Understanding Economics

2nd edition

by Mark Lovewell and Khoa Nguyen

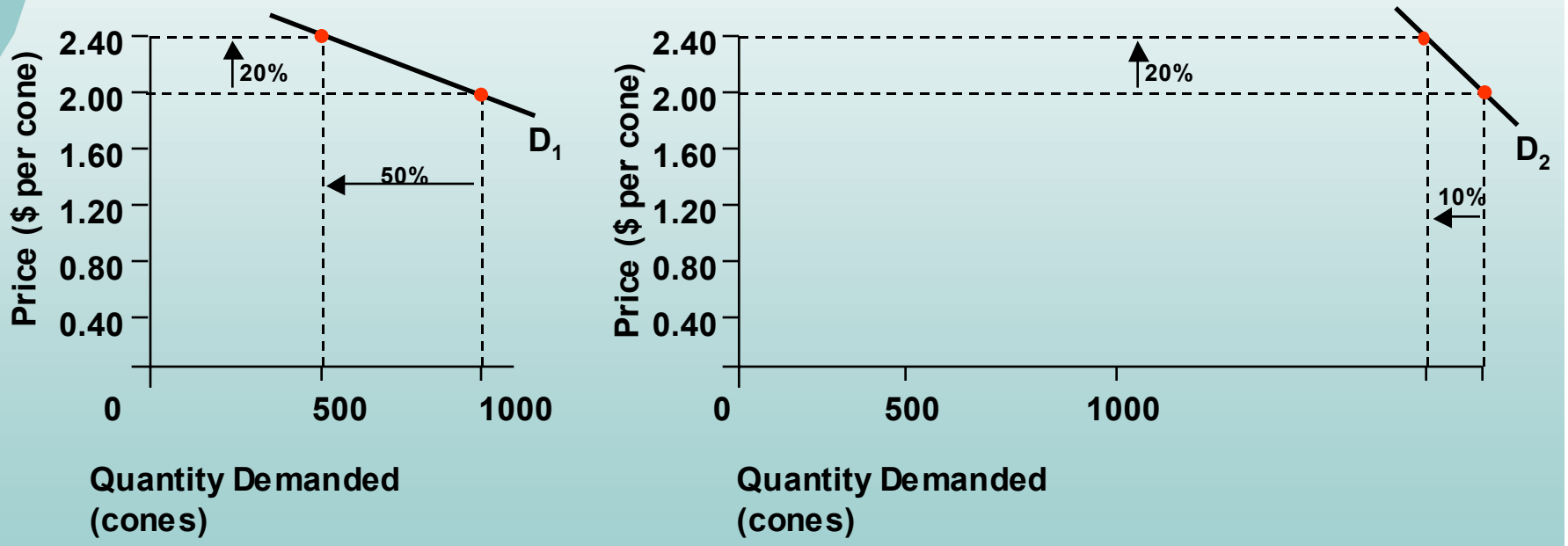
Chapter 3
Competitive Dynamics and Government

Elastic and Inelastic Demand (a)

- Price elasticity of demand shows how responsive consumers are to price changes
  - elastic demand means % change in quantity demanded is more than % change in price
  - inelastic demand means % change in quantity demanded is less than % change in price
  - unit-elastic demand means % change in quantity demand equals % change in price

Elastic and Inelastic Demand (b)

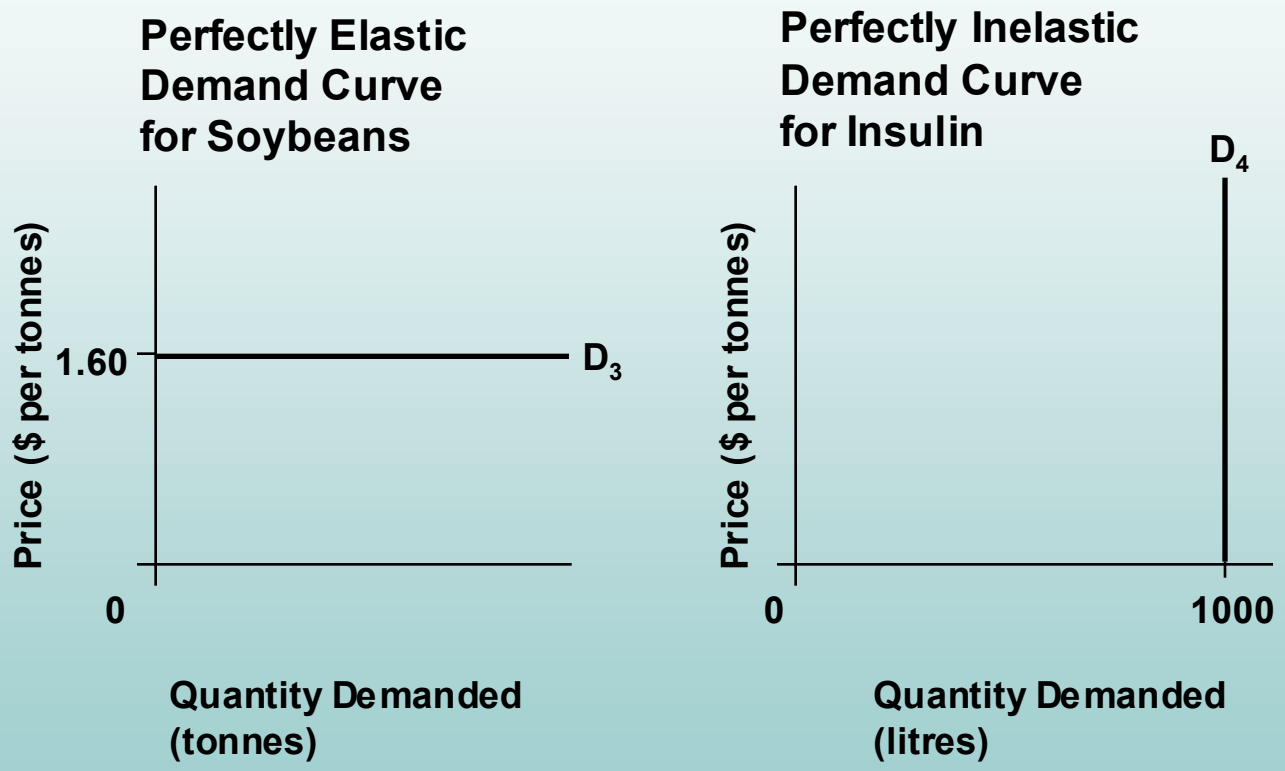
Figure 3.1 Page 56



Perfectly Elastic and Perfectly Inelastic Demand (a)

- Perfectly elastic demand means constant price and a horizontal demand curve
- Perfectly inelastic demand means constant quantity demanded and a vertical demand curve

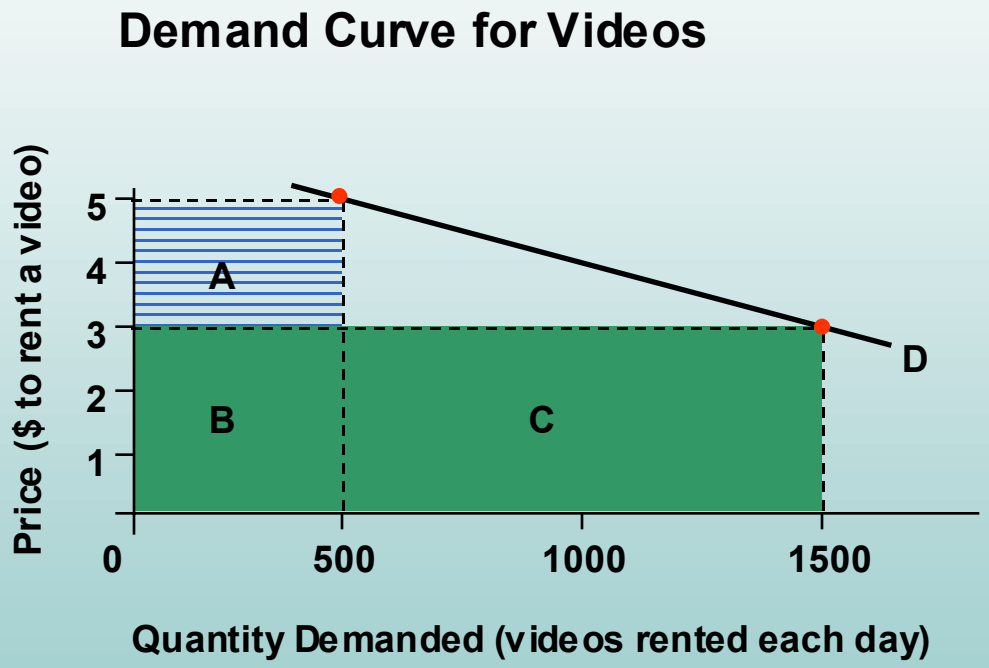
Perfectly Elastic and Perfectly Inelastic Demand (b) Figure 3.2 Page 57



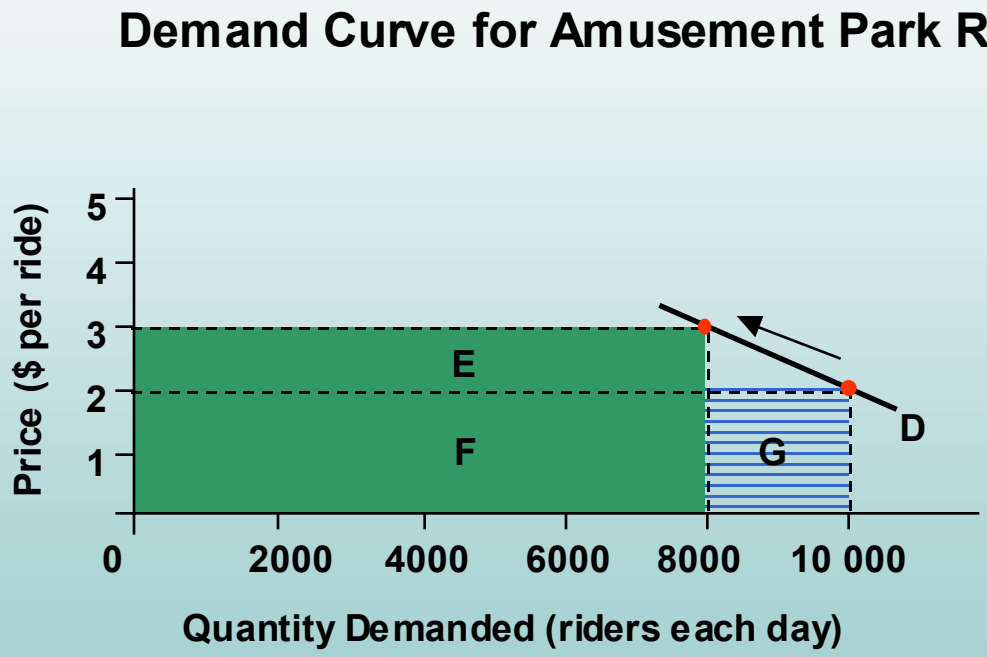
Total Revenue and the Price Elasticity of Demand

- A price change causes total revenue to change in the opposite direction when demand is elastic
- A price change causes total revenue to change in the same direction when demand is inelastic
- A price change does not affect total revenue when demand is unit-elastic

Revenue Changes with Elastic Demand Figure 3.3 Page 59



Revenue Changes with Inelastic Demand Figure 3.4 Page 59



Total Revenue and the Price Elasticity of Demand (c) Figure 3.5 Page 60

Demand Elasticity and Changes in Total Revenue

	Price Change	Change in Total Revenue
Elastic Demand	up	down
	down	up
Inelastic Demand	up	up
	down	down
Unit-Elastic Demand	up	unchanged
	down	unchanged

Determinants of the Price Elasticity of Demand

- There are four determinants:
  - portion of consumer incomes (products with smaller portions more inelastic)
  - access to substitutes (products with more substitutes more elastic)
  - necessities versus luxuries (more inelastic for necessities and more elastic for luxuries)
  - time (more elastic with the passage of time)

Calculating Price Elasticity of Demand

- A numerical value for price elasticity of demand (e_d) is found by taking the ratio of the changes in quantity demanded and in price, each divided by its average value.
- In mathematical terms:

$$e_d = \frac{\Delta Q_d \div \text{average } Q_d}{\Delta \text{price} \div \text{average price}}$$

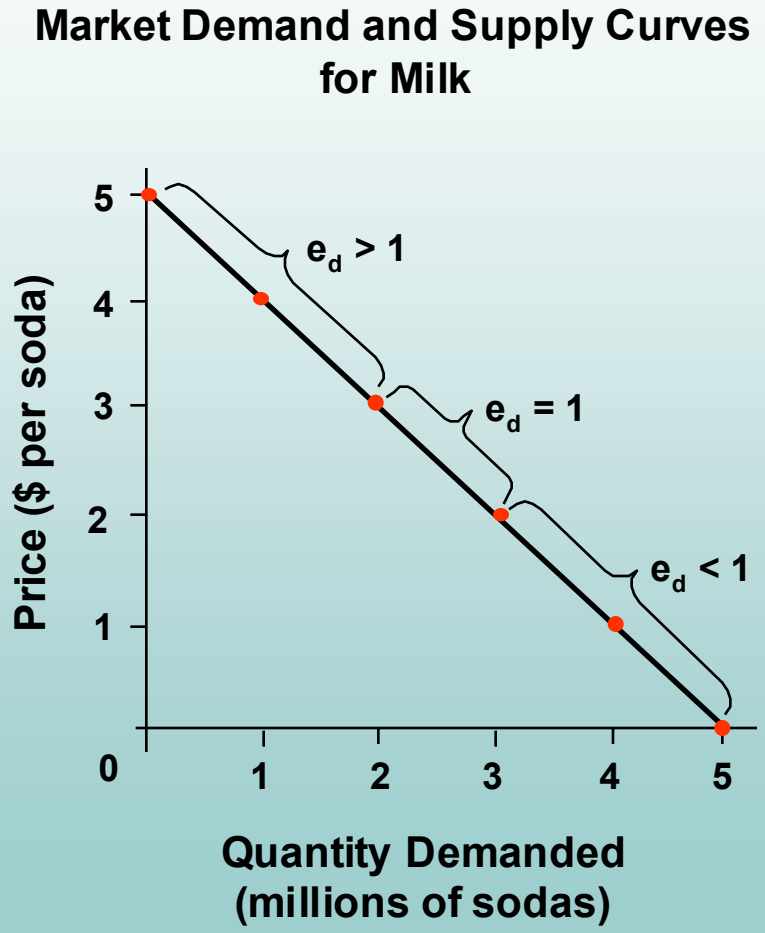
Elasticity and a Linear Demand Curve (a)

- A linear demand curve has a different price elasticity (e_d) at every point.
- At high prices, the change in quantity demanded (price) is relatively large (small), giving a large e_d.
- At low prices, the change in quantity demand (price) is relatively small (large), giving a small e_d.

Elasticity and a Linear Demand Curve (b) Figure 3.6 Page 62

Market Demand Schedules for Sodas

Price ($ per soda)	Quantity Demanded (millions of sodas)	Price Elasticity of Demand (e_d)
5	0	
		9.00
4	1	
		2.33
3	2	
		1.00
2	3	
		0.43
1	4	
		0.11
0	5	



Income Elasticity

- Income elasticity (e_i) is the responsiveness of a product's quantity demanded to changes in consumer income.
- In mathematical terms:

$$e_i = \frac{\Delta Q_d \div \text{average } Q_d}{\Delta I \div \text{average } I}$$

Cross-Price Elasticity

- Cross-price elasticity (e_i) is the responsiveness of the quantity demanded of one product (x) to a change in price of another (y)
- In mathematical terms:

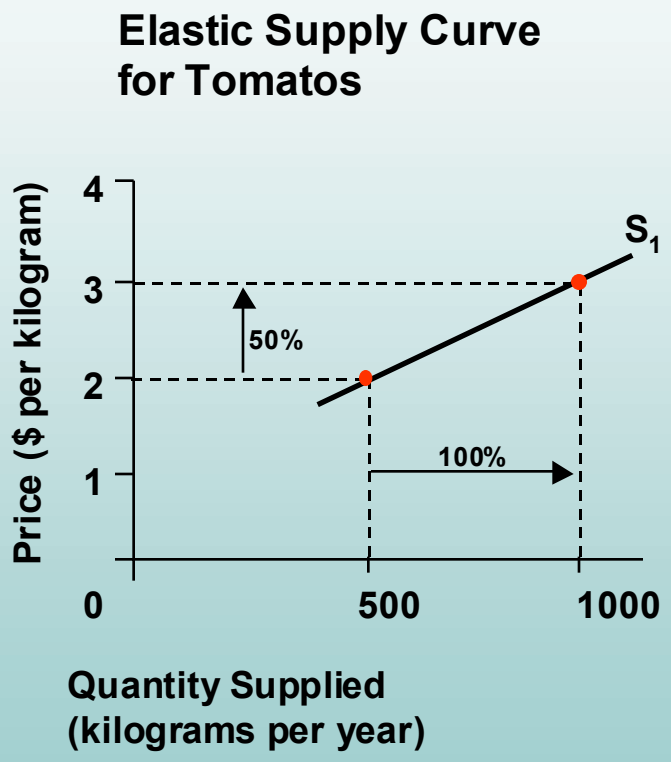
$$e_{xy} = \frac{\Delta Q_d \div \text{average } Q_d}{\Delta P_y \div \text{average } P_y}$$

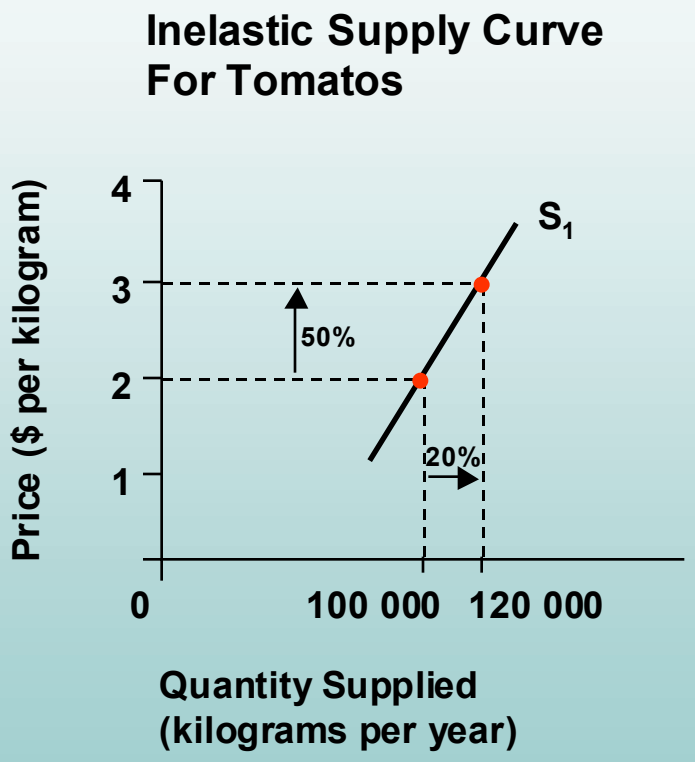
Elastic and Inelastic Supply

- Price elasticity of supply measures the responsiveness of quantity supplied to price changes
  - elastic supply means % change in quantity supplied is more than % change in price
  - inelastic supply means % change in quantity supplied is less than % change in price

Elastic and Inelastic Supply

Figure 3.7, Page 64





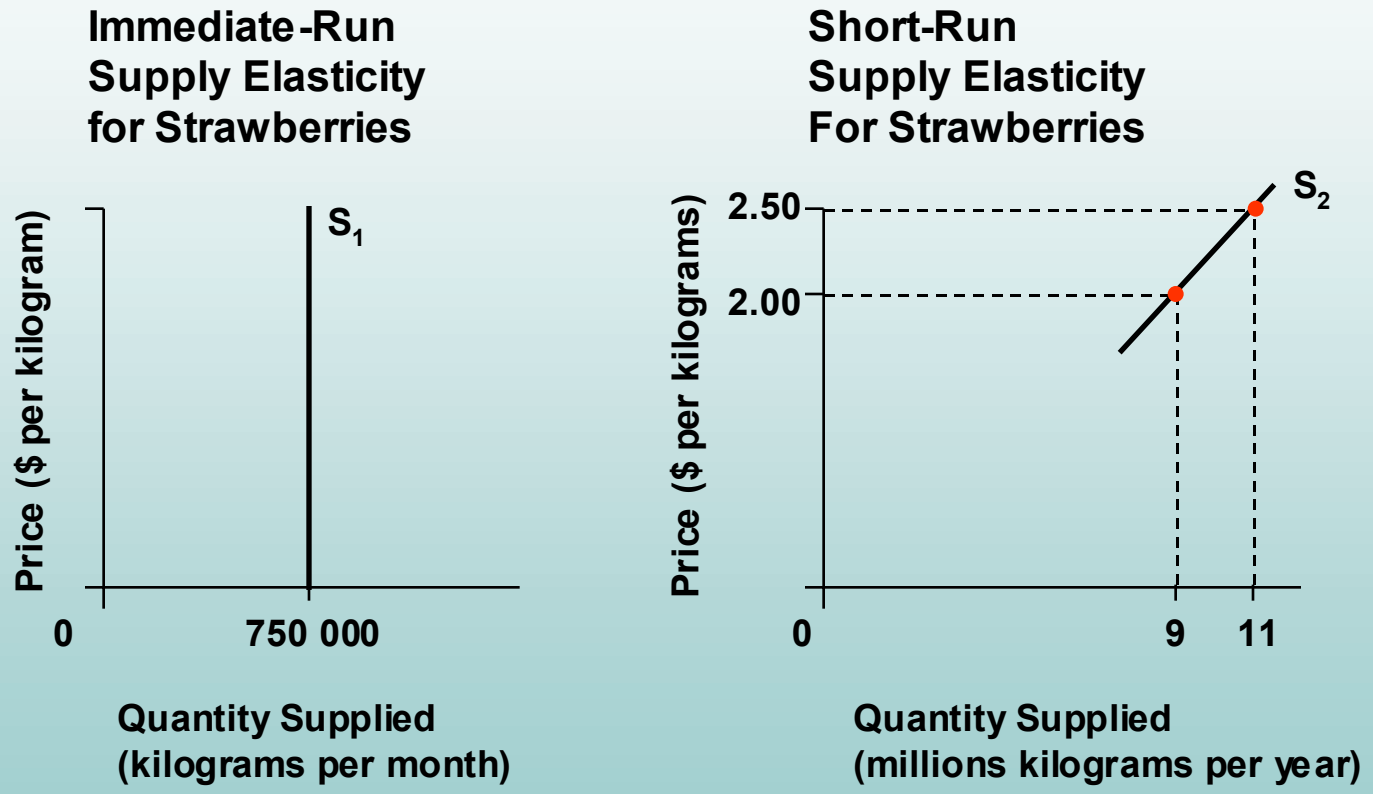
Perfectly Elastic and Perfectly Inelastic Supply

- Perfectly elastic supply means constant price and a horizontal supply curve
- Perfectly inelastic supply means constant quantity supplied and a vertical supply curve

Time and the Price Elasticity of Supply (a)

- Price elasticity of supply changes over three production periods
  - supply is perfectly inelastic in the immediate run
  - supply is either elastic or inelastic in the short run
  - supply is perfectly elastic for a constant-cost industry and very elastic for an increasing-cost industry in the long run

Time and the Price Elasticity of Supply (b) Figure 3.8, Page 65



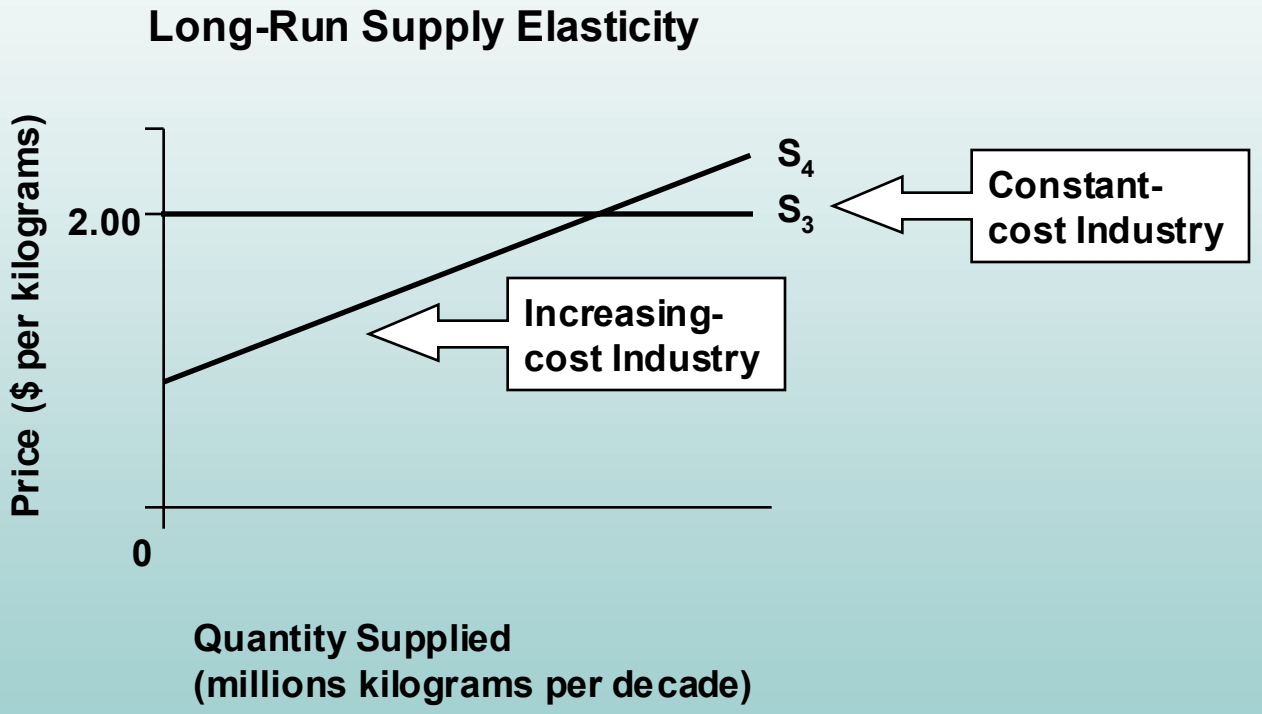
Time and the Price Elasticity of Supply (c)

- If strawberries are produced in a constant-cost industry:
  - A higher price of strawberries raises production but not resource prices.
  - As new businesses enter the industry in the long run due to a higher price of strawberries, this price is gradually pushed back down to its original level.
  - Therefore the long-run supply curve for a constant-cost industry is perfectly elastic.

Time and the Price Elasticity of Supply (d)

- If strawberries are produced in a increasing-cost industry:
  - A higher price of strawberries raises production and also resource prices.
  - As new businesses enter the industry in the long run due to a higher price of strawberries, this price is gradually pushed back down to its lowest possible level, but this level is higher than it was originally.
  - Therefore the long-run supply curve for an increasing-cost industry is very elastic.

Time and the Price Elasticity of Supply (d) Figure 3.8, Page 65



Calculating Price Elasticity of Supply

- A numerical value for price elasticity of supply (e_s) is found by taking the ratio of the changes in quantity supplied and in price, each divided by its average value.
- In mathematical terms:

$$e_s = \frac{\Delta Q_s \div \text{average } Q_s}{\Delta \text{price} \div \text{average price}}$$

Price Controls

- A price floor is a minimum price set above the equilibrium price
  - it results in a surplus in the market
- A price ceiling is a maximum price set below the equilibrium price
  - it results in a shortage in the market

Agricultural Price Supports

- Price supports for agricultural goods are an example of a price floor
  - they help overcome unstable agricultural prices
  - farmers win from these supports
  - consumers and taxpayers lose from these supports

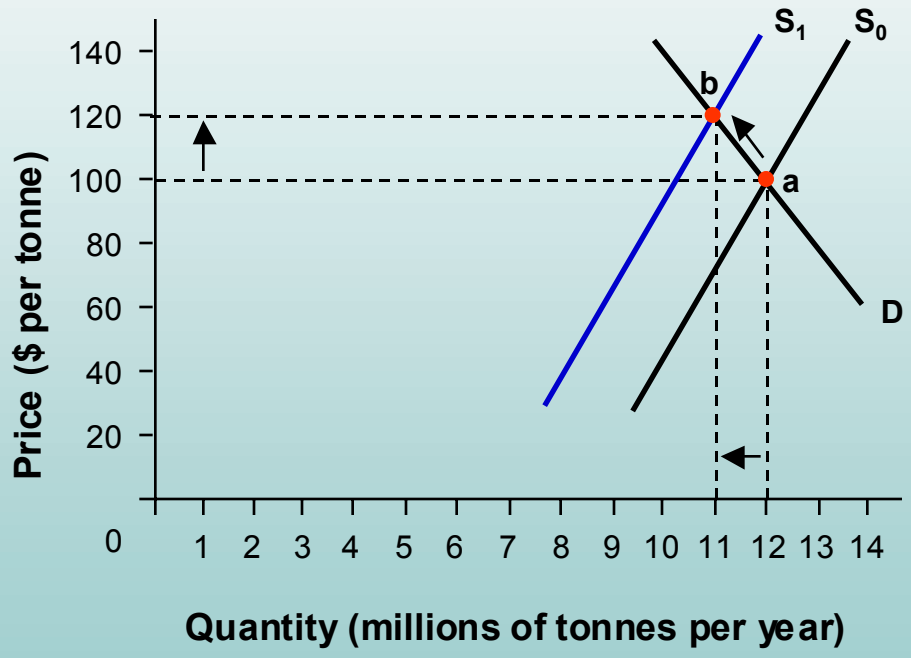
Reasons for Price Supports

Figure 3.9, page 68

Market Demand and Supply Schedules for Wheat

Price ($ per tonne)	Quantity Demanded (D) (millions of tonnes)	Quantity Supplied (S_0) (millions of tonnes)		Quantity Supplied (S_1) (millions of tonnes)
140	10	14	→	12
120	11	13	→	11
100	12	12	→	10
80	13	11	→	9
60	14	10	→	8

Market Demand and Supply Curves for Wheat

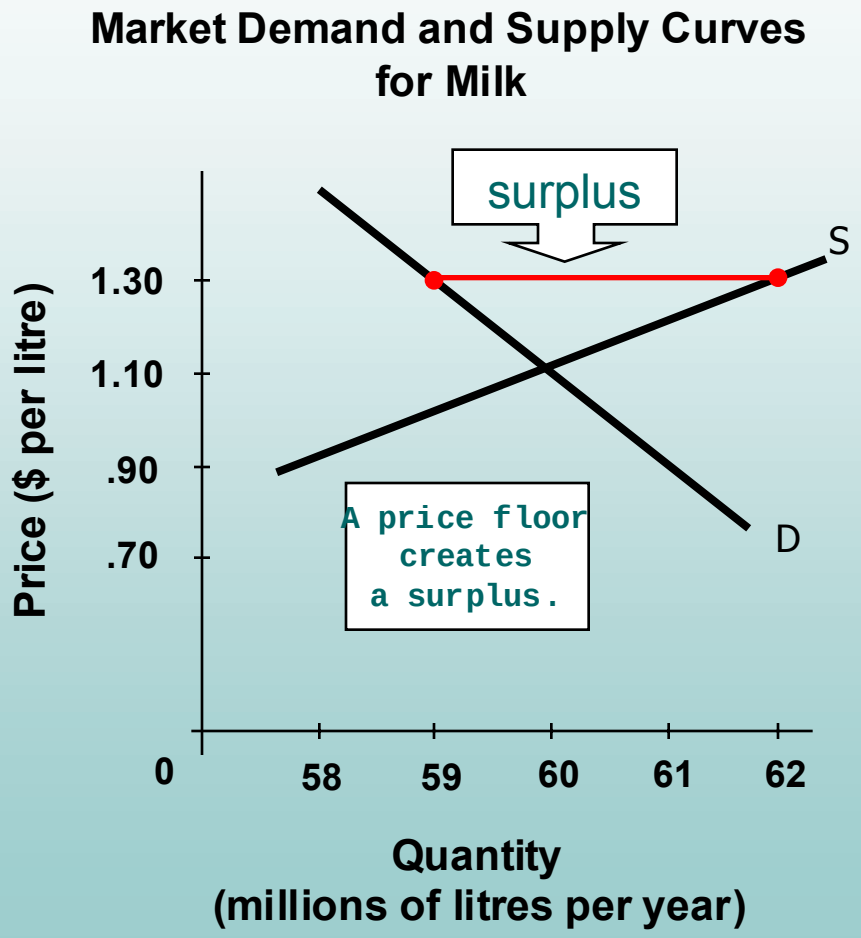


Effects of Price Supports

Figure 3.11, page 70

Market Demand and Supply Schedules for Milk

Price ($ per litre)	Quantity Demanded (D) (millions of litres)	Quantity Supplied (S) (millions of litres)
1.30	59	62
1.10	60	60
.90	61	58



Rent Controls

- Rent controls are an example of a price ceiling
  - they keep down prices of controlled rental accommodation
  - some (especially middle-class) tenants win from these controls
  - other (especially poorer) tenants lose from these controls

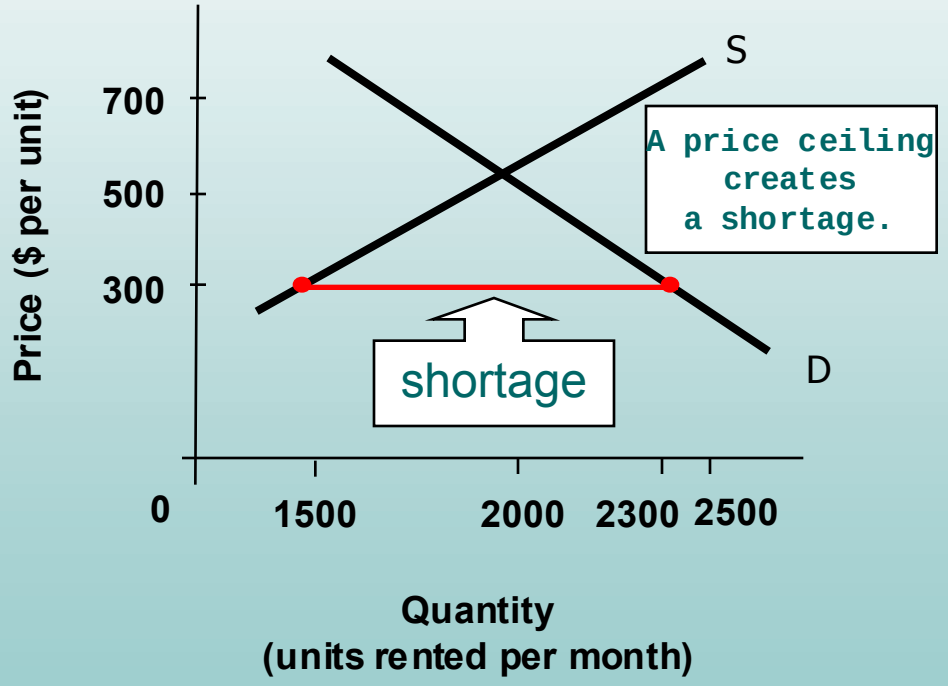
Effects of Rent Controls

Figure 3.11, page 70

Market Demand and Supply Schedules for Units

Price ($ rent per month)	Quantity Demanded (D) (units rented per month)	Quantity Supplied (S) (units rented per month)
700	1700	2500
500	2000	2000
300	2300	1500

Market Demand and Supply Curves for Units



Spillover Costs (a)

- Spillover costs are the negative external effects of producing or consuming a product
  - adding these costs to private costs raises the supply curve
  - the preferred outcome is at a lower quantity than in a perfectly competitive market
  - government intervention (e.g. an excise tax) can produce the preferred outcome

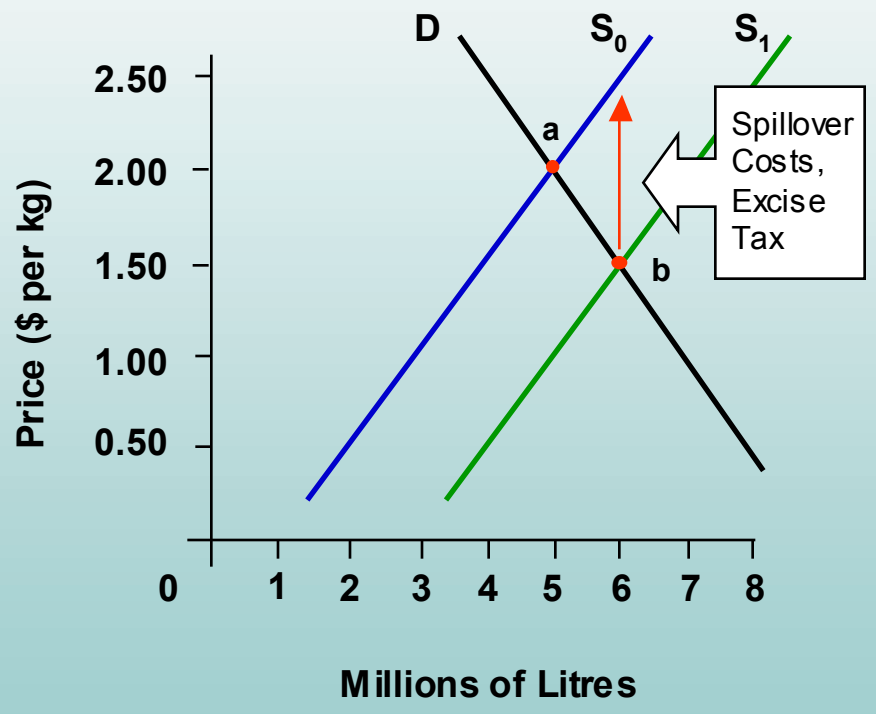
Spillover Costs (b)

Figure 3.13, page 72

Demand and Supply Schedules for Gasoline

Price ($ per kg)	Quantity Demanded (D) (millions of litres)	Quantity Supplied (S_0)		Quantity Supplied (S_1)
2.50	4	8	→	6
2.00	5	7	→	5
1.50	6	6	→	4
1.00	7	5	→	3
0.05	8	4	→	2

Market Demand Curve for Strawberries



Spillover Benefits (a)

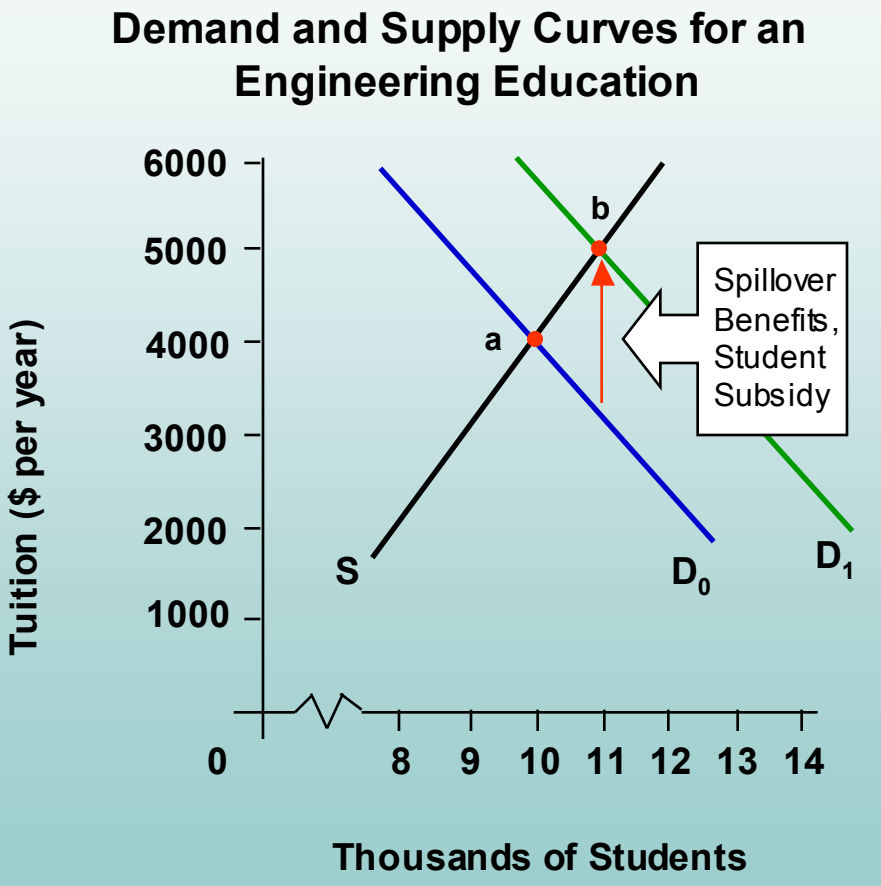
- Spillover benefits are the positive external effects of producing or consuming a product
  - adding these benefits to private benefits raises the demand curve
  - the preferred outcome is at a higher quantity than occurs in a perfectly competitive market
  - government intervention (e.g. a consumer subsidy) can produce the preferred outcome

Spillover Benefits (b)

Figure 3.14, page 73

Demand and Supply Schedules for an Engineering Education

Tuition ($ per year)	Enrollment Demanded (S_0)		(S_1)	Quantity Supplied (S)
	(thousands of students)			
6000	8	→	10	12
5000	9	→	11	11
4000	10	→	12	10
3000	11	→	13	9
2000	12	→	14	8



Getting More Than You Bargained For (a)

- Alfred Marshall
  - was the first to establish the use of demand and supply curves
  - devised the notion of consumer surplus which is the difference between marginal benefit and price for each unit of a product
- The notion of consumer surplus applies both to individual consumer and market demand curves:

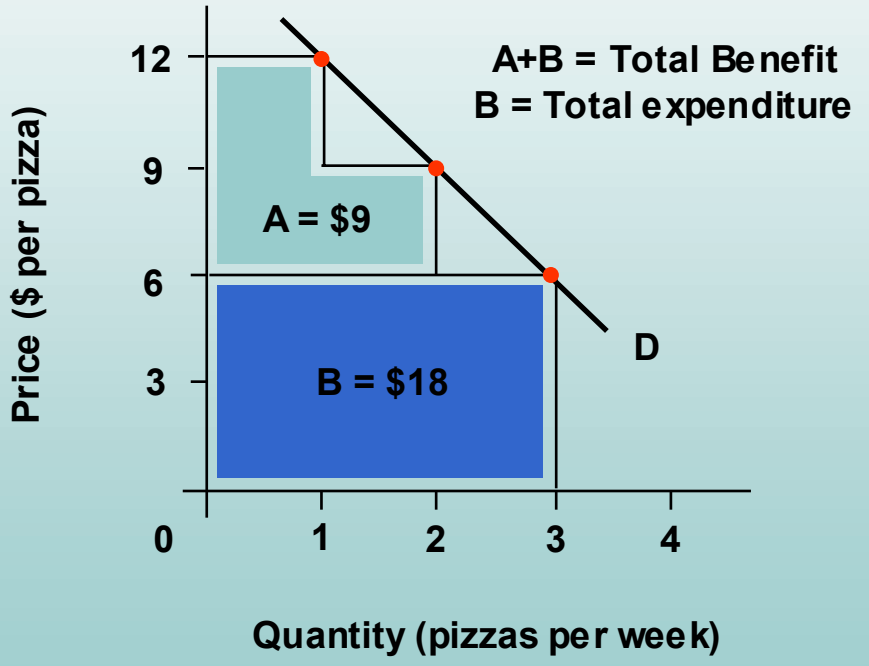
Getting More Than You Bargained For (b)

Figure A, page 81

Consumer's Demand Schedule for Pizzas

Price ($ per pizza)	Quantity Demanded (D) (pizzas)	Total Benefit ($)
12	1	12
9	2	21 (12 + 9)
6	3	27 (12 + 9 + 6)

Consumer's Demand Curve for Pizzas



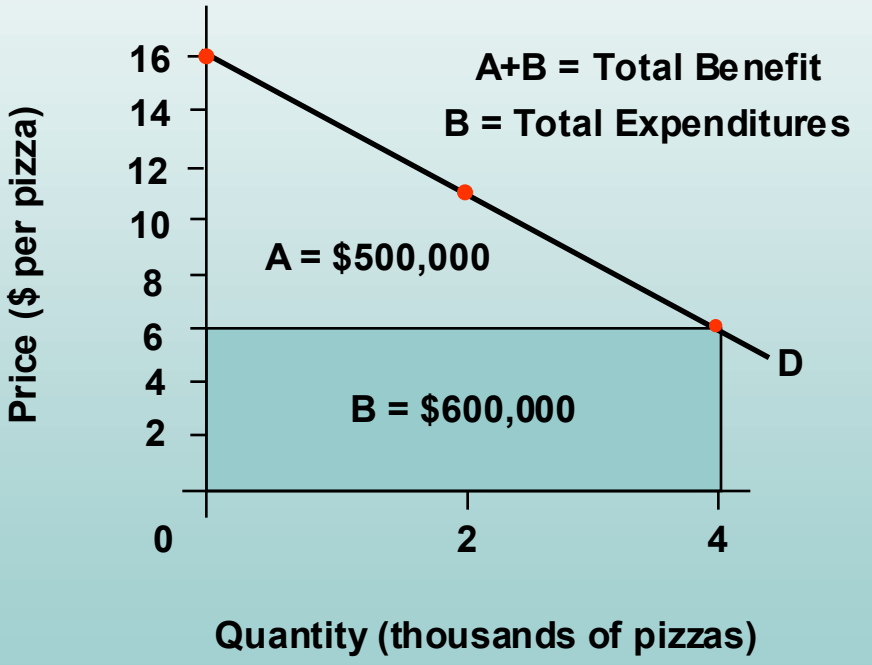
Getting More Than You Bargained For (c)

Figure B, page 82

Market Demand Schedule for Pizzas

Price ($ per pizza)	Quantity Demanded (D) (thousands of pizzas)
16	0
11	50
6	100

Consumer's Demand Curve for Pizzas



The Economic Role of Government

- Besides intervening in private markets, Canadian governments have an independent role.
- Government programs include payments to adults with children, retirement funds for the elderly, unemployment insurance, welfare, higher education subsidies, free health care and schooling, and subsidized public housing.

Federal Spending

- The main federal spending programs are:
  - transfer payments to seniors (the Seniors Benefit)
  - tax credits to low-income parents (the Child Tax Credit)
  - transfer payments to the unemployed (Employment Insurance)
  - pensions (the Quebec and Canada Pension Plans)

Provincial and Territorial Spending

- The responsibilities of provincial and territorial governments include:
  - health care
  - subsidies for post-secondary education
  - welfare services
- The federal government pays a portion of these costs through the Canada Health and Social Transfer (CHST).

Government Expenditures

Figure A, Page 85

Federal (1999-2000) ($ billions)		Provincial (1999 ($ billions)		Federal (1999-2000) ($ billions)	
Transfers to persons		Goods and services	106.3	Goods and services	63.9
Benefits to the elderly	23.3	Transfers to		Transfers to	
Employment insurance benefits	11.7	Persons	26.9	Persons	4.0
Transfers to other levels of government	23.6	Businesses	5.3	Businesses	1.5
Subsidies and other transfers	20.2	Governments	32.1	Provinces	0.3
Crown Corporations	3.8	Debt charges	27.5	Debt Charges	3.8
Defence	9.9		198.1		73.5
Government operations	23.0				
Debt charges	41.5				
	157.0				

Taxation (a)

- Canadian governments use five main types of taxation:
  - Personal income taxes are levied by both federal and provincial governments, and are based on four marginal federal tax rates (16%, 22%, 26%, and 29%).
  - Sales taxes are levied by both federal and provincial governments, and are charged as a percentage of price on a wide range of products.

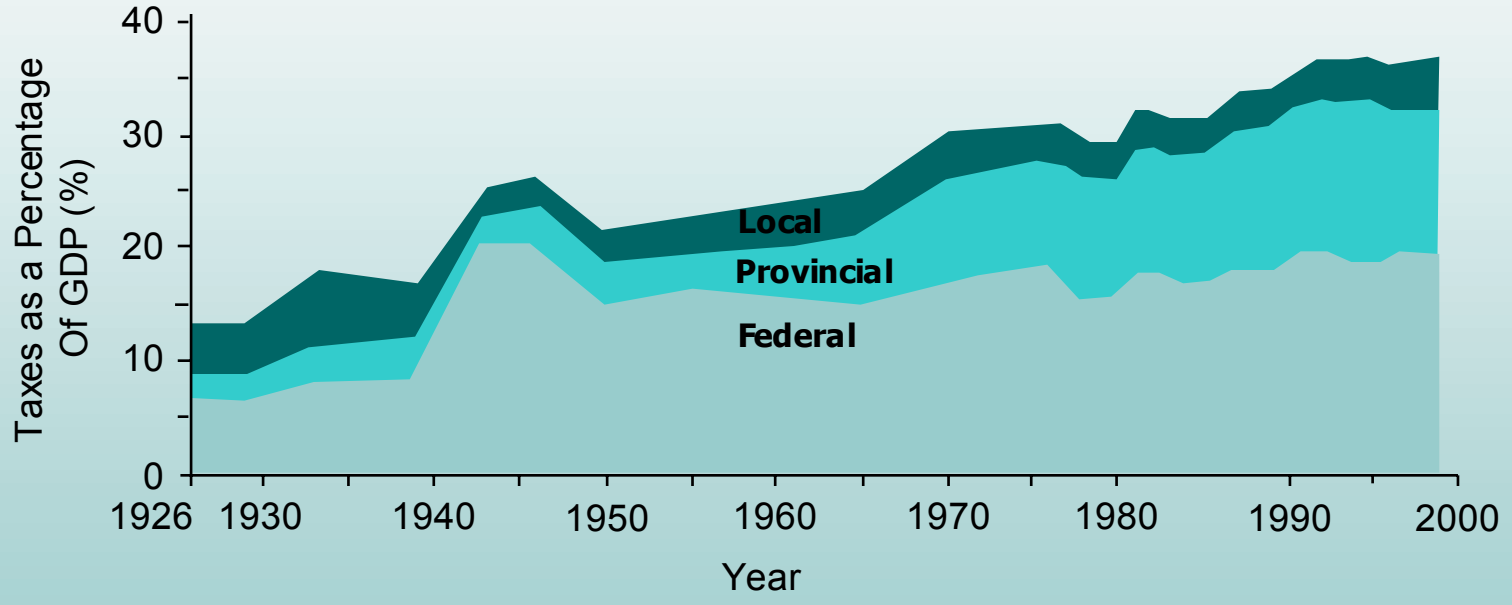
Taxation (b)

- Excise taxes are levied by both federal and provincial governments, and are usually charged as a dollar amount per unit of quantity on particular products.
- Property taxes are charged by local governments on buildings and land.
- Corporate income taxes are paid by corporations to both federal and provincial governments as a percentage of annual profits.

Tax Revenues for All Levels of Government Figure B, Page 86

	Percent of Gross Domestic Product	Percent of Total Taxes
Personal income taxes	14.3	38.2
Sales and excise taxes	5.5	14.7
Property taxes	3.5	9.4
Corporate income taxes	3.2	8.6
Miscellaneous taxes	10.9	29.1
	37.4	100.0

Government Taxes and the Canadian Economy Figure C, Page 87



Debates over Government's Role (a)

- Taxes have increased significantly as a proportion of the total Canadian economy over the past few decades.
- Critics argue that taxes and some spending programs reduce productive activity.
- Critics also contend that many government programs are inequitable, and hampered by high administrative problems.

Debates Over Government's Role (b)

- Supporters of government admit that public spending and taxation are not as effective as they could be. But they argue that these problems need to be seen in perspective, given that private markets are also subject to a variety of flaws.

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Chapter 3

The End