

CHAPTER 5

The Role of Business in the Economy

The role of business in an economy is to produce goods and services in order to satisfy consumers' needs and wants. Businesses also fulfil this function in order to maximise profits. In carrying out this function businesses employ resources including land, labour, capital and enterprise and therefore create income and employment opportunities for the labourforce in primary, secondary and tertiary industries.

DEFINITION OF A FIRM AND AN INDUSTRY

A firm is any business organisation which uses resources to produce goods and services to satisfy consumers' needs and wants usually in return for a profit. Business firms are classified according to both their legal structure and the type of production activity or industry in which they operate.

In terms of legal structure, there are **unincorporated business enterprises** such as sole traders and partnerships, where there is unlimited liability for the debts of the business, and most of the capital is either provided by the owners or borrowed from financial institutions. Unlimited liability means that the owners of a sole tradership or a partnership are liable for all the debts of the business, even to the extent of having to sell their personal property to pay any unpaid debts or liabilities of the business.

Incorporated business enterprises such as private and public companies have limited liability for debts and raise capital through the issue of shares either privately or publicly. In limited liability companies shareholders are only liable for the debts of the company to the extent or value of their shareholding. **Table 5.1** summarises the main features of incorporated and unincorporated business enterprises.

A group of firms producing a similar range of goods or services constitutes an industry. Various industries can be identified and defined in the Australian economy such as the following:

- **Primary industry** consists of all those firms engaged in the extraction of natural resources (such as agriculture, mining, fishing, hunting and forestry), and accounted for 10.3% of Australia's GDP and 4.3% of total employment in 2018-19. The resources boom has increased the share of the mining sector (7.9%) to this industry's overall contribution to Australian GDP in recent years.
- **Secondary industry** consists of all firms engaged in the manufacturing of usable products from natural resources produced by primary industry, such as the simple and complex processing of minerals and other natural resources into consumer goods such as clothes, electrical goods, furniture and food. It also includes firms which manufacture capital goods such as trucks, machinery and computers for use by other firms and industries. Manufactured goods are classified as either simply transformed manufactures (STMs) or elaborately transformed manufactures (ETMs). Manufacturing accounted for 5.6% of GDP and 6.8% of employment in Australia in 2018-19.
- **Tertiary industry** consists of firms selling final goods and services to consumers and other businesses. Examples of tertiary services include retailing, wholesaling, education, health, finance, insurance, recreation, transport, communications, entertainment, community and personal services. Tertiary industry accounted for 84.1% of GDP and 88.9% of employment in Australia in 2018-19.
- **Quaternary industry** refers to the information technology services provided by individuals and firms in the information and communications technology (ICT) industry.
- **Quinary industry** refers to firms and individuals who provide personal services directly to other firms and individuals in the economy such as maintenance services.

Although quaternary and quinary industries are defined separately, they are included as part of tertiary industry in calculating its 84.1% share of Australian GDP and 88.9% of employment in 2018-19.

Table 5.1: Types of Business Firms According to Legal Structure*UNINCORPORATED BUSINESS ENTERPRISES: SOLE TRADERS AND PARTNERSHIPS*

<i>Features</i>	<i>Sole Trader</i>	<i>Partnership</i>
Number of Owners	One owner	Two to twenty owners
Management	Owner - manager	Management shared by skills and expertise
Start up Capital	Personal savings/bank loans	Shares provided by partners/borrowings
Liability	Unlimited liability for debts	Unlimited liability for debts
Expansion	Borrowings, retained profits	Retained profits, borrowings, new partners
Advantage	Independent management	Access to more capital than sole traders
Disadvantage	Unlimited liability for business debts	Limited capital from partners which may limit the extent to which the business can expand
Examples	Tradespeople, small retailers	Doctors, dentists, solicitors and accountants
Legal Status	Registered business name	Partnership agreement creates a legal entity

INCORPORATED BUSINESS ENTERPRISES: PRIVATE AND PUBLIC COMPANIES

<i>Features</i>	<i>Proprietary Company (Pty Ltd)</i>	<i>Public Company (Ltd)</i>
Number of Owners	One to fifty owners	Minimum of three shareholders plus a company secretary
Management	Board of directors elected by the shareholders. Managers appointed to run the business	Board of directors elected by shareholders. Directors appoint salaried managers to run the business
Start up Capital	Private invitation to buy shares through the issue of a company prospectus	Public invitation (float) to buy shares in the company through sharebrokers, financial markets and issue of a company prospectus
Types of Shares	Ordinary shares	Ordinary, preference and contributing shares
Transfer of Shares	Unlisted on the ASX Private sale and purchase	Listed on the ASX if desired Public sale and purchase of shares
Voting Rights	One vote per one ordinary share	One vote per one ordinary share
Liability	Limited liability of shareholders	Limited liability of shareholders
Expansion	Borrowings, profits, private sale of shares by invitation	Profits, borrowings, public sale of new shares (i.e. a float or new share issue - IPO)
Advantage	Raising capital is easier because shares in the company can be sold privately	Access to more capital than private companies, since shares can be sold to the public on the securities exchange (ASX)
Disadvantage	Not publicly listed on the ASX	Complexity of management structure
Examples	Family businesses	BHP-B Ltd, NAB Ltd, Telstra Corporation Ltd
Legal Status	Proprietary Limited Company (Pty Ltd)	Must have Limited (Ltd) in its name Compliance with ASIC and ASX listing rules

Table 5.2: Contribution by Industry Sector to Australian GDP and Employment

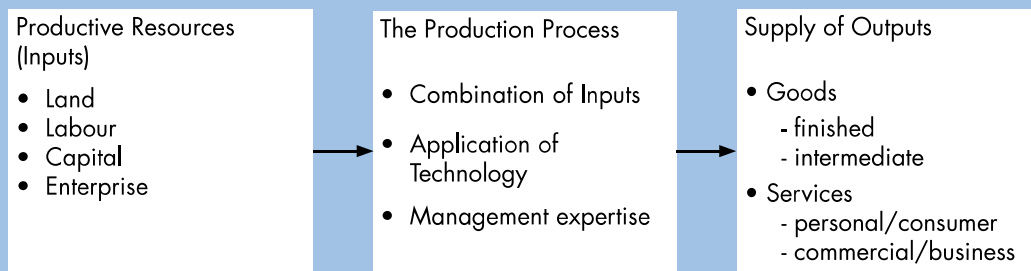
	2015-16	2016-17	2017-18	2018-19
<i>Gross Domestic Product \$m</i>				
Agricultural Output	\$36,007m	\$44,370m	\$41,653m	\$44,424m
Mining Output	\$114,573m	\$116,400m	\$103,435m	\$146,229m
Manufacturing Output	\$99,272m	\$97,487m	\$102,191m	\$103,656m
Services Output	\$1,411,066m	\$1,434,862m	\$1,495,730m	\$1,556,691m
Total GDP	\$1,660,918m	\$1,693,119m	\$1,743,009m	\$1,851,000m
<i>Employment</i>				
Agricultural Employment	322,000	323,000	329,000	326,200
Mining Employment	215,000	221,000	242,600	238,000
Manufacturing Employment	892,000	897,000	907,000	871,700
Services Employment	10,452,000	10,832,000	10,978,400	11,524,600
Total Employment	11,881,000	12,273,000	12,457,000	12,960,500

Source: ABARES (2019), *Agricultural Commodities*, September Quarter and ABS Catalogue 6291.0.55.003 Aug.

The contribution of firms according to major industry sectors (agriculture, mining, manufacturing and services) in Australia between 2015-16 and 2018-19 to output (GDP) and employment is shown in **Table 5.2**. Key trends in **Table 5.2** are the large increase in mining output in 2018-19 due to the strong demand for coal, iron ore and LNG exports, and the growth in services output and employment as the economy transitioned to non mining sources of growth. Manufacturing output increased in 2018-19 with continued housing and apartment construction and infrastructure projects, particularly in Sydney and Melbourne. Manufacturing employment has declined over time with the increased use of capital.

A Firm's Production Decisions

A firm's main production decisions include selecting the appropriate mix of inputs (i.e. raw materials, intermediate goods, labour, capital and enterprise) to produce final output (i.e. goods and services) that are demanded by consumers in markets. The firm's production process is illustrated in **Figure 5.1**. It involves the application of technology and management expertise to the exact combination of inputs or productive resources to minimise production costs, and to produce final goods and services in sufficient quantities and qualities to satisfy the market demand of consumers.

Figure 5.1: The Firm's Production Process

In business the entrepreneur's economic problem and the firm's economic problem include decisions made in relation to the following production questions:

- **What goods and services to produce?:** This includes determining what the market demands and the preferences and expertise of the entrepreneur who is running and managing the firm.
- **What quantities of goods or services to produce?:** The firm must satisfy market demand so that revenue is maximised and costs are minimised in order to maximise the firm's profits.
- **How to produce?:** This is a question of the resources and technology available to be used in the production process. Entrepreneurs will attempt to produce output at minimum or least cost.
- **How to organise and manage production?:** The entrepreneur must create a management structure to plan, organise, lead and control the production process. The factors of production must be paid for from operating revenue, and a profit made to compensate the entrepreneur for risk taking behaviour such as financing and organising the production activities of the business.



REVIEW QUESTIONS

DEFINITION OF A FIRM AND AN INDUSTRY

1. Distinguish between a firm and an industry.
2. Outline the main characteristics of sole traders, partnerships, private and public companies from Table 5.1.
3. What are the advantages and disadvantages of unincorporated and incorporated business enterprises? Refer to Table 5.1 in your answer.
4. Using examples, distinguish between primary, secondary, tertiary, quaternary and quinary industries in Australia.
5. Refer to Table 5.2 and calculate the percentage shares of GDP and employment accounted for by primary, secondary and tertiary industries in 2018-19. How and why have these shares changed over time? Why has the service sector's share of output and employment increased?
6. Refer to Figure 5.1 and explain how the firm attempts to solve its economic problem.
7. What specific production decisions does the entrepreneur and the firm have to make?
8. Add the following terms to a glossary: sole trader, partnership, private company, public company, limited/unlimited liability, primary industry, secondary industry, tertiary industry.

BUSINESS AS A SOURCE OF GROWTH AND INCREASED PRODUCTIVE CAPACITY

The firm is organised in such a way as to establish clear goals that guide business behaviour. The main goal that is assumed to apply to a firm's market behaviour in economics is **profit maximisation**. In the theory of production in economics, two production periods are studied. The **short run** is a production period where some costs are fixed (e.g. the rent for using business premises) and some are variable (e.g. wages paid to labour) and the scale of plant or operations is also fixed. In the **long run** production or planning period all costs may become variable, as the firm can vary or expand its scale of plant or operations, or even close down, if it is not making a profit. In the long run, the firm's management can expand the business by increasing productive capacity, thereby contributing to the growth in production or output, as well as the employment of labour and other resources such as raw materials and capital.

THE GOALS OF THE FIRM

The goals of the firm are usually selected by the firm's owners and implemented by the managers. In unincorporated business enterprises the owner is usually the manager. However in incorporated business enterprises there is usually a **separation of ownership from control** of the firm. The shareholders are the owners of the firm, who elect a board of directors to run or control the company. The goals of the firm will tend to reflect the preferences of the owners and managers; the level of competition in the industry in which the firm operates; the firm's legal structure; and the general economic environment.

Profit Maximisation

Profit maximisation occurs at the point where there is the greatest positive difference between the total revenue (TR) of the firm, which is gained from selling goods and services, and the total cost (TC) of employing or using resources to produce those goods and services. Profit is calculated as follows:

$$\text{Profit } (\pi) = \text{Total Revenue (TR)} - \text{Total Cost (TC)}$$

Total revenue is equal to the number of units of output sold by the firm multiplied by the price at which they are sold by the firm in markets:

$$\text{Total Revenue (TR)} = \text{Price} \times \text{Quantity Sold}$$

Total costs (TC) include fixed costs (FC) such as rent, which do not vary with output, and have to be paid even if the firm is not producing in the short run. Variable costs (VC) are also part of total costs and include costs such as wages and raw materials which tend to vary directly with the firm's output.

$$\text{Total Cost (TC)} = \text{Fixed Costs (FC)} + \text{Variable Costs (VC)}$$

Firms are assumed to not just try and achieve profits but to maximise profits. If total costs equal total revenue (i.e. $TC = TR$) the firm will break even. If total costs exceed total revenue (i.e. $TC > TR$) the firm will incur a loss and may have to consider shutting down if the trading position cannot be changed to make the firm more efficient and profitable in the long run. If total revenue exceeds total costs (i.e. $TC < TR$) the firm is making a profit, but profit maximisation only occurs where there is the greatest positive difference between total revenue and total cost.

Maximising Sales or Total Revenue

Rather than maximising profits, a firm may attempt to maximise sales or total revenue (i.e. price multiplied by the quantity of goods sold) in order to try and increase its market share relative to its competitors. Another reason for sales maximisation might be that managers, by achieving maximum sales, may use this to try and raise their own status, salaries and bonuses within the business. Firms that try to maximise sales may produce large volumes of output and spend more money on sales and promotional effort, market research and advertising than would firms seeking to maximise profits.

If the goal of sales maximisation is not achieved, the firm may incur larger costs of production which may cause profitability to fall. New entrants into industries often attempt to maximise sales by charging prices below their competitors to attract customers away from a competing brand (e.g. Optus discounting STD calls in competing with Telstra in the 1990s when it entered the telecommunications market).

This price cutting strategy could also lead to lower revenue for a firm if it is unsuccessful. A new firm, unless it is backed by large amounts of capital, cannot sustain losses for long periods of time in seeking to gain a profitable market share (e.g. Compass Airlines could not sustain losses in competing with Ansett and Australian Airlines for market share and sales growth in the early 1990s, and went out of business). In such cases of unsuccessful market competition, the firm will exit the industry after incurring large losses and accumulating debts to its creditors, and may eventually be placed in liquidation.

Maximising Growth

Firms may seek to maximise the growth in business assets rather than profits and sales, as this may ensure that the firm survives in the long run. Growth may lead to increasing market share relative to competitors. A firm seeking to maximise its growth in the long run may undertake large investment in new plant and equipment to increase its productive capacity in the future to meet expected increases in the demand for its products or services. A growth oriented firm may use joint ventures with other companies or a system of franchising to promote its brand name and corporate presence in the market place. Mergers and takeovers are also key vehicles for achieving the goal of maximising growth.

Increasing Market Share

Increasing its share of the market may be the goal of a firm, since a greater market share should ensure that the firm increases its profitability in the long run. If a firm is a new entrant into a market and faces considerable opposition from incumbent competitors, it may use a pricing strategy of undercutting competitors' prices to entice customers to switch from an existing product to its new product or service.

Meeting Shareholder Expectations

Businesses attempt to maximise profits, and incorporated businesses such as proprietary and public companies pay dividends from their profits to their shareholders or owners. Shareholders have an expectation that the business will increase its profits over time thereby increasing their dividend income. They also expect capital growth through rising share prices and a rising price to earnings ratio (i.e. P/E ratio). Maintaining a sound corporate image is also important to shareholders. For unincorporated businesses (i.e. sole traders and partnerships), the owners are usually the managers of the business and their expectations may be different and involve goals other than profit maximisation such as:

- Maintaining a reasonable return on the capital invested in the business;
- Providing employment for the owners of the business and their families or partners; and
- Achieving growth of the business through franchising or expansion of the business into other niche markets such as export markets or other geographic regions or locations.

Satisficing Behaviour

Satisficing behaviour refers to the theory that managers attempt to achieve a range of goals that meet profit and performance projections, but above all ensure the security of the managers' jobs, status and prestige, salary and fringe benefits, corporate image, power and lifestyle. However a satisfactory level of profitability, sales revenue and market share will still need to be achieved by the managers of the firm.



REVIEW QUESTIONS

THE GOALS OF THE FIRM

1. Why does the firm need to establish operational goals?
2. Explain the concept of profit maximisation. Why do economists assume that firms attempt to maximise profits?
3. Using examples, briefly explain the additional goals of a firm such as sales maximisation, growth maximisation, increasing market share, meeting shareholder expectations and satisficing behaviour.
4. Define the following terms: short run, long run, price, total revenue, profit, profit maximisation, quantity sold, fixed costs, variable costs and total cost.

COST AND REVENUE THEORY

Costs refer to the explicit monetary payments (e.g. rent, wages, interest and profit) made by firms for the use of productive resources such as land, labour, capital and enterprise in the production process. There are five main types of production costs which are defined and explained below:

1. Fixed costs (FC) are costs such as rent and interest which do not vary with output. These costs still have to be paid by the firm in the short run whether or not they are producing output.
2. Variable costs (VC) are costs such as wages and raw materials which do vary with output. The more output a firm produces in the short run the higher will be its variable costs of production.
3. Total costs (TC) refer to the sum of fixed and variable costs of production for a firm i.e.

$$TC = FC + VC$$

4. Average cost (AC) refers to the average cost of producing a unit of output by a firm. Average costs are determined by dividing the total cost (TC) of production by the number of units of output (O) produced by a firm i.e.

$$AC = \frac{TC}{O}$$

5. Marginal cost refers to the change in total cost as one more unit of output is produced by a firm i.e.

$$MC = \frac{\Delta TC}{\Delta O}$$

Table 5.3 shows fixed, variable, total, average and marginal costs of production for a hypothetical firm.

Output	Fixed Cost	Variable Cost	Total Cost	Average cost	Marginal Cost
0	\$2m	0	\$2m	0	0
1	\$2m	\$7m	\$9m	\$9m	\$7m
2	\$2m	\$12m	\$14m	\$7m	\$5m
3	\$2m	\$19m	\$21m	\$7m	\$7m
4	\$2m	\$30m	\$32m	\$8m	\$11m
5	\$2m	\$43m	\$45m	\$9m	\$13m
6	\$2m	\$58m	\$60m	\$10m	\$15m

- Total revenue (TR) refers to the total sales receipts a firm receives from selling a given level of output and is equal to the price multiplied by the quantity of output sold i.e.

$$TR = \text{Price} \times \text{Output}$$

- Average revenue (AR) refers to the average price a firm receives for selling its output. It is calculated by dividing total revenue (TR) by the number of units of output (O) sold i.e.

$$AR = \frac{TR}{O}$$

- Marginal revenue refers to the change in total revenue as one more unit of output is sold by a firm i.e.

$$MR = \frac{\Delta TR}{\Delta O}$$

Table 5.4 shows average, total and marginal revenue for the same firm in our example. The firm sells each successive product for a lower price as this reflects the demand for its product. For example, one unit is sold for \$15m and the firm receives a total revenue of \$15m. But if it sells three products it will receive \$33m in total revenue. Therefore the average revenue or price is \$11m per unit of output sold.

Table 5.4: Average, Total and Marginal Revenue (\$m)

<i>Output</i>	<i>Average Revenue</i>	<i>Total Revenue</i>	<i>Marginal Revenue</i>
0	0	0	0
1	\$15m	\$15m	\$15m
2	\$12.5m	\$25m	\$10m
3	\$11m	\$33m	\$8m
4	\$10m	\$40m	\$7m
5	\$9m	\$45m	\$5m
6	\$8m	\$48m	\$3m

We can now determine whether the firm in our example makes a profit or a loss over the range of output of one to six units of output produced. This is shown in **Table 5.5**.

Table 5.5: Total Revenue, Total Cost and Profit or Loss (\$m)

<i>Output</i>	<i>Total Revenue</i>	<i>Total Cost</i>	<i>Profit/Loss</i>
0	0	\$2m	-\$2m
1	\$15m	\$9m	\$6m
2	\$25m	\$14m	\$11m
3	\$33m	\$21m	\$12m
4	\$40m	\$32m	\$8m
5	\$45m	\$45m	0
6	\$48m	\$60m	-\$12m

In microeconomics total profit (π) is equal to total revenue (TR) minus the total cost (TC) of production i.e.

$$\text{Total Profit } (\pi) = \text{Total Revenue (TR)} - \text{Total Costs}$$

Profit Maximisation is where there is the greatest positive difference between total revenue and total cost.

The firm makes a loss of -\$2m if it does not produce any output at all because it must still pay for its fixed costs of production. When one unit of output is produced a profit of \$6m is made. This rises to \$11m with two units of output sold, and to \$12m with three units of output sold. Total profit however falls to \$8m when the firm produces four units of output, and it breaks even when it produces and sells five units of output. If six units of output are produced the firm will make a loss of -\$12m.

Profit is therefore maximised at \$12m by producing three units of output, as this is the point where there is the greatest positive difference between total revenue and total cost.

EFFICIENCY AND THE PRODUCTION PROCESS

Productivity

Productivity refers to the volume of output produced in terms of the volume of inputs used to produce that output over time. Total factor or **multifactor productivity** (MFP) refers to the productivity of all the factors of production combined to produce a given volume of output. **Single factor productivity** (SFP) refers to the productivity of each factor of production over time e.g. land productivity, labour productivity, capital productivity and entrepreneurial productivity. Productivity can be measured by using the following formulae in Equations (1), (2) and (3):

$$(1) \text{ Productivity} = \frac{\text{Output}}{\text{Inputs}} \quad (2) \text{ MFP} = \frac{\text{Output}}{\text{All Inputs}} \quad (3) \text{ SFP} = \frac{\text{Output}}{\text{Single Input}}$$

It is in the interests of the entrepreneur to gain the maximum productivity from the factors of production in order to minimise costs and maximise output from a given level of resources. This avoids the wastage of resources in production. The main sources of productivity improvements in the production process include the increased specialisation of the factors of production through the following means:

- **The division and specialisation of labour** refer to the acquisition of knowledge, skills and experience by labour in production. This can reduce the time taken to complete work tasks, and promote the use of capital in combination with labour in production. The specialisation and division of labour can be promoted through education and training, which can improve the quality and quantity of human capital used in the production process. An example of the specialisation of labour in the building industry would be the various occupations of carpentry, plumbing, electrical trades, tiling, painting and bricklaying. The division of labour would be these trades working together to construct a building such as a residential house or block of apartments, industrial factory, commercial office complex, a retail shopping centre or a warehouse.
- **The specialisation or localisation of land or industry** refers to the trend for firms and industries to locate near each other or in specific locations to reduce production costs. Cost savings may come about from more efficient and cheaper access to raw materials, labour, transport, markets, finance, energy and other support services or inputs. Examples of the localisation of industry are the Port Kembla industrial region in NSW where firms making steel products are located close to the steelworks, or retail firms located in Sydney's Central Business District (CBD) being able to access a large market and support services such as labour, transport, banking and insurance.
- **The specialisation of capital or large scale production** refers to the use of large scale mass production techniques to produce large volumes of output. Manufacturing firms commonly employ highly specialised machines and mass production processes to produce their output. This allows for a high volume of output at minimum cost, and the use of specialised labour and land resources in combination with specialised capital such as automated production lines in factories.

An example of the specialisation of capital would be the production of motor vehicles using robotic welding machines and specialised labour on an assembly line to manufacture car components using advanced capital equipment and technology.

The factors of production can also be substituted for each other, or used in combination in production. The use of capital with land, labour and entrepreneurial resources increases the productivity of these resources, leading to increasing single factor productivity as well as multifactor productivity.

The advantages of rising factor productivity include lower costs; lower prices; increased efficiency; an increased range of goods and services; higher profits and real incomes; enhanced rates of economic growth and technological progress; and rising international competitiveness. However disadvantages that may arise from increasing single and multifactor productivity may include structural unemployment through the de-skilling of labour, and higher rates of structural and technological change in production and industry, because of increased demands for the re-skilling and multi-skilling of the workforce.

THE LAW OF DIMINISHING RETURNS

In the **short run** production period the firm has a fixed scale of plant or operations, and both fixed and variable factors of production. However in the **long run** production period, the scale of a firm's plant is variable and all factors of production may be varied. Fixed factors of production are those that do not vary with output such as land and capital. For example, one machine and one piece of land may be used by a farmer to grow wheat. Variable factors of production vary with output in the short run, and include labour and raw materials. For example, a farmer may employ more units of labour and use more quantities of fertiliser on a farm, if they want to increase the output of wheat over time.

The **law of diminishing returns** or variable proportions suggests that as increasing quantities of a variable factor are added to a fixed factor of production in the short run, total output will eventually decline, leading to diminishing returns to the variable factor. Various assumptions are made regarding the use of the following economic model to explain the law of diminishing returns:

- There are only two factors of production: land and labour.
- One factor such as land is a fixed factor, and the other factor, such as labour, is a variable factor.
- A farmer is assumed to use various quantities of the variable factor of labour in combination with the fixed factor of land to produce wheat.
- The level of technology and all other factors of production are held constant.

Table 5.6. shows the production function or schedule for a farmer who is growing wheat, using a fixed amount of land (i.e. the fixed factor), and varying amounts of labour (i.e. the variable factor).

Total physical product (TPP) refers to the total output of goods using the sum of both fixed and variable factors of production. In **Table 5.6** TPP refers to the total output of wheat using a fixed amount of land and varying amounts of labour inputs. For example if one unit of land and seven units of labour are used to grow wheat, total wheat output or TPP will be 56 units of wheat.

Table 5.6: A Model of the Production Function for Wheat

<i>Fixed factor (Land)</i>	<i>Variable Factor (Labour)</i>	<i>Total Physical Product (TPP)</i>	<i>Average Physical Product (APP)</i>	<i>Marginal Physical Product (MPP)</i>
1	0	0	0	0
1	1	5	5	5
1	2	12	6	7
1	3	21	7	9
1	4	32	8	11
1	5	45	9	13
1	6	54	9	9
1	7	56	8	2
1	8	56	7	0
1	9	50	5.5	-6

Average physical product (APP) is equal to the total physical product (TPP) divided by the number of units of the variable factor of labour (L) e.g. the APP of 8 units of labour is 7 when TPP of 56 units are produced. APP is a measure of the productivity of the variable factor of production labour (L) i.e.

$$\text{APP} = \frac{\text{Total Physical Product}}{\text{Units of Variable Factor}} = \frac{\text{TPP}}{L}$$

Marginal physical product (MPP) is the change in total physical product (TPP) that occurs with the addition of one more unit of the variable factor of labour i.e.

$$\text{MPP} = \Delta \text{TPP} = \text{TPP}_t - \text{TPP}_{t-1} \quad \text{where } t = \text{time}$$

For example the MPP of the 5th unit of labour is 13 units. The values for total physical product, average physical product and marginal physical product calculated in **Table 5.6** are graphed in **Figure 5.2**.

Total physical product increases at an increasing rate with each successive unit of labour employed between 1 and 5. This indicates increasing returns to the variable factor of labour. After the employment of the sixth unit of labour, TPP still increases but at a decreasing rate. This indicates diminishing returns to the variable factor of labour. TPP reaches a maximum of 56 after the employment of the eighth unit of labour and thereafter declines. This indicates negative returns to the variable factor of labour.

Average physical product increases between the employment of the first and sixth units of labour. This indicates the rising productivity of labour as the total physical product of wheat increases with each successive unit of labour employed. If APP is rising, this indicates that the MPP of each successive unit of labour is also rising. MPP must exceed APP for this to occur. The sixth unit of labour maintains the same level of productivity as the fifth (9 units), but the productivity of the seventh, eighth and ninth units of labour, whilst positive, begin to decline. The MPP of the seventh, eighth and ninth units of labour are less than the APP of each of these workers, indicating the declining productivity of labour.

Marginal physical product indicates the rate of change in TPP. MPP rises from 5 with one unit of labour to reach a maximum of 13 with the employment of the fifth unit of labour. Thereafter MPP falls and reaches zero with the employment of the eighth unit of labour, and becomes negative (-6) with the employment of the ninth unit of labour. If MPP exceeds APP, TPP will rise at an increasing rate. When MPP is less than APP, APP will fall, and TPP will increase at a decreasing rate. When MPP equals APP, APP will be at a maximum (at 6 units of labour). When TPP is at a maximum at 56 units with 8 units of labour employed, the MPP is zero and if a ninth unit of labour is employed MPP is negative six (-6).

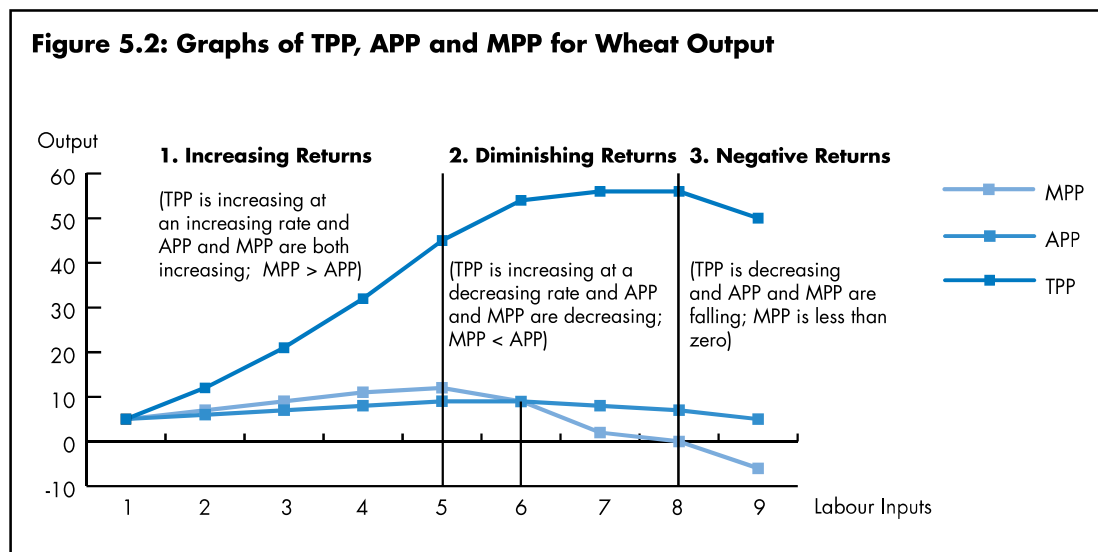


Table 5.7 summarises the findings from the economic model of diminishing returns used in **Table 5.6** and graphed in **Figure 5.2**. The principle of diminishing returns is important in guiding firms to use the most efficient combination of resources to produce their output. As long as MPP is positive and rising, additional quantities of variable inputs like labour can be used. The main constraint faced by a firm in the short run is that a fixed factor such as land or capital cannot be utilised indefinitely with increasing quantities of a variable factor such as labour. Diminishing returns to the variable factor will eventually set in or occur, if the marginal productivity of a variable factor such as labour falls.

Table 5.7: A Summary of the Model of Diminishing Returns

<i>Labour Employed</i>	<i>TPP</i>	<i>APP</i>	<i>MPP</i>	<i>Returns</i>
1 to 5 Units	Increasing at an increasing rate	Positive and Rising	Positive and rising $MPP > APP$	Increasing returns to the variable factor of labour
6 to 8 Units	Increasing at a decreasing rate	Positive but falling	Positive but falling $MPP < APP$	Decreasing returns to the variable factor of labour
9 Units	Decreasing	Positive but falling	Negative	Negative returns to the variable factor of labour



REVIEW QUESTIONS

PRODUCTIVITY AND THE LAW OF DIMINISHING RETURNS

1. What is meant by productivity? Distinguish between single factor and multifactor productivity.
2. Using examples, explain the benefits of the specialisation of land (localisation of industry), labour (the specialisation and division of labour) and capital (large scale production and automation).
3. State the law of diminishing returns. What are the assumptions of an economic model used to explain the law of diminishing returns? What is the difference between increasing, decreasing and negative returns to a variable factor such as labour?
4. Explain the difference between fixed and variable factors of production and the short and long run production periods. Define the concepts of TPP, MPP and APP in production.
5. Graph the TPP, APP and MPP curves from the following production function and determine the point at which diminishing returns to labour in production set in or occur.

<i>Land</i>	<i>Labour</i>	<i>TPP</i>	<i>APP</i>	<i>MPP</i>
1	1	25		
1	2	40		
1	3	60		
1	4	70		
1	5	80		
1	6	85		

ECONOMIES OF SCALE

In the **long run production period** the firm can avoid the onset of diminishing returns by varying any or all of the factors of production. This includes the scale of plant it is using to produce output (e.g. firms may expand the size of a farm, mine, factory, warehouse, shop or office complex). In expanding productive capacity a firm may be able to generate what are known as economies of scale.

Economies of scale refer to the reductions in average costs or costs per unit of output as output increases. They are the 'savings of size' if a firm is able to increase the size or scale of its plant or operations in the long run production period. For example, a business may find that with increasing market share or growth in market demand for its product or service, it may need to expand its scale of operations, such as building or renting a larger factory, shop, office or warehouse complex. In the long run production period all factors can become variable, including fixed factors such as land and capital.

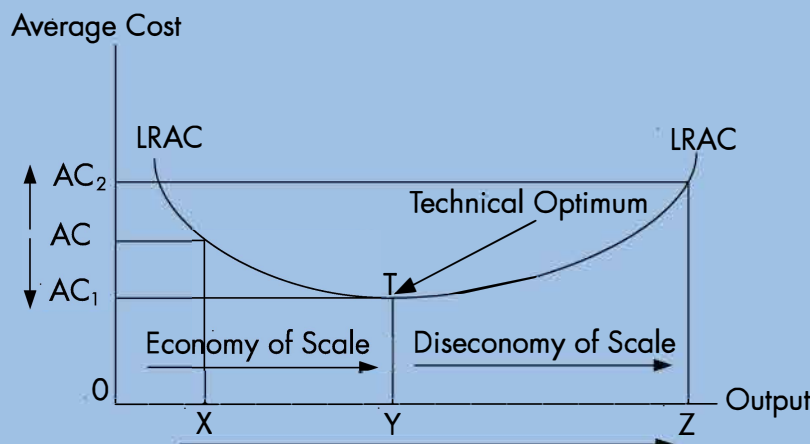
With reference to the firm's long run average total cost curve (LRAC) curve it is possible to use an economic model to show how economies of scale can come about. The LRAC curve is often referred to as the **planning** or **envelope curve** since it represents the locus of points that join average costs associated with differing levels of output and plant sizes for a firm. In **Figure 5.3** if the firm produced output level OX, its average cost (AC) of production would be AC. Average cost is found by dividing the total cost or TC (i.e. the sum of fixed and variable costs) of output by the number of units of output (O) i.e.

$$(1) \quad AC = \frac{TC}{O} \quad (2) \quad TC = FC + VC$$

Total cost (TC) consists of both fixed costs (FC) such as rent on land and variable costs (VC) such as wages for employing labour. If the firm expanded its plant size in the long run and produced at output level OY in **Figure 5.3**, the average cost of this level of output would fall from AC to AC₁. The average cost (AC₁) at output OY is the minimum point (T) on the LRAC, and is the lowest average cost per unit of output that the firm can achieve for any given level of output with this scale of plant.

This minimum point (T) on LRAC in **Figure 5.3** is known as the point of **technical optimum** or the point of **technical efficiency** because average cost is minimised, and this is also the optimal scale of plant size for the firm. This is the achievement of an economy of scale by the firm. By having a bigger plant size, the average or unit cost of production falls from AC to AC₁, and this is indicated by the downward sloping part of the LRAC curve between output levels OX and OY.

Figure 5.3: Internal Economies and Diseconomies of Scale



If the firm continued to increase its plant size and produced OZ level of output, the average cost would rise from AC_1 to AC_2 . By increasing the level of output from OX to OY, the firm is experiencing economies of scale since larger plant sizes result in falling average costs. However by increasing the level of output further from OY to output level OZ, the firm experiences **diseconomies of scale** since average costs per unit of output start to rise with increasing plant size. There are two types of economies and diseconomies of scale: internal and external, which are discussed in the following sections.

Internal Economies of Scale

Internal economies of scale refer to the cost savings or cost advantages that accrue to the firm because it becomes more efficient in allocating its internal resources. Internal economies of scale are represented by the downward sloping section of the LRAC curve between points OX and OY in **Figure 5.3**. Internal economies of scale result from cost savings from within the firm's direct span of control. Sources of internal economies of scale can include the following:

- **Increased specialisation and division of labour** which may lead to higher labour productivity and output. This may be sourced from increased education and training of labour resources.
- **Increased specialisation of capital** which may raise total factor productivity and labour productivity in particular. Total output will increase as a result of using specialised capital in production.
- **Lower input costs** through the discounted purchase of raw materials and other inputs in bulk.
- **Access to cheaper finance** may result from a firm increasing its scale of production due to larger market share, sales and profits. Larger companies or businesses tend to pay lower interest rates on their borrowings, because the risk associated with borrowing is less than for small businesses.
- **By-products or waste materials may be used from large scale production** because of recycling or the creation of a market for waste products from the production process e.g. a printing business may recycle excess paper for usable products such as business cards, note pads and packaging.
- **Research and development (R and D)** and technological advances may lead to new products and processes for a firm, which may lower production costs and increase the sales of its output.

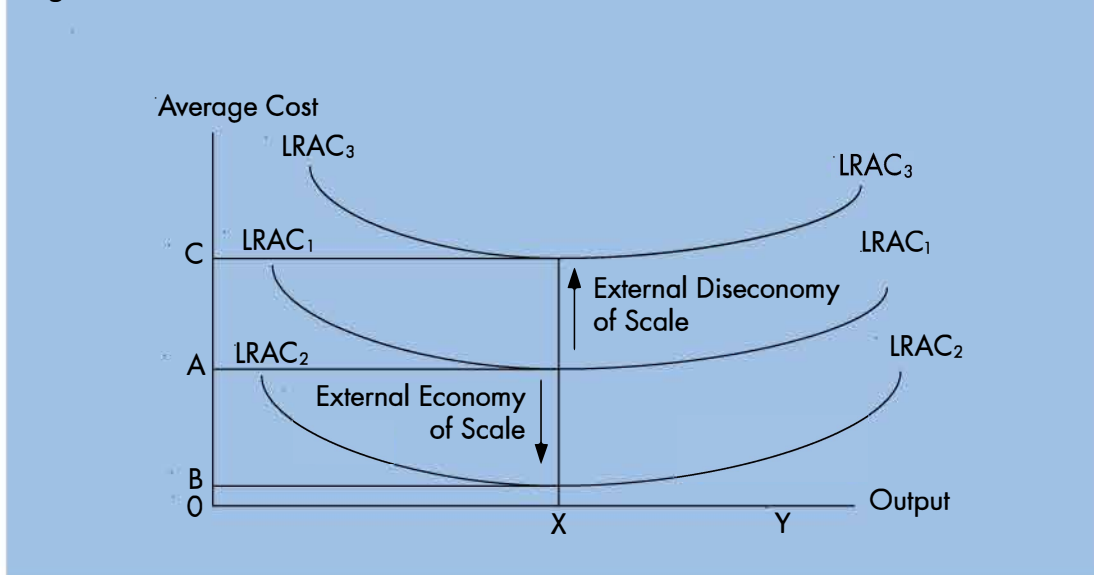
Internal Diseconomies of Scale

Internal diseconomies of scale refer to increases in production costs per unit as output increases such as between points OY and OZ in **Figure 5.3**. Increases in plant size beyond the point of technical optimum (T) will lead to rising average costs as the fixed factor (e.g. land or capital) is incapable of yielding further reductions in average costs. This may be caused by any or all of the following factors:

- The **management of the firm may become too complex and costly** to co-ordinate as there is a lack of communication between different departments and different layers of management (i.e. senior, middle and supervisory levels of management) leading to bureaucratic inertia or inefficiency.
- **Increased output may only occur with more variable factors** (e.g. labour and raw materials) which may raise variable costs and increase average costs at the given level of plant size.
- **Congestion in the production process**, errors in production, higher costs in the distribution of products and the administration of the business, may raise costs to such an extent that average costs keep rising and become difficult to control and reduce.

External Economies of Scale

External economies of scale result from reductions in average costs due to factors outside the firm's direct control. These may be the result of growth in the industry in which the firm operates, causing a reduction in the long run average cost curve faced by all firms in the industry. This situation is illustrated

Figure 5.4: External Economies and Diseconomies of Scale

in **Figure 5.4**. The LRAC curve shifts from $LRAC_1$ to $LRAC_2$, leading to lower average costs over the whole range of output. For example, at output level OX the average cost is reduced from OA to OB . External economies of scale may result from the localisation of industry or industrial agglomeration, where firms in a similar industry locate near each other to reduce costs such as the following:

- **Lower resource costs** because of proximity to natural resources e.g. the steelworks at Port Kembla are located near Illawarra coal deposits.
- **Improved transport facilities** provided by government to service the needs of major industrial, mining or commercial complexes. These could include expanded rail, bus, port or airport services.
- **Access to cheaper power and infrastructure** provided by the government for the whole industry.
- **Proximity to a healthy, educated, trained and skilled labourforce** which increases labour productivity and provides a skills base for firms in the whole industry (such as a technology park).
- **Research and development** of new methods of production and new products as a result of industry co-operation or government funded research and development through CSIRO.
- **Access to a lower cost of finance** due to growth and profit opportunities in the industry as a whole.

External Diseconomies of Scale

External diseconomies of scale result from increases in average costs due to factors outside the firm's direct control. They may be due to the growth of the industry in which the firm operates, leading to a rise in the long run average cost curve faced by firms in the industry. This is illustrated in **Figure 5.4**. The LRAC curve shifts upwards from $LRAC_1$ to $LRAC_3$ leading to higher average costs over the whole range of output. For example, at output level OX the average cost is increased from OA to OC . External diseconomies of scale may also result from the localisation of industry or industrial agglomeration because of increasing congestion, pollution and competition between firms in the industry:

- **Higher resource costs** may be paid as firms compete for available resources or inputs.
- **Increased government regulation** of the industry, which can add to the compliance costs of the industry and each firm involved in that production activity. Examples could include regulations over pollution emissions, the disposal of hazardous wastes or traffic and parking restrictions. Other examples could be onerous government zoning laws, development applications and building codes.

- **Higher labour costs** due to labour skills shortages, as the industry expands and higher wages and fringe benefits have to be paid by firms to attract (and retain) skilled labour in the industry.
- **Increased congestion and pollution** in the industry e.g. a lack of extensive or suitable parking facilities or higher levels of traffic congestion and industrial pollution in an industrial region.

Returns to Scale

A related but different concept to economies of scale is returns to scale. Returns to scale refer to the relationship between inputs and outputs (refer to **Table 5.8**). As a firm alters its plant size, the ratio of its inputs to outputs may also change:

- Increasing returns to scale occur when inputs (e.g. land, labour, capital and enterprise) are for example, doubled, and output more than doubles (e.g. from 16 to 48 in **Table 5.8**). This also occurs over output range XY in **Figure 5.3** and output range OX in **Figure 5.4**.
- Constant returns to scale occur when inputs for example, are doubled, and output exactly doubles e.g. in **Table 5.5**, output exactly doubles from 48 to 96, when the labour employed increases from 8 units to 16 units, and capital employed increases from 2 units to 4 units.
- Decreasing returns to scale are when inputs are doubled, but output increases by less than double. This would occur in the portion of the LRAC curve in **Figure 5.3** between point OY and YZ and between X and Y in **Figure 5.4**. This occurs in **Table 5.8** between an output of 96 and 180 units.

Table 5.8: An Example of Returns to Scale

Units of Labour	Units of Capital	Units of Total Output	Returns to Scale
4	1	16	Increasing
8	2	48	
16	4	96	Constant
32	8	180	Decreasing



REVIEW QUESTIONS

ECONOMIES OF SCALE

1. Define an economy of scale. Distinguish between an economy and a diseconomy of scale.
2. Why do economies and diseconomies of scale occur in the long run? Draw a diagram of the long run average cost curve to illustrate the relationship between output and average cost. Mark in the point of technical optimum, and economies and diseconomies of scale on the diagram.
3. Explain the difference between internal economies of scale and internal diseconomies of scale. What are some possible causes of internal economies and diseconomies of scale?
4. Explain the difference between external economies of scale and external diseconomies of scale. What are some possible causes of each? Draw a diagram to illustrate how external economies and diseconomies of scale can arise in production.
5. Explain the difference between increasing, constant and decreasing returns to scale.

THE IMPACT OF INVESTMENT, TECHNOLOGICAL CHANGE AND ETHICAL DECISION MAKING ON THE FIRM

Investment is the creation of new capital goods by a firm which can assist in increasing the productive capacity of a firm to produce more consumer and capital goods in the future. **Technological change** refers to changes in the methods and techniques used to produce, distribute and market goods and services. Investment is required to undertake research and development, which may result in technological change. **Innovation** is often associated with this process, as new products and processes can result from technological improvements in the production process.

When a firm undertakes investment spending it can be separated into three components as suggested by the following equation:

Gross Investment = Net Investment + Replacement Investment (Depreciation of the Capital Stock)

Gross investment refers to the total level of investment spending undertaken, including new or net investment which is the net addition to the existing capital stock, plus **replacement investment** to allow for the depreciation of the existing capital stock. Capital goods depreciate over time because of wear and tear and obsolescence, and have to be replaced with new capital goods to maintain or increase a firm's current productive capacity. **Net investment** on the other hand is investment in new plant and equipment and inventories. **Inventory investment** refers to investment by a firm in raw materials, intermediate goods and new plant and equipment that increases the firm's existing productive capacity.

Capital widening takes place if the firm is able to maintain the rate of growth of its capital stock with the rate of growth of the labourforce, whereas **capital deepening** will take place if the rate of growth of the capital stock exceeds the rate of growth of the labourforce. Capital widening and deepening are important means by which labour and multifactor productivity can be raised by firms in the long run.

Production Methods

As a result of investment and technological change, production methods may also change from being labour intensive to being more capital intensive. When capital is combined with labour, the productivity of labour is usually increased, resulting in more output and higher multifactor productivity. Production methods may become more mechanised, computerised, automated and digitised. This can lead to an increase in the speed of production, helping to reduce production time and average costs. A result of this can be the release of resources for use in the distribution and marketing of final goods and services.

Prices

The relationship between investment, technological change and prices is that lower production costs may be passed on to consumers by firms in the form of lower prices, thereby raising their real incomes. For example, as investment in new computer hardware and software technology has reduced production costs, these savings have led to lower prices, and a greater range or choice for consumers in buying both computer software and hardware products. Other manufactured goods have also tended to fall in price, leading to greater consumption by a wider cross section of people of various incomes. In addition, generic and non generic brands have been developed (to accommodate for different consumer tastes and income levels) which have also increased the range of consumer choice in product markets.

Employment

The impact of investment and technological change on a firm's level of employment can be twofold. Firstly, new technology will lead to the demand for specialist labour skills which may exist within the firm through the training of existing staff. If not, then the firm will create job opportunities for

newly skilled staff in information technology, precision engineering or the use and operation of highly specialised capital equipment. Secondly, the introduction of new technology and capital goods may lead to some **structural unemployment** as the existing skills of some workers may become redundant due to new production methods being introduced which are labour saving. Those workers who are made redundant will have to be re-trained and placed in other departments of the firm, or paid compensation in the form of a redundancy pay out and assisted with re-training and relocation for alternative employment. Some level of **de-skilling** may also occur because of structural change, and the demands for re-skilling and up-skilling will vary with the rate of structural change in the economy and in particular industries such as printing, publishing, car manufacturing and telecommunications.

Output

A firm's output may increase dramatically due to the introduction of new investment and technological change. Due to the existence of internal and external economies of scale, and returns to scale, the firm may experience falling unit costs and increasing returns to scale as output increases with a more optimal scale of plant. The firm's output mix may also change due to **economies of scope** where joint products may be produced sharing the same inputs, which can also lower average costs. Greater product or service variety may also be possible with new investment and technological change, which can lead to new products and services being produced or existing ones being modified and improved in quality.

Profits

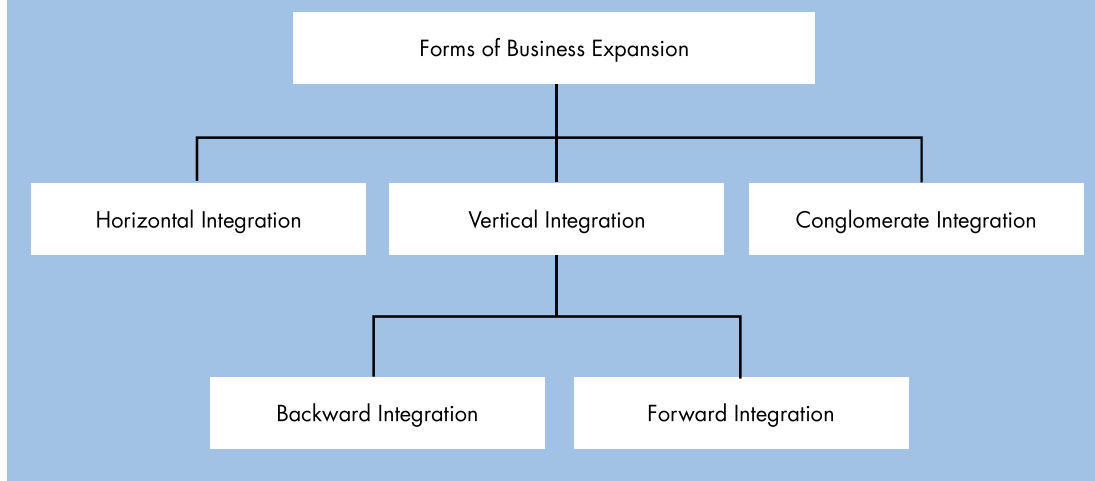
Businesses invest in new capital and technology with a view to increasing their stream of profits in the future. If new capital and technology can increase a firm's competitiveness in domestic and world markets, enabling it to capture a greater market share, this will lead to higher total revenue. The firm may also be able to cut its costs of production and reap economies of scale. With lower costs of production, the savings may be passed on to consumers in the form of lower prices and/or improved products. This in turn may lead to a higher level of sales, and if total revenue grows more than proportionately to total costs, total profit may increase, leading to further growth of the firm in its industry. The firm may also experience a rise in its market power if it is able to reap **supernormal profits** by eliminating competition in the market place. Microsoft, Google, Facebook, Amazon and Apple are good examples of companies which have reached a dominant global position, partly because of their ability to innovate and absorb competitors, and thereby accumulate supernormal profits from their various market segments in the global computer, Internet, mobile phone, social media and electronic commerce industries.

Types of Products

Investment in new capital and technology which reduces costs can also lead to the development of new products and services such as smart phones and Internet services. Lower costs may give a firm the flexibility to shift some of its resources out of certain types of production, which can be maintained with higher productivity of existing resources. New products or a greater variety of products can lead to a more diverse production base (i.e. diversification) and further growth and expansion of a business firm. This may come about from widening the market or deepening the market, enabling the firm to target new markets or increase its penetration of existing markets by taking sales away from its competitors.

Such growth and expansion can come about from horizontal and vertical integration or the diversification of the product base. These forms of business expansion are illustrated in **Figure 5.5**.

- **Horizontal integration** is where a firm takes over or merges with other firms engaged in the same line of production i.e. producing the same types of goods or services.
- **Vertical integration** is where a firm takes over or merges with other firms engaged in a different stage of production i.e. producing goods or services in line with its production process.

Figure 5.5: Methods of Business Expansion

- **Backward integration** is where a firm takes over or merges with a raw material supplier.
- **Forward integration** is where a firm takes over or merges with another firm engaged in the wholesaling or retailing of its product or service.
- **Conglomerate integration** is where a firm establishes subsidiaries or buys subsidiaries which are under the control of one firm (i.e. the parent or holding company). These subsidiaries may not necessarily produce goods and services related to the parent company's line of production.

Globalisation

Globalisation refers to the creation of a single world market for goods and services caused by:

- The revolution in information and communications technology (ICT) and lower transport costs;
- Reductions in barriers to world trade such as cuts to subsidies and tariffs and other trade barriers;
- The increasing dominance of multi-national corporations (MNCs) in world trade; and
- The greater mobility of capital and finance between countries and regions (i.e capital mobility).

Globalisation has led to small, medium and large scale firms investing in new capital and technology to access the global market for goods and services. Often this is facilitated through access to the **Internet** or information super highway, which allows firms to target new markets outside of traditional domestic markets, or new firms servicing niche markets within the global market or domestic market.

There is a growing amount of **electronic commerce** in world trade, particularly in the provision of services such as telecommunications, social media, travel, tourism, banking and finance, insurance, business services such as accounting, and in the fields of sport, leisure, recreation, media and entertainment.

Manufactured goods, particularly elaborately and simply transformed manufactured goods (i.e. ETMs and STMs), have also been standardised and customised for sale in global markets in Europe, the Americas and East Asia. This has resulted in the spread of global brands for many goods and services.

Multinational corporations (MNCs) which are dominant in many global markets have **global production networks**, which often utilise low labour costs in developing countries. This enables MNCs to reap economies of scale by standardising their production facilities through global production webs or supply chains. The reduction in production costs and the marketing of standardised goods and services globally assists MNCs in maximising profits on a global scale. An excellent example of global production webs include the location of many manufacturing plants of MNCs in the low cost Special Economic Zones in Southern and Eastern China. Another example is the relocation of MNC call centres to Southern Indian cities such as Bangalore and Hyderabad to take advantage of lower labour costs.

Environmental Sustainability

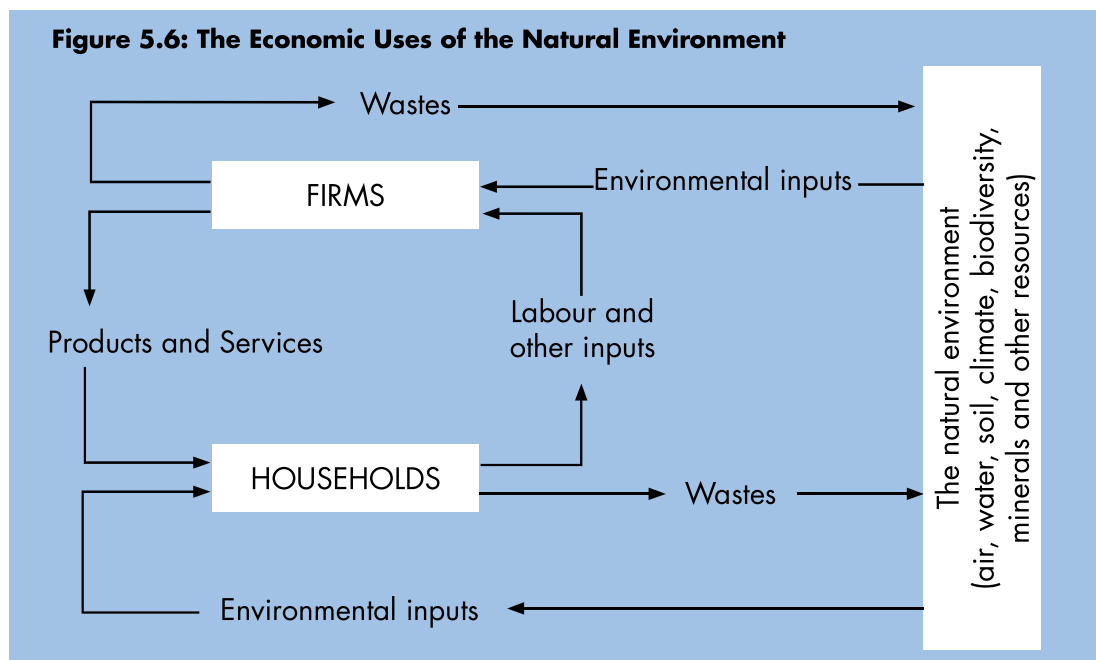
Environmental sustainability refers to the use of natural resources in a way that preserves resources for use by future generations and does not degrade or pollute the environment in the present. Firms have an important role to play in the preservation of resources by ensuring that their production activities do not contribute to environmental problems such as pollution, land degradation, loss of biodiversity and increased levels of greenhouse gas emissions (which can accelerate the rate of climate change).

The natural environment is a source of natural resources for private production and the receptacle for waste for many industries in advanced, emerging and developing economies. The management of environmental problems by individuals and firms is important for ensuring that the quality of life is not reduced through the over exploitation of both **renewable and non renewable environmental resources**, and the pollution of the natural environment by unsustainable growth in private production activities.

Figure 5.6 shows how households and firms interact with the natural environment. Households and firms are two of the main sectors in an economic system which interact with the environment. There are three main flows between an economic system and the natural environment:

1. The natural environment is a **source of raw materials** or environmental inputs such as air, water, soil, forests, climate, minerals, fish and other biodiversity (such as plants, animals, birds and insects) used by humans for production, consumption and recreational utility.
2. The natural environment is a **receptacle for both biodegradable and non biodegradable waste** products from households and firms. Some of this waste may cause pollution and the degradation of the natural environment such as oil spills or the dumping of toxic wastes into waterways.
3. The natural environment **provides amenities** or **renewable resource flows** such as beautiful landscapes, wildlife, beaches, harbours, mountains, forests, lakes and rivers which can be used for recreational and leisure activities by humans such as sport and tourism.

Increasingly firms are being encouraged to recycle non renewable resources in their production processes and to use alternative technologies and renewable energy sources (such as solar, wind, tidal and thermal power) to reduce their emissions of greenhouse gases, which will help to slow the rate of global climate change and achieve a greater level of domestic and global environmental sustainability.



Ethical Decision making

Ethics refer to the fundamental principles of 'right and wrong' that guide human behaviour. In relation to businesses, ethical principles are evident in the scrutiny that business activities are subjected to by governments, communities and individuals in relation to the public interest and community standards. In business, a formal set of ethical principles is embodied in the various types of legislation which regulate business activities such as manufacturing, marketing, finance, accounting, taxation and employment relations. Apart from these legal sanctions which regulate business behaviour and conduct, there is also a set of moral principles which society upholds for the 'greater good', which apply to all individuals including the employees, owners, shareholders, managers and directors of businesses and companies.

In the 2000s there have been many examples of unethical business and corporate behaviour, both in Australia and globally. These include the payment of bribes by the Australian Wheat Board to the Iraqi government to secure wheat contracts; under funding of compensation by James Hardie for employees suffering from asbestosis; price fixing in the packaging industry by the Visy Group and Amcor Ltd; the massive oil spill caused by BP in the Gulf of Mexico; and evidence of misconduct by the Hayne *Royal Commission into Misconduct in the Banking, Superannuation and Financial Services Industry*.

Government legislation has also generally been strengthened to deal with cases of white collar crime including fraud, misleading conduct and behaviour, embezzlement and money laundering. In many cases, company directors have been held personally, legally and financially responsible for their actions, since their behaviour and decisions can affect the various stakeholders in a business or company such as:

- Customers concerned over honesty, product standards, safety and prices.
- Shareholders concerned over returns on their investment portfolios.
- Employees concerned over wages, employment security and workplace health and safety (WHS).
- Local communities concerned over the impact of business activities on suppliers, local communities and the natural environment.
- Suppliers/creditors concerned about the solvency of business customers.
- Governments concerned over the payment of taxes and business compliance with legislation.
- Society at large, concerned over the issue of corporate citizenship and corporate governance.

The recent occurrence of major cases of corporate fraud, 'wage theft', the operation of cartels and price fixing and misconduct in the banking, superannuation and financial services industry in Australia illustrate the need for a strong regulatory framework in markets including financial and product markets. All businesses, but especially large corporations which hold billions of dollars of assets and employ large workforces must comply with the following legislative requirements imposed by the Australian government and its agencies in order to protect major stakeholders in markets:

- Accurate and regular reporting of financial accounts;
- Disclosure of relevant and important financial documents; and
- Compliance with specific regulations and legislation affecting an industry.

In Australia there is a strong regulatory framework enforced by the following government authorities:

- The ACCC enforces the *Competition and Consumer Act 2010*, helping to uphold competition in markets, protect consumers and prevent anti-competitive behaviour by firms;
- The ASIC regulates companies and enforces the *Corporations Act*, as well as being responsible for consumer protection in financial markets; and
- The Australian Prudential Regulation Authority (APRA) has responsibility for the prudential supervision of banks and all deposit taking institutions, and the Reserve Bank of Australia (RBA) is responsible for ensuring the stability of the entire Australian financial system.



REVIEW QUESTIONS

THE IMPACT OF INVESTMENT, TECHNOLOGICAL CHANGE AND ETHICAL DECISION MAKING ON THE FIRM

1. Define investment and technological change. How are they related to each other?
2. Why are investment and technological change important to a firm's growth and competitive position?
3. Explain the difference between gross, net and replacement investment. How are they linked?
4. Why may a firm invest in capital widening and capital deepening?
5. What effects might investment and technological change have on a firm's production methods, prices and employment?
6. What effects might investment and technological change have on a firm's output, profits and the types of products it produces?
7. Explain how a firm can grow through horizontal and vertical integration and diversification.
8. Using examples distinguish between backward and forward integration.
9. What is meant by globalisation? How have investment and technological change led to opportunities for firms in the global market place?
10. Discuss the link between the process of globalisation and the development of global production webs and supply chains by multinational corporations (MNCs).
11. Explain how multinational corporations can use global production networks to reap economies of scale in production. Use an example of an MNC like Apple or Google to illustrate your answer.
12. What is meant by environmental sustainability? Explain how firms could contribute to environmental problems through their production activities.
13. Discuss how firms can make their production activities more environmentally sustainable.
14. Discuss the importance of ethical decision making in business activities.
15. How does the Australian government regulate business activities to protect consumers, investors, businesses and the community?
16. Define the following terms and add them to a glossary:

backward integration
business expansion
conglomerate integration
depreciation of capital
diversification
environmental sustainability
ethical decision making
forward integration
globalisation
gross investment

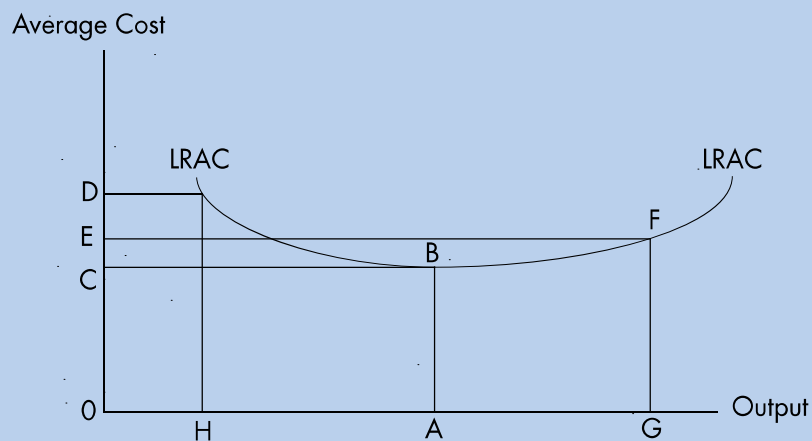
horizontal integration
inventory investment
investment
mergers
net investment
replacement investment
structural change
takeovers
technology
vertical integration

CHAPTER 5: SHORT ANSWER QUESTIONS

Quantity of Labour	Total Physical Product
1	200
2	290
3	370
4	430
5	470
6	490
7	480

Refer to the table above of a firm's production function and answer the questions below. Marks

- What is the marginal physical product (MPP) of the fifth labourer? _____ (1)
- What is the average physical product (APP) of the seventh labourer? _____ (1)
- How many labourers are employed before diminishing returns set in? _____ (1)
- Explain what is meant by the law of diminishing returns. _____ (2)

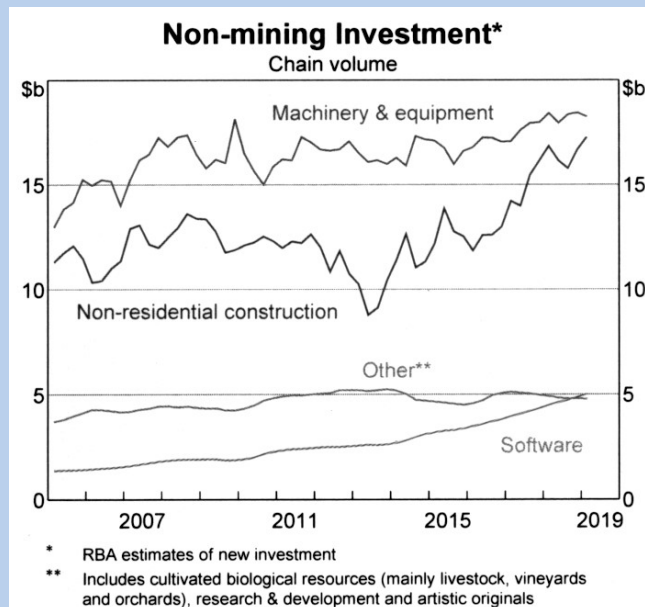


Refer to the diagram above of a firm's long run average cost curve and answer the questions below.

- What is the point of technical optimum for the firm? _____ (1)
- Over output range AG what type of returns is the firm experiencing? _____ (1)
- If the firm increased output from OH to OA by how much would its average cost fall? _____ (1)
- Distinguish between an economy and a diseconomy of scale. _____ (2)



CHAPTER FOCUS ON THE ROLE OF BUSINESS IN THE ECONOMY



"Non mining investment apart from infrastructure remains elevated, but has been growing more slowly over the past year. In particular, growth in non-residential building investment has slowed, after a period of strong growth over 2017 and the first half of 2018. However, building approvals remain around their average since 2016 and the stock of work yet to be done on private non-residential buildings remains elevated, reflecting work underway on offices, warehouses and other commercial buildings. Investment in machinery and equipment and other assets has also been growing at a subdued pace."

Source: Reserve Bank of Australia (2019), *Statement on Monetary Policy*, August.

Discuss the reasons why businesses undertake investment and why private non mining business investment has increased in Australia in recent years.



CHAPTER 5: EXTENDED RESPONSE QUESTIONS

1. What are the main features of sole traders, partnerships, private and public companies? What advantages do companies have over unincorporated businesses? Explain the main goals of business firms.
2. What is meant by the law of diminishing returns? Use an economic model and state its assumptions to show the behaviour of total, average and marginal physical product in illustrating the law of diminishing returns.
3. Distinguish between internal and external economies of scale. What are the main sources of internal and external economies of scale? What might cause internal and external diseconomies of scale to arise?
4. Why do firms undertake investment spending? What impact do investment and technological change have on production methods, prices, output, profits and employment?
5. Distinguish between horizontal, vertical and conglomerate integration. How can these methods of business expansion lead to increased profits for firms?
6. Discuss the main reasons for the emergence and spread of the process of globalisation. Explain the link between the global production networks of multinational corporations and economies of scale.
7. Discuss the main goals of firms and the importance of environmental sustainability and ethical decision making in a firm's behaviour in markets.



CHAPTER SUMMARY

THE ROLE OF BUSINESS IN THE ECONOMY

1. A firm is any business organisation established to produce goods and services in order to satisfy consumers' needs and wants usually in return for a profit. An industry is a collection or aggregation of firms engaged in a similar line or range of production of goods and services.
2. The main types of business firms classified according to their legal structure include sole traderships, partnerships, proprietary (private) companies and public companies.
3. The main types of industries classified in the Australian economy include the primary, secondary, tertiary, quaternary and quinary industries.
4. A firm's production process consists of combining productive inputs (i.e. land, labour, capital and enterprise) with technology and management expertise in order to produce outputs such as goods and services for consumers.
5. A firm faces two production or planning periods known as the short run and the long run. The short run is where some factors of production are fixed (such as the scale of plant) and some are variable (such as labour and raw materials). The long run is a period where all factors of production become variable, so that a firm can change its scale of plant in order to expand production.
6. The main goal of a firm is to maximise profits (π) by achieving the greatest positive difference between total revenue (TR) and total cost (TC). Other goals of the firm may include the maximisation of sales or total revenue; maximising growth of the firm; increasing the firm's market share; meeting shareholders' expectations; and satisficing behaviour, where managers may seek to enhance their own power, status, income and prestige in the business.
7. Productivity refers to the amount of output produced in terms of the volume of inputs used over time. Firms can increase their productivity through the specialisation of the factors of production such as the division and specialisation of labour; the specialisation or localisation of land or industry; and the specialisation of capital through large scale production techniques.
8. The law of diminishing returns suggests that as increasing quantities of a variable factor (such as labour) are added to a fixed factor (such as land or capital) in the short run, total output will eventually decline, leading to diminishing returns to the variable factor. A model of a firm's production function can illustrate this law by showing trends in total physical product (TPP), average physical product (APP) and marginal physical product (MPP) with increasing variable inputs.
9. Economies of scale refer to reductions in unit costs of production as a firm increases its output. Economies of scale may be realised in the long run production period as a firm increases its scale of plant. There are two types of economies of scale: internal and external. Internal economies of scale arise from improvements in the productivity of resource use within the firm. External economies of scale are derived from productivity improvements outside the firm's direct operations, such as improved transport or education facilities provided by the government to an industry.
10. Diseconomies of scale arise when a firm's unit costs of production rise when output increases. There are both internal and external sources of diseconomies of scale.
11. Returns to scale refer to the relationship between the volume of inputs used in production and changes in total output.
12. Investment and technological change can impact on a firm's production methods; the employment of labour; output produced; the prices of its products; profits; and the types of products produced.
13. Environmental sustainability and ethical decision making are important considerations in a firm's market behaviour. Business behaviour is regulated by governments through legislation.