac{\% \text{ r QD}}{\% \text{ r P}}$$

Illustration

If the price of a good increases from \$20 to \$22 and quantity demanded falls from 150 to 120 units.

$$E_p = \frac{20\%}{10\%} = 2.0$$

Therefore the demand for the good is elastic.

Note: The coefficient of price elasticity of demand will always be a negative number because price and quantity demanded move in opposite directions. It is therefore necessary to take the positive value.

The Mid Point Method

This gives a more accurate figure for the coefficient:

$$E_p = \frac{\frac{\text{Change in QD}}{(QD1 + QD2) / 2}}{\frac{\text{Change in Price}}{(P1 + P2) / 2}}$$

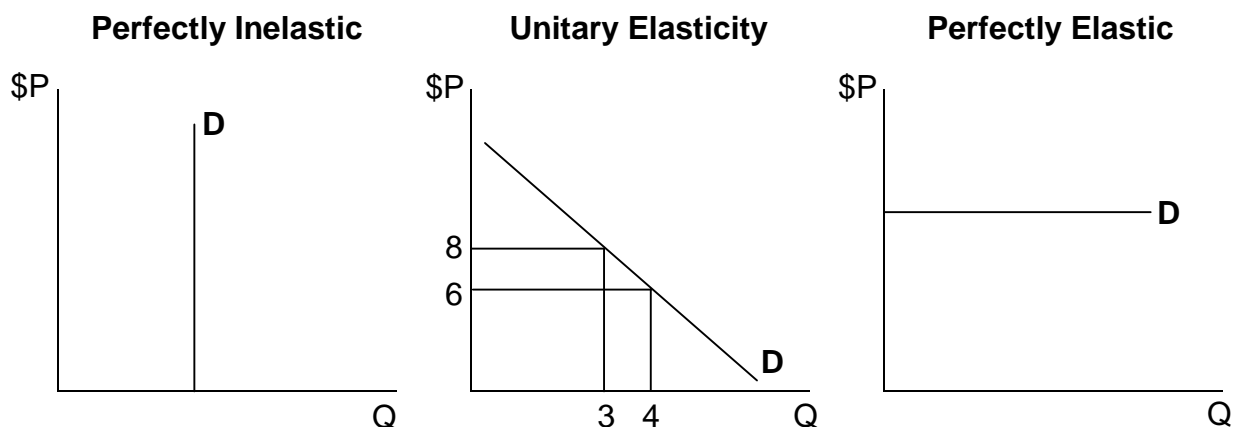
Illustration

If the price of a good increases from \$20 to \$22 and the quantity demanded falls from 150 to 120 units.

$$\begin{aligned} E_p &= \frac{30 / 135}{2 / 21} \\ &= 0.2222 / 0.095 = 2.53 \end{aligned}$$

Therefore demand is elastic.

Illustrating Price Elasticity on a Demand Curves



Important Note: For most goods and services the price elasticity of demand will change along the demand curve.

Factors Affecting Price Elasticity of Demand

Price elasticity of demand is different for different goods because:

1. The availability of substitutes will make demand for an item more elastic as people can switch to the substitute.
2. If the good is a necessity such as electricity then demand will be inelastic.
3. If total spending on the good is small compared to income then demand will be inelastic. If a newspaper increases in price from \$1 to \$1.20 the percentage change in price is 20% yet people will still buy the newspaper because this is a very small part of their income.
4. If the good is addictive such as cigarettes then demand will be inelastic.
5. The time period – Over a longer time period demand tends to become more elastic. In the 1970s when petrol prices soared eventually demand for petrol fell as fuel efficient cars were introduced or people starting using public transport.

Applications of Price Elasticity of Demand

Price elasticity analysis has a number of applications. Sellers need to have an awareness of the elasticity of demand for their products so that they can price appropriately. Sellers also seek to make demand for their produce more inelastic as this gives them greater market power over the price for their product.

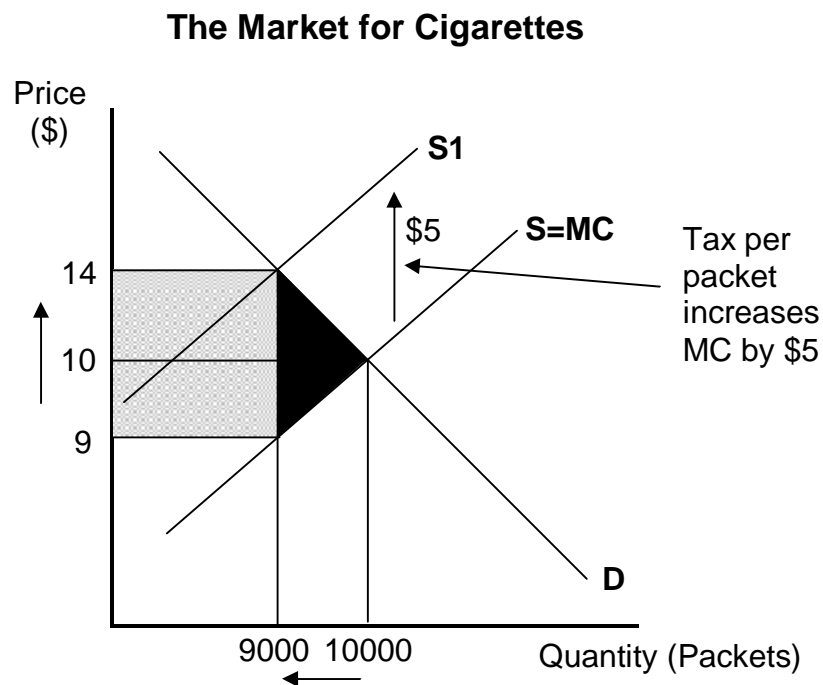
Examples of Applications of Price Elasticity of Demand

Indirect Taxation

An indirect tax is a tax on a good or service. It raises the costs of production for producers. This causes the cost per item to increase by the amount of the tax per item. This is represented by a vertical shift of the supply curve because marginal cost per item has increased by the tax.

This causes the market price to increase. The extent of the price increase will be determined by the price elasticity of demand. If demand is inelastic most of the tax will be passed to consumers through a higher price.

The graph below shows the impact of a \$5 tax per packet of cigarettes. The market price rises from \$10 to \$14. The quantity sold falls from 10,000 to 9,000.



The tax revenue is the grey shaded box. The total tax the government receives is 9,000 units x \$5 = \$45,000. The consumers pay \$40,000 and the producers pay \$5,000. Most of the **incidence** of the tax has been on the consumers because the producers have been able to increase the price due to inelastic demand.

The black shaded area represents the deadweight loss caused by the tax. There has been a loss of consumer and producer surplus due to the fall in output as a result of the tax.

Subsidies

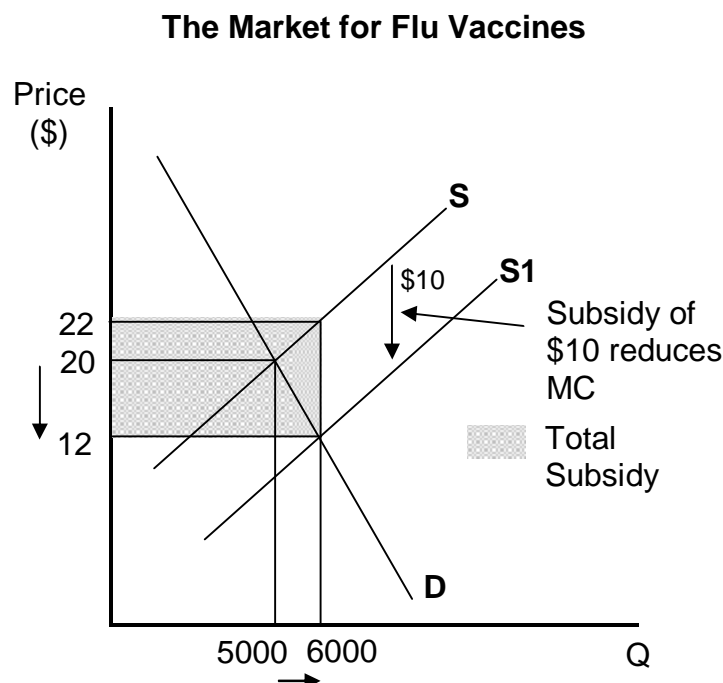
A subsidy is a payment by government to producers to reduce the costs of production. This leads to an increase in supply.

If demand is inelastic most of the subsidy will be passed to consumers by a decrease in price. The producers are eager to gain as much subsidy payment from the government as possible. To do this they must sell more of the good. If the demand is inelastic they will need to substantially lower the price to sell more. Most of the incidence of the subsidy will be on the consumer.

If demand for the good is elastic then a subsidy will cause price to fall by less than if demand is inelastic. The reason is that a smaller fall in price will lead to a greater increase in quantity demanded.

In the example below the government subsidises flu vaccines by \$10. The supply curve shifts down vertically by the \$10 because the cost of production per job has fallen by \$10. The market price falls from \$20 to \$12. The quantity sold increases from 5,000 to 6,000. Most of the subsidy has been passed to consumers (8/10 or 80%). This suggests that demand for flu jobs is inelastic and that is why most of the subsidy has been passed on.

The amount of the subsidy actually paid by the government is 6,000 units x \$10 = \$60,000. This is represented by the shaded box in the diagram below.



The shaded area represents the total subsidy paid by Government.

Other Examples of Applications of Price Elasticity of Demand

Why do cinemas have cheap entry on Tuesdays?

Because demand is elastic during off peak periods therefore a fall in price will increase revenue in these periods.

Why do airlines tickets cost more in the holidays?

Because demand in the school holidays is price inelastic. Airlines can increase their prices and consumers will still buy the seats. This leads to an increase in revenue in these periods.

Why are World Cup Final Tickets so much more expensive than pool play matches?

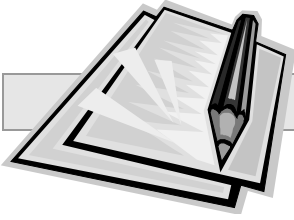
There are two key reasons for this. First demand is inelastic because fanatic fans really want to attend. Also supply is limited by the capacity at the ground. Supply is perfectly inelastic.

Why do video stores charge lower rentals during the week?

Because during off peak times demand is elastic therefore reducing rental prices will increase revenue.

Why did Nike pay enormous amounts to Michael Jordon to endorse its shoes?

By having one of the most famous athletes in the world wearing its shoes Nike was trying to make its shoes seem unique and preferable to its competitors. This would make demand more inelastic allowing Nike to charge higher prices.



Chapter Review Exercise

1. Complete the following glossary:
 - (a) Price elasticity of demand is the responsiveness of _____ to a change in _____.
 - (b) If price rises by 10% and quantity demanded falls by 5% then demand is _____.
 - (c) If price falls and producer revenue falls then demand is _____.
 - (d) If price rises and total revenue falls then demand is _____.
 - (e) If price increases and total revenue stays the same then demand is _____.
 - (f) An _____ is a tax on goods and services such as GST.
 - (g) A _____ is a payment by government to producers to encourage more output.

2. For each good or service state the type of price elasticity it would tend to have and then give a reason (the first one is done for you):

Good / Service	Type of Elasticity	Reason
Butter	Elastic	The availability of close substitutes such as margarine
Electricity		
Bread		
A box of matches		
Natural gas for heating		
Film tickets to a World premier of Lord of the Rings		
Emergency dental services		

3. Complete the table below.

Price \$	Quantity Demanded	Total Revenue
6	900	
7	800	
8	700	
9	650	

4. Use the information from the table (change in revenue) to comment on price elasticity at the following price levels:

- (a) \$6 to \$7 _____
- (b) \$7 to \$8 _____
- (c) \$8 to \$9 _____

4. The price of an ice cream increases from \$3.00 to \$3.40 and the quantity demanded falls from 3,000 to 2,200.

(a) Use the mid point method to calculate the coefficient of price elasticity.

(b) What type of elasticity does this represent? _____

(c) Give a possible reason why ice cream may have this elasticity.

5. The price of petrol has increased from \$1.20 to \$1.50 in recent months. The quantity demanded has fallen from 1 million litres to 950,000 litres per day.

(a) Use the mid point method to calculate the coefficient of elasticity

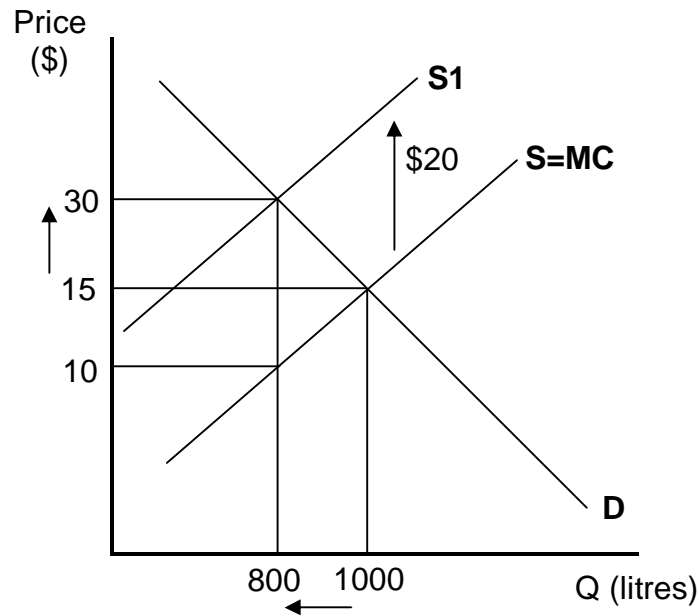
(b) What type of elasticity does this represent? _____

(c) Give a possible reason why ice cream may have this elasticity.

(d) Explain what could happen to the price elasticity of petrol over a longer time period.

6. Use the graph below to answer the following questions:

The Market for Bottles of Whisky Showing the Effect of an Indirect Tax



- (a) What is the tax per item? _____
- (b) What is the total tax revenue to the government?

- (c) How much of the total tax is paid by consumers?

- (d) Comment on the price elasticity for this good?

- (e) Shade:
- (i) The deadweight loss.
 - (ii) The incidence of tax on consumers.
 - (iii) The incidence of tax on producers.

