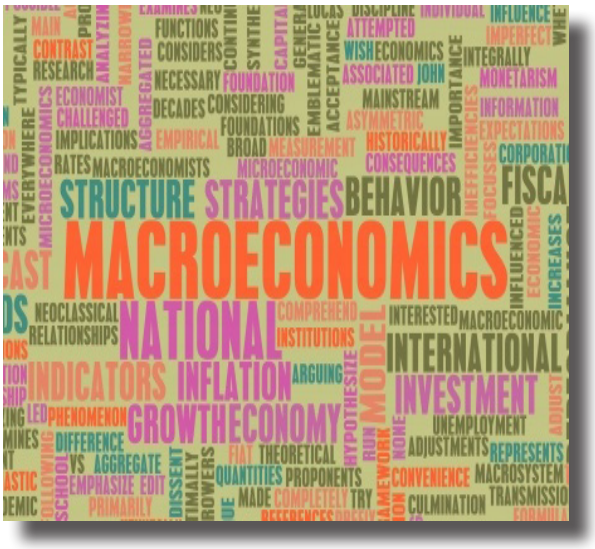
Chapter 4 The nature and purpose of macroeconomic activity

4.1 The nature of macroeconomic analysis

Chapters 1 to 3 focused on the role of markets in allocating scarce resources and how the decisions made by households, businesses and governments influenced prices and the key economic decisions of what, how and for whom to produce. The final combination of goods and services that is produced at any point in time is also likely to have macroeconomic ramifications. This chapter is an introduction to macroeconomics, which is the study of economy-wide issues. Macroeconomists look at the causes and effects of changes in key aggregate measures of the economy such as national production, income and expenditure, unemployment, inflation and foreign debt. Macroeconomics is concerned with the 'big picture' of how the Australian economy performs (based on a number of benchmarks), the response of macroeconomic variables to changes in key factors and the role of government in influencing the level of economic activity. Other economies from around the world will also be considered in this area of study. Ultimately, the goal is to use the knowledge about the macroeconomy to develop policies (see Chapters 8 - 12) that can help to achieve a number of domestic economic goals (Chapter 5), which are directly and indirectly linked to improvements in living standards.



The link between **microeconomics** and **macroeconomics** is a strong one. It is important to understand how individual markets work if one is to draw conclusions about the macroeconomy. For example, in order to understand how a change in a macroeconomic factor such as interest rates will affect the total demand and supply across the economy, knowledge of the way people respond to the change in this key relative price is needed. This chapter focuses heavily on the factors that influence the total demand and supply available in the economy. These factors will be important knowledge that will be needed as you proceed through the rest of the course.

Macroeconomics therefore focuses heavily on the causes and consequences of changes in economic activity. Economic activity refers to the production of goods and services in an economy over a period of time. This can generally be measured by total expenditure in an economy, the volume of production and the income that it is generated from the activity. Economic activity therefore generates goods and services to meet the needs and wants of households (the end users of the production), employment and income.. In some cases the economist (or government) may be interested in the whole economy but other measures of economic activity may focus on aggregate indicators of specific areas.

The Australian Bureau of Statistics collects data on economic activity on a daily basis. The most comprehensive statistic is **Gross Domestic Product (GDP)**, which provides information about the level and growth in the production of goods and services in Australia. (Australia's) GDP is defined as the final market value of all goods and services produced in the (Australian) economy over a given period of time. The inclusion of the word 'gross' indicates that it does not deduct the cost of capital depreciation. GDP is usually calculated and reported every three months with the performance for the whole being reported at the same time. GDP will be discussed in more detail in Chapter 5, when the goal of strong and sustainable economic growth is considered.

Review Questions 4.1

1. Distinguish between what is studied in microeconomics and macroeconomics.
2. Explain why knowledge of microeconomic theory is important for macroeconomic analysis.
3. Explain what economists are referring to when they discuss 'economic activity'. What is the most commonly used indicator for measuring economic activity?

4.2 Living Standards

When economists look at the impact of economic activity or changes in government policy, they will want to ascertain how living standards have been affected. Living standards can only ever be an average measure, as each person in the economy will have different access to the elements that are discussed in the subsequent sections. Economists start their discussion of living standards by looking at the distinction between material and non-material standards. This was briefly discussed in Chapter 1, but will be now be analysed in terms of some of the key factors that affect living standards.

Material living standards

Economic activity is designed to meet the needs and wants of people, and most economies have evolved into sets of interdependent markets designed to allocate scarce resources. Governments all around the world also intervene in the market (to differing degrees) in the hope that they can allocate resources more efficiently or more equitably. Given that economists sometimes disagree on the best way to achieve allocative efficiency and the citizens of a country might have different values and goals themselves, it is often difficult to determine the aggregate outcome of any change on living standards.

The first aspect of living standards is referred to as **material living standards**. This measure looks at the ability of individuals to access goods and services. In a market-orientated economy, this will be heavily influenced by households' **purchasing power**. Can the households buy the goods and services they need and want with the income they receive? Through government intervention, this access to goods and services can be altered. It may be increased for some groups and reduced for others. Those who believe that increases in the consumption of goods and services leads to a more enjoyable and fulfilling life will see improvements in material living standards as very important. Much of the focus of economic policy making in the last 50 years has been skewed towards the promotion of activities that essentially make the average person materially richer.

Non-material living standards

Economics has sometimes been criticised for its bias towards materialism and the promotion of excessive consumption. There is an inherent assumption in most standard economic models that wellbeing is improved if utility (satisfaction or wellbeing) and profits are maximised. Even with the existence of diminishing marginal utility (each additional unit of a good or service that is consumed generates less utility than the previous one), the assumption is that, for the most part, 'more is better'. The production of more goods and services is likely to boost real incomes and therefore purchasing power over time. However, the economic models may lose their predictive powers if, over time, humans re-evaluated their obsession with material possessions and found a new level of contentment. In reality, a person's quality of life is multi-faceted and economists are increasingly working with experts in other professions to try and understand the factors, other than access to goods and services, that might lead to a higher quality of life. A study of non-material living standards will therefore look at a wider range of the factors other than purchasing power that affect a person's wellbeing – their overall 'quality of life'. The factors that affect non-material living standards are looked at in terms of the 'hard-to-measure' concepts like happiness and life satisfaction. While measuring material living standards is relatively easy (at least on an average level), knowledge of non-material living standards requires a deeper understanding of the human condition.

Factors affecting living standards

Access to goods and services

To measure material living standards, economists will generally rely on an aggregate measure of national production called GDP and, over time, a nation will tend to experience an increase in GDP. While this will indicate that the value of production has increased, only some of this increase will be 'real' in the sense that it represents more goods and services being produced (which of course helps to boost our material standards of living). Some of the increase in GDP will have occurred because of rising prices rather than rising volumes. To remove the price effects, the ABS calculates a measure referred to as **real GDP**. [The derivation and importance of these measures will be discussed in Section 5.2 of Chapter 5.]

Accordingly, when real GDP increases, it means more goods and services will be produced than the year before, which typically means that national income and expenditure will be higher (see Section 4.3 on the circular flow of income) and economic growth has taken place.

Real GDP is usually divided by the population of a nation to give another aggregate measure, called real GDP per capita. When real GDP per capita increases, this will mean that average real incomes per person will tend to increase over time and citizens of a country will be able to purchase more goods and services with their given income. It is important to remember that this factor affecting material living standards is an 'average'.

We can also use real GDP per capita as the basis of comparison between countries (after adjustment for exchange rates and purchasing power within a nation), although statistics between countries may be difficult to compare due to the reliability of data.

There is very little doubt that **material consumption** has increased over the last 50 years and the average household can now purchase more goods and services with their incomes. Increases in real GDP per capita are also necessary for labour resources to be employed. Having access to paid employment is one of the key factors that influence a person's income and therefore their ability to purchase goods and services. With increases in productivity, population (participation in the labour market) and the implementation of technology in the production process, a greater volume of goods and services must be produced to keep the unemployment rate steady. If the unemployment rate is to fall, a higher rate of economic growth will be needed.

Given that real GDP per capita measures access to goods and services for an average individual, it can be somewhat misleading as a measure of both material and non-material living standards. For example, if a small percentage of the population is extremely wealthy while most of the population lives in poverty (which may be the case in some less developed countries), then the real material standard of living may be disguised by focusing on the **mean income** since access to goods and services may be very low for many of the nation's citizens.

Therefore, real GDP per capita is, unfortunately, an unreliable indicator of material living standards. It can, at best, provide an estimate of the average access to goods and services but it fails to include a number of key transactions that influence both material and non-material living standards. In particular, people may have access to more goods and services than what is measured by real GDP per capita because they may:

- Produce some of their own goods and services
- Purchase some goods and services in the black market or informal sector (transactions for which the government has no data)
- Receive goods or services for free which have been provided by charitable organisations.

Some researchers have suggested that excessive *material* consumption can actually lead to a decrease in non-material living standards. The argument here is based on the hypothesis that is associated with a non-medically diagnosed condition called **affluenza**. Affluenza refers to the idea that the addictive pursuit of more and more goods and services is damaging to the mental health of the individual, as their desires cannot be satisfied. This is sometimes referred to as the 'hedonic treadmill' because the satisfaction from the consumption of goods and services is fleeting and the consumer seeks satisfaction from external sources rather than through intrinsic (internal) factors such as achievement or a sense of purpose. People in the modern era have, on average, greater access to goods and services than ever before but there is little evidence that people are happier or live more fulfilling lives than previous generations.

It is difficult to distinguish how having access to goods and services affects non-material living standards when compared to material living standards. Consider the following examples:

- If a person has the ability to pay for (or receive government subsidised) psychology services, this would be recorded as a market transaction that boosts material living standards. Having access to this type of service is also a key factor that will influence a person's mental health and their quality of life, and hence their non-material standard of living.

- If a person chooses, in a free market economy to purchase a packet of cigarettes and smoke them around other people, this will be seen as having 'access to goods and services' as measured by GDP per capita. The consumption of this demerit good, however, could negatively affect non-material living standards. Those affected by passive smoke could have reduced enjoyment of life for example. The GDP figures would not subtract any of the negative externalities associated with the consumption of the product.

As the two examples above illustrate, sometimes improved access to goods and services can improve non-material living standards, and sometimes it will have the opposite effect.

While measuring living standards by looking at 'access to goods and services' is a useful place to start, it is very important to go further into the data to discover the degree of *equality of income distribution* which inherently tells us something about access to those goods and services, and the *types* of goods and services that are produced and consumed in the economy. A discussion of living standards will therefore involve some value judgements because how an action affects a person's quality of life is inherently difficult to determine - especially given that every person in the country is not going to be asked to report on their material and non-material living standards.

Environmental quality

Economists are often criticised for many of their models of the economy, which effectively ignore the role of the environment in sustaining life. Environmental quality can be looked at from a number of perspectives that include:

- The availability of perpetual, renewable and non-renewable resources so that life can be sustained and humans can access valuable resources that are used as inputs in the production of marketable goods and services and other amenities that can be provided free of charge (such as access to nature for walks and the 'common access resources' discussed in Chapter 3.)
- The level of negative externalities that might be present in the natural environment. Production and consumption activities might pollute the air we breathe, the oceans which sustain the fish we eat, the land on which we grow our food, and even the houses we live in.

Environmental quality and living standards

All economic activity is ultimately dependent upon the environment. If resources are depleted at an excessive rate, then in the short or long term, **material living standards** might start to decline. For example, if world economy reaches 'peak oil' (where half of the world's known oil supply has been consumed), it will be much harder in the future to extract this important resource. This will increase the cost of production for firms and may lead to reduced purchasing power for households. Excessive consumption of common access resources such as the world's fishing stocks might also lead to reduced income earning opportunities in the future and reduced access to key goods and services. Pollution of the world's atmosphere and ecosystems could also have long term ramifications on the ability of humans to earn an income and therefore access goods and services. For example, the use of certain herbicides in the production of food may affect the ability of the human body to heal itself and could lead to a number of health-related issues in the future. This could negatively affect the productivity of the workforce, which ultimately affects the volume of goods and services that can be produced in the future.

Human beings' quality of life is intrinsically linked to the quality of environmental resources that they have available to them. This, like many aspects of **non-material living standards**, is hard to quantify and difficult to obtain statistical evidence on. Nevertheless, intuitively, people know that being in nature is good for them. They may feel energised from spending time at the beach or hiking through a national park. It is also difficult to measure the effect of excessive pollution on a person's quality of life but it would seem obvious that those who live in a city that suffers from heavy air pollution will experience less enjoyment of life than those who can breathe freely (assuming all other factors are held constant). The quality of the food we eat is intrinsically linked to the level of toxins that can be found in the food chain. Scientific researchers are increasingly finding links between the quality of the food consumed by a person and their physical and mental health outcomes, factors that clearly affect a person's quality of life.

Physical and mental health

Health outcomes are also an important factor that affects the ability of a person to access goods and services and has a huge impact on one's quality of life.

A **healthy population** (from both a physical and mental perspective) is likely to be more productive. A healthy person may also be able to work longer hours (when there is demand for their labour) and be able to create new solutions to problems, be entrepreneurial and develop new and innovative technology. If a person experiences on-going illness, from either a physical or a mental condition, then their ability to participate in the production process may be hampered. Some of the population may have to withdraw from the labour force altogether and rely upon the government disability pension. This payment is more than likely going to be an amount that is less than what the person could earn through the provision of their labour, so their access to goods and services might be reduced. The government, which usually subsidises or provides such services, will require more funds if the health outcomes of the country deteriorate. One way to deal with the funding shortfall would be to increase taxes. This would mean that most households would then experience a decrease in their material living standards because their disposable income would fall.

Being healthy is also a factor that influences a person's non-material living standards. The inability to undertake and participate in leisure or work activities can negatively affect a person's enjoyment of life and level of happiness. Mental health issues may cause someone to feel disconnected from other people and lead to a feeling of isolation, which also negatively affects their quality of life.

It is interesting to note that an excessive focus on material consumption can also have a negative impact on both physical and mental health outcomes. If a person feels the need to work harder to obtain more goods and services, this might lead to a neglect of their physical and emotional needs. Their relationships might suffer (which has a huge impact on mental and physical health), they may not eat properly, and their enjoyment of life may deteriorate.

There is a growing body of medical professionals who are beginning to show strong links between mental and physical health and that deterioration in one is often intrinsically linked to a decline in the other.

Life expectancy

Life expectancy refers to the number of years an average person in a nation can expect to live. It is one of the measures used to determine the level of **economic development** in a nation and is used by the UN to calculate the composite measure called the **Human Development Index**. A longer life expectancy will generally have a positive impact on material living standards. If a person lives for a longer time, then they may be able to work for a longer time and this can affect their ability to earn an income and therefore purchase more goods and services.

A longer life expectancy has, however, created additional challenges for economies around the world and could lead to slower growth rates and negative impacts on future living standards. While greater life expectancy can contribute to more years working, it has not necessarily turned out this way. People may be retiring at the same age they have done in the past, but then they are living longer once they have retired. Most people in Australia have inadequate funds to finance their own retirement and therefore they rely upon the pensions provided by the government. This is predicted to cause on-going budget deficits in the future, unless the government changes how it collects revenues or how it spends this revenue. The ageing population may also be associated with increased spending on healthcare, with an increased need to raise additional taxes from the existing workforce or the government's borrowing requirement could increase (meaning that interest payments in the future will also increase, further worsening the budget outcome).

Life expectancy will also have an impact on non-material living standards. While life expectancy is a measure used to determine the level of economic development, it may be hard to determine how it impacts all aspects of non-material living standards. In aggregate, a person's life may include the sum total of more positive experiences if they remain on the planet for longer. They may also feel more satisfied with life, knowing that they will be alive for a long time. Longer life expectancy has generally been associated with the effective eradication of many preventable diseases and a greater understanding of the causes of illness. This too, could be associated with better health outcomes and a higher quality of life.

While most would agree that higher life expectancy is associated with higher non-material living standards there are some exceptions that are worthy of discussion. For example, while the body may be able to sustain itself well into the future, the chances of being diagnosed with Alzheimer's disease increases with age. Approximately 10% of people over the age of 65 will get Alzheimer's, and this figure increases to 30% once a person reaches the age of 85. Alzheimer's disease can significantly reduce the quality of life for the person affected as well as that of their family and friends.

Crime rates

Crime rates are usually reported on a per annum basis and this figure can be converted to a figure per 1000 people. For example, there were approximately 383,100 reported crimes in Victoria in 2017/18, which is a slight decrease when compared to the 405,976 in the previous year (this was a 10 year peak). To the extent that the statistics are accurate, a decrease in crime rates is usually associated with an improvement in both material and non-material living standards.

Increased crime rates impose a **material cost** on all citizens of a country. Shop stealing for example, represents a cost associated with running a retail outlet. To ensure profitability, the businesses that are affected by theft will have to raise their prices so that their costs are covered. They may also need to install preventative measures such as CCTV cameras and security guards, which further increases the costs of doing business. These extra costs are usually passed onto the consumer (the supply curve shifts to the left leading to an increase in the equilibrium price), leading to a decrease in the purchasing power of households. Looked at it from this perspective, material living standards might decline. Higher crime rates also tend to lead to an increase in insurance claims. The insurance company will need to raise their premiums so that they reflect the risk of having to pay out to their customers. Rising insurance premiums make it harder for some households to access this service that provides them with some piece of mind.

Crime rates can also have a negative influence on **non-material living standards**. The victims of crime are likely to be the most directly affected because their physical or mental well-being has been affected. The families of murder victims would suffer a significant deterioration in the non-material living standards and feelings of grief and anger lasting for many years. Increased crime rates can also be associated with increased anxiety amongst the general community as they feel less safe going about their daily lives. Terrorist attacks around the world have certainly contributed to this anxiety and have caused people to become distrustful of others in the community. When crime rates increase, people often look to blame governments and seek to introduce measures that reduce freedoms and privacy, and these measures may also be associated with a decrease in non-material living standards.

In a peculiar way, criminal activity can also have a positive effect on **economic growth** and **material living standards**. If a person's house is burgled, for example, they will experience a reduction in the goods and services they have available to them (which might be temporary because if they are insured they will receive some sort of replacement). Given the way economists measure economic activity (that is, using GDP), crime will therefore misleadingly lead to the reporting of a higher GDP. The stolen items need to be replaced which creates new demand for some businesses. This might lead to an increase in the income and material living standards of those connected with the businesses. A whole industry operating around security and crime prevention could also develop, providing employment for those with expertise in the field. When employment increases, so does income, so the ability to purchase goods and services also increases.

Literacy rates

The adult literacy rate measures the percentage of the population, aged 15 or over, who can both read and write. A literate individual has a much higher ability to participate in the market economy. A large proportion of jobs require reading and writing skills, and as the economy becomes more technologically developed, higher skills in this area will become increasingly necessary. The inability of a person to read or write may mean that they reduce their probability of employment, which means that their ability to earn an income is significantly reduced. This affects their ability to purchase goods and services in the economy and is therefore negative for the individual's **material living standards**.

At a macroeconomic level, literacy rates may also be important for a country's ability to compete in a **globalised economy.** International trade is now an integral factor influencing the rate of economic growth in a nation. Countries with low literacy rates may not be able to offer goods and services that are the most valuable in the world economy. Literacy rates are an indicator of **educational outcomes**, such that, when a society becomes more educated, its workforce can

participate in more sophisticated areas of production so that more revenue can be earned for the nation. This increases GDP per capita, which boosts average material living standards..

The ability to read and write is also very important for a person's **non-material living standards**. Communication is a key facet of the human experience. Enjoyment of life can be significantly improved through the reading of interesting and thought-provoking ideas, and the debating of contentious issue. It also helps to develop new neural pathways that promote self-actualisation. Literacy increases the ability of the person to participate in the production process, which can be associated with a greater sense of wellbeing, the benefits associated with social interaction and a positive feeling knowing that he or she is making the world a better place to live in. Literacy will also improve a person's ability to participate effectively in the broader community and, in the context of the broader political system, to contribute to democratic decision-making in an informed way.

Review Questions 4.2

1. Explain what is meant by the term 'material living standards'.
2. Explain what is meant by the term 'non-material living standards'.
3. With reference to one of the factors discussed in Section 4.2, explain why it may cause material living standards to increase but cause non-material living standards to decrease.
4. With reference to a different factor discussed in Section 4.2, explain why it may cause non-material living standards to increase but cause material living standards to decrease.
5. Explain how an increase in crime can have both a positive and negative effect on material living standards.
6. Identify one reason an increase in material living standards may also be compatible with an improvement in non-material living standards.

Activity 4a: Material vs non-material living standards

Draw up a table in your notebooks or on a word document similar to that below. For each factor, summarise how it affects material and non-material living standards. Provide at least one argument/justification for your identified effect (it is important not to simply assert that it increases or decreases). Some factors could have both positive and negative effects, so you may like to include both sides to consolidate your knowledge in the area.

Factor	Impact on material living standards	Impact on non-material living standards
An increase in the nation's average income		
A shortage of oil due to increased conflict in the Middle East		
The replacement of workers with artificial intelligence		
Increased government spending on the promotion of merit goods		
A reduction in the retirement age		
A downward trend in the crime rate across Victoria		
A universal basic income (covered in Chapter 3)		
Depletion of natural resources through increased economic activity		
An increase in production resulting from increased productivity and/or longer work hours		
Improved health outcomes resulting from preventative health measures		
An increase in gang violence		

Activity 4b: Population and living standards

In 2018, the population of Melbourne reached 5 million. It had taken only 4 years to increase the size of the population by 1 million people, and this made Melbourne one of the five fastest growing cities in the world. The increase in population has been increasingly driven by historically high immigration levels (approximately 125,000 new residents from both overseas and interstate each year).

While immigration will be covered in more detail in Chapter 12, it is worthwhile investigating the impact of this increase in population size on both material and non-material living standards. It has become evident that adding more people to Melbourne's population has contributed to the strong growth in economic activity over recent years. In the June Quarter of 2018, Victoria grew by 1.2% (compared to 0.9% for the whole of Australia). Further analysis of the figures highlights that private consumption demand (to be discussed in this chapter) and Government spending contributed strongly to the growth.

On the surface, the rapid increase in demand (and hence production) would indicate that material living standards are growing. The most recent Gross State Product per capita figures indicate an increase, but this was equivalent to the national average (only 0.41% increase for the financial year ended June 2018). It could therefore be argued that population growth, in this case, has contributed to both an increase in state production and also an increase in material living standards, as measured by output per capita. The fast rate of growth in the economy has also contributed to the lower-than-average unemployment rate in Victoria (4.8% in July 2018 compared to a national figure of 5.3%). Reducing the unemployment rate is one of the most effective ways to raise material and non-material living standards and enables the economy to achieve a more equitable distribution of income as people move from a 'below the poverty line' level of government assistance, to earning at least the minimum wage.

The growth in the population may, however, have a negative impact on non-material living standards. Analysis of the population statistics reveals that 53% of the population moved to the urban fringe and only 12% of the extra population located in the inner city. This places extra demands on the state's infrastructure with longer commutes for many and increasing pressure on the public transport system. There is a growing level of angst about such rapid increases in the population, with politicians from a number of parties suggesting that a review is needed on whether this approach is sustainable and in Victoria's best interests.

To cope with the rapid increase in population, the state government has undertaken an extensive infrastructure program, and this has brought with it significant disruptions to the city. For example, some roads have been temporarily blocked and train services cancelled while new works take place. While this will provide increases in living standards in the future, there is a decrease in the short term.

Questions

1. **Distinguish between material and non-material living standards.**
2. **Explain why the rapid increase in Victoria's population may be associated with an increase total production in the state.**
3. **Explain why economic growth is usually associated with an increase in living standards.**
4. **Explain why GSP per capita is a more reliable measure of changes in living standards than GSP. (GSP is Gross State Product and isolates the figures for the individual state - Victoria in this case).**
5. **Explain how the rapid increase in population may have caused non-material living standards to have deteriorated for some people.**

4.3 The circular flow model of income

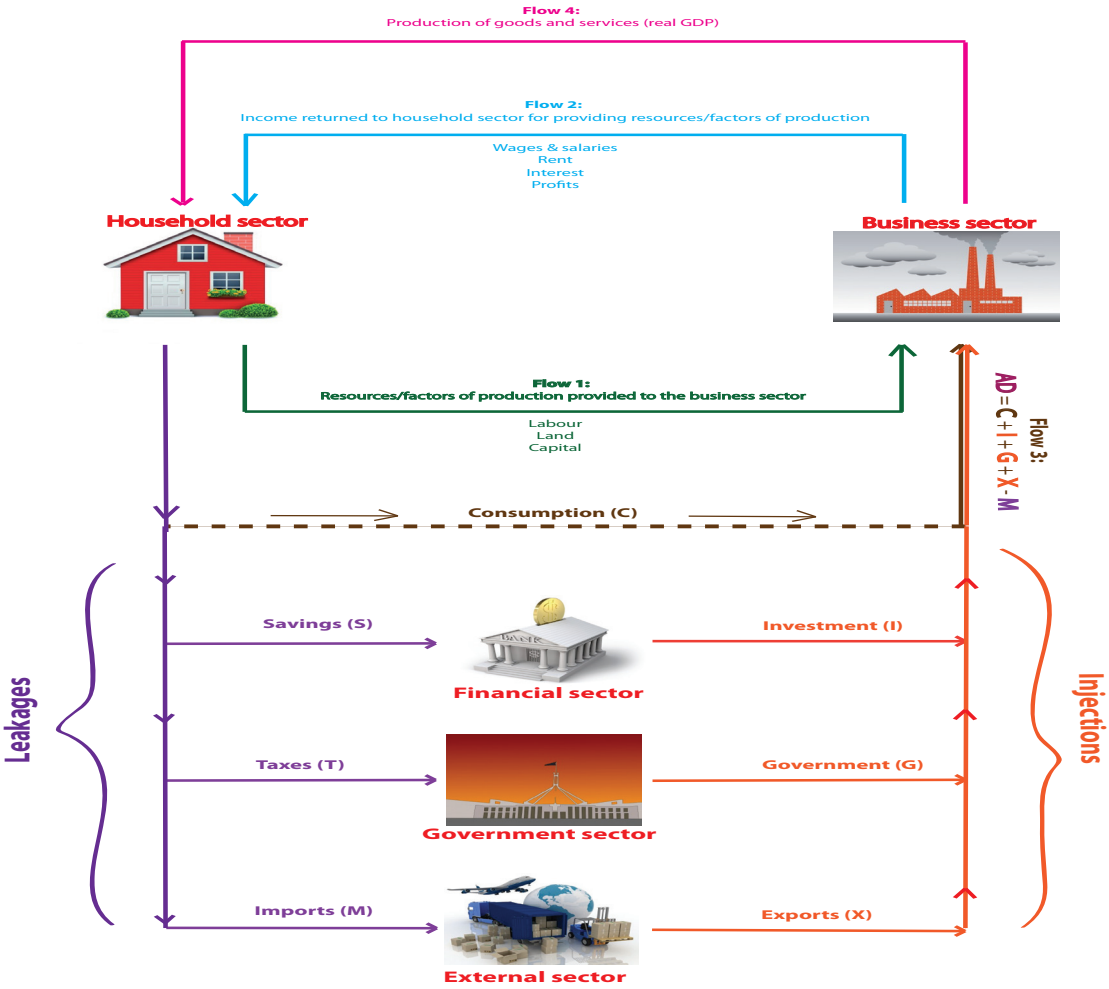
One of the first models that can be utilised to illustrate some of the key macroeconomic concepts and relationships is the **circular flow model of income**. This is a model that shows the flow of money, resources and goods and services in an economy.

There are a number of models that have been developed in this area, with varying degrees of detail and sophistication. At the core of any circular flow model is the interaction between households and businesses in product and factor markets. These economic agents are the key decision makers in the economy and their actions have the most significant effect on the amount of income that is generated and that flows throughout the economy.

The model shows that there are four separate flows between households and businesses (which are continuous flows so it doesn't matter where the flow begins). Two of the flows move from the households to the businesses while the other two movements are in the other direction. For each flow there is a corresponding movement of income -hence the name of the model.

The flows that are described below correspond to the appropriately numbered sections in Figure 4.1.

Figure 4.1
The Circular flow model for a mixed open economy



Flow 1: The factors of production flow from households to businesses

The three factors of production were discussed in Chapter 1. Members of the households (i.e. the **Household Sector** in the model) provide **natural resources, labour and capital** to businesses. People are obviously free to provide their labour to firms but households also own the other factors of production (in a market capitalist system, where resources are owned by private individuals) and these are provided as inputs in the production process. Firms see these as part of their cost of production but their purchase is a necessity if businesses are to produce the goods and services to the market.

Flow 2: The businesses pay income to those who provide the factors of production

The market capitalist economic system rewards those who provide firms with the factors of production. This becomes the **income** for households and may take the following forms:

- From the provision of labour, households may receive wages, salaries, commissions, royalties etc.
- From the provision of land the households may receive rent.
- From the provision of capital the household may receive dividends, interest and profits.

This section of the circular flow model therefore highlights a wide range of incomes that are received in exchange for factors of production

Flow 3: Demand for goods and services

Part of the income received by households in **Flow 2** is then 'consumed' via the purchase of goods and services (i.e. **Consumption**), which forms part of **Flow 3.** However, part of the income earned by households does not immediately result in demand for Australian goods and services (i.e. **Aggregate Demand**) because the income is diverted through the **Financial, Government and External sectors** in the three ways described below. The funds that are diverted away from Consumption are referred to as **leakages** in the model and are represented by the downward purple arrow on the left hand side. An increase in leakages will tend to reduce the level of economic activity.

Leakages

Savings (S): It is unlikely that consumers will spend all of their income on goods and services in the market. In our model of the economy, it is assumed that **savings** will be redirected through the **Financial Sector** of the economy. Households will make deposits with financial institutions such as banks. When households do not spend their income but rather save it, the income is effectively removed from the core of the economy and will not boost Aggregate Demand (AD) until the funds are eventually injected back into the economy via Investment (see Injections below).

Taxes (T): Australia is considered a mixed economy because, although the market is the primary mechanism by which resources are allocated, the government intervenes in markets and alters not only the allocation of resources but also the total level of economic activity. Households in Australia do not get to keep all of the income that they earn. They must legally pay part of it in **taxes** to the **Government Sector**. They also pay tax when they purchase goods and services that have an indirect tax imposed upon them. Taxes are also seen as a **leakage** because they represent a reduction in the capacity of households and businesses to purchase goods and services.

Imports (M): Australia is also considered an open economy. This means that trade takes place between Australia and other countries. Spending on **imports** by Australians (the purchase by Australians of foreign made goods and services) is considered a leakage from the core of the economy. The spending effectively leaves the country through the **External Sector** and helps to boost economic activity in another nation.

The impact of these leakages on AD and economic activity will ultimately be offset by **injections.** These are instances where there is an increase in funds flowing back into the core of the economy. In the model, they are represented by the upward orange arrow on the right hand side. These injections result in an **increase** in the level of economic activity.

Injections

Overall, the total demand placed on Australia's Business sector is made up of AD (**Flow 3**) which then determines the total real value of production in the economy (i.e. **Flow 4**).

Investment (I): The funds that are saved become available to the firms in the **Financial Sector**. Firms are able to access loans and increase their access to money from issuing bonds or equity. This money is used to finance the purchase of new capital or land. This spending is seen as **Investment,** as the productive capacity of the firm has increased. This is an **injection** because the money flows back into the core economy. A company may purchase a new computer for example, which means that the income of the firm selling the computer increases.

Government (G): The government will eventually use the tax revenue it receives from the private sector. The funds are **injected** back into the economy through a number of **Government spending** initiatives. They may be redistributed back to some households as transfer payments (thereby contributing to more activity in the core economy) or used to purchase goods and services that could be provided by the private (business) sector (which then helps to generate additional incomes for households).

Exports: In contrast to the leakage of the model in the form of imports, the income earned from the sale of exports (Australian made products that are purchased by foreigners) become an **injection**. While the income is generated from the spending of consumers overseas, it is injected into the Australian economy and therefore becomes an important component of AD.

Overall, the total demand for goods and services (**Flow 3**) is made up of **Consumption demand,** in addition to value of the **injections** that come through the Financial Sector (i.e. **Investment demand**), the Government Sector (i.e. **Government demand**) and the External Sector (i.e. **Export demand**). However, within this demand is a portion of spending on foreign goods and services (i.e. the leakage 'imports') that must be deducted in order to arrive at an accurate value for the demand placed on Australia's business sector. [Box 4.1 within Section 4.5 explores this in more detail.] We call flow 3 **Aggregate Demand (AD)** for Australian made goods and services, which becomes C + I + G + X - M.

Flow 4: Production of goods and services (real GDP)

As discussed above, the total demand placed on Australia's **Business sector** is made up of AD (**Flow 3**). It is AD that determines the total real value of production (i.e. real GDP) in the economy, which is **Flow 4** in the model. [The meaning and importance of AD, including the factors affecting AD will be explored in some detail from Section 4.5.]

The use of the model is illustrative because it helps us to gain a better understanding of the influences affecting AD and economic activity. For example, it should be apparent that any decision by the Household sector to increase their rate of Savings (e.g. because householders have lost confidence in the economy) will tend to reduce the growth of AD and economic activity unless the Business sector is immediately willing to use the increased flow of funds in the Financial Sector to increase Investment spending by the same amount. If the Business sector is also experiencing low confidence levels then an equivalent amount of Investment is unlikely to occur, even in spite of a fall in interest rates that should occur when savings increase. Similarly, a decision by the Government sector to raise Taxes without any corresponding increase in Government spending (i.e. increase budget surpluses) should also act as a further constraint on AD and economic activity. With respect to the External sector, a decrease in the international competitiveness of Australian exporters and import competing producers should also serve to constrain AD as Australians will tend to purchase more imports (rather than local products) and foreigners will tend to purchase exports from Australian competitors (such as New Zealand). In each of these cases, the leakages from the economy will exceed the injections for a period of time, which ultimately has a negative influence on economic growth.

Alternatively, there may be periods of time where the injections are greater than the leakages. This could lead to excessive spending in the economy which may put upwards pressure on prices, which could ultimately lead to a decrease in living standards.

The problems associated with an unbalanced circular flow model are the focus of many chapters in this book. The Australian government tries to achieve an optimal rate of increase in the volume of goods and services produced, an optimal level of employment and an optimal increase in the rate at which prices increase. To do this they can, in conjunction with the use of other policy instruments, alter their effect on leakages from and injections into the core section of the macroeconomy.

As each of the government goals and the appropriate policy responses are discussed in subsequent chapters, try to continually refer back to and use the circular flow model to enhance your level of understanding of the effect of these actions on the overall economy.

Review Question 4.3

1. Which two sectors form the core of the circular flow model? Explain why they are considered the 'drivers' of economic activity.
2. Explain what is exchanged between households and businesses in the product markets and the factor markets.
3. Explain how households and businesses are both buyers and sellers in the circular flow model of the economy.
4. Identify and describe examples of the income that is generated by each of the factors of production.
5. Distinguish between leakages and injections in the circular flow model. Explain how each will lead to changes in the total level of economic activity.
6. Identify the leakages and injections that are connected to the government sector in the circular flow model, and provide two examples for each.
7. Identify the leakages and injections that are connected to the financial sector in the circular flow model, and provide two examples for each.
8. Identify the leakages and injections that are connected to the transactions with other countries in the circular flow model, and provide two examples for each.
9. In sections 4.5 and 4.6 of the text, you will look at the factors that can influence the level of economic activity. Predict five factors that could lead to an increase in injections and/or leakages that would affect the level of economic activity. Refer back to your answer after you have had the chance to study these sections. Reflect upon the accuracy of your predictions.

4.4 The nature and causes of the business cycle

Over time, the level of economic activity (and therefore the rate of economic growth) fluctuates. Economists have observed that the level of economic activity tends to go through a cyclical movement, with periods of above average (and some might consider excessive) rates of economic growth, and periods of negative or low rates of growth. Examining the rate of economic growth over an extended period, there appears to be **peaks**, **troughs**, **recoveries** and **downturns**. Booms are associated with very high rates of growth in production, but not all peaks in the business cycle will be considered booms. Conversely, troughs are associated with very low rates of growth in production, but not all troughs will be considered a recession.

Study tip

The business cycle is also referred to as the 'trade cycle' or the 'economic cycle'.

For example, over 2008-9, the Australian economy went through a trough but managed to avoid a technical recession, which is defined as two successive quarters of negative economic growth. The economy also experienced another trough in the first quarter of 2011, but this too was not considered a recession. It was a temporary setback caused by widespread floods across eastern Australia, particularly impacting Queensland. In contrast, the Australian economy grew by 3.4% in the year ended June 2018, indicating that there was a strong increase in aggregate demand and economic activity.

The business cycle looks at the fluctuations in the growth in output (economic activity) that takes place over an extended time frame. In particular, it suggests that economic activity follows some sort of pattern with periods of expansion (where there is positive rates of growth) and periods of contraction (where economies may sometimes produce less than they did the year before). The notion of a business cycle has been developed from observations of historical data that shows that economic activity or rates of economic growth are rarely the same from year to year.

A complete 'cycle' of the business cycle – from peak through trough and then back to a peak - can take a short or a reasonably long period of time. The time frame for each phase of the cycle will depend upon a range of factors that will be considered in later chapters. No two business cycles are identical and Australia has enjoyed an extended period of positive economic growth. Australia's last technical recession was in 1991 with 27 years of positive economic growth since then (which is now a world record). This is a remarkable achievement given that during that time, there was the Asian Financial Crisis, the bursting of the Dotcom bubble and the GFC (now referred to as the Great Recession).

Phases of the business cycle

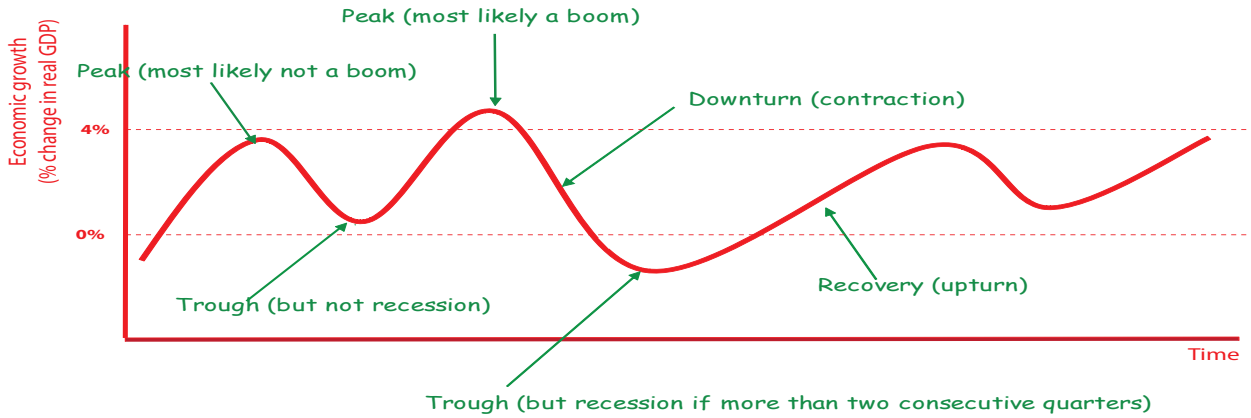
The business cycle has four distinct phases/stages and each is characterised by changes in key economic indicators. Analysis can begin at any of the four phases/stages.

Stage 1: Peak

During a peak the economy is usually experiencing strong rates of economic growth. Consumer and business confidence are high, which may encourage a greater propensity to spend and a willingness to take on new debt. The savings rate may therefore fall. The strong growth in demand will encourage firms to expand production, leading to an increase in

the derived demand for labour. Referring back to the circular flow model in Section 4.3, this will mean that leakages will be falling relative to injections, leading to (rapidly) rising economic activity. If the peak is considered to be a **boom**, then the rate of economic growth may be considered excessive and unsustainable. There are likely to be inflationary pressures in the economy, especially if there are capacity constraints. For example, a tight labour market may increase the likelihood of wage demands adding to inflationary pressures. Asset prices may increase rapidly and there will tend to be a significant increase in the size of the current account deficit as imports are purchased in greater volumes and more interest must be serviced on the growing debt. Generally, a boom is not sustainable and the economy will eventually move to the next phase of the business cycle.

Figure 4.2 Business cycle



Stage 2: A contraction or downturn

The excessive rates of inflation and the existence of capacity constraints that characterise a boom (or peak) in the business cycle should mean that increasing the volume of production becomes more difficult. High inflation, higher interest rates and strong growth in asset prices (or **'asset bubbles'**) that result in overvalued assets (such as shares or property) typically result in a market 'correction' that eventually leads to a fall in private consumption and investment as more households save and deleverage (reduce their debt burden). Referring back to the circular flow model in Section 4.3, this will mean that injections will be starting to fall relative to leakages, leading to a slowing in the growth in economic activity The rate of economic growth will therefore slow, some resources will become unemployed, confidence deteriorates further and inflation falls back to levels that don't encourage a too-rapid growth in credit and consumption. This adjustment can be slow or rapid. During the downturn in 2008/09, the change in behaviour by consumers and businesses was relatively quick. The ready availability of economic data from around the world may have influenced this speed of adjustment.

Stage 3: Trough

The downturn will eventually reach a point where the level of economic activity reaches its minimum point in the cycle. The trough may or may not turn out to be a **recession**. One accepted definition of a technical recession is two consecutive quarters of negative economic growth. A prolonged recession is referred to as a **depression** and this has not occurred in Australia since the 1930s. One could argue that a greater understanding of the business cycle and the role of AD and AS by economists has meant that we have managed to avoid such a situation. A trough is usually associated with low or negative rates of economic growth.

The low rates of growth in the trough mean that firms will need fewer factors of production and the rate of unemployment (or underemployment) should start to rise. Referring back to the circular flow model in Section 4.3, this will mean that leakages will be high relative to injections, leading to falling economic activity. During the 2008-9 downturn the unemployment rate did rise but by less than expected, as many workplaces reduced hours rather than sacked workers (see Chapter 5). The inflation rate will generally fall during a trough (disinflation), and if the downturn is bad enough, deflation can result, where the general level of prices falls.

Stage 4: Recovery

During the trough, the relatively low inflation rate combines with lower labour costs and lower interest rates to spark an economic recovery. Consumption, Investment and Net Exports will all start to pick up over time, helping to promote growth in production, employment, income and expenditure. Referring back to the circular flow model in Section 4.3,

this will mean that injections will be rising relative to leakages, leading to increasing economic activity. Eventually the economy will recover and continue to grow until we reach the next peak in the business cycle and the process continues.

Given the highly cyclical nature of economic activity over time, the Government tends to use its macroeconomic demand management (**stabilisation**) policies to temporarily replace the lack of demand during a trough and to constrain growth during a peak. Some economists have argued that lack of government intervention to smooth the business cycle can lead to extended periods of instability and a loss of living standards. The government took this approach in the second half of 2008 and early 2009 with their stimulus packages. The idea from the government's Treasury was to 'go hard, go early, go households' to avoid the severity of the recession experienced by many other developed nations. As a consequence, Australia's downturn was relatively minor and the economy entered the recovery phase from 2009-10. The government's recent use of its macroeconomic demand management policies to manipulate the business cycle will be fully explored in chapters 8-11.

While a boom is normally characterised by strong production, high inflation and low unemployment and a recession is associated with weak production, low inflation and high unemployment, it is possible to have periods of low economic growth, high unemployment rates and high inflation rates. Such a situation is referred to as **stagflation**. This occurred in Australia between 1973 and 1983 with unemployment reaching a peak of 10.2% in 1983 and inflation averaging 11.6% per annum over the entire period.

Causes of the business cycle

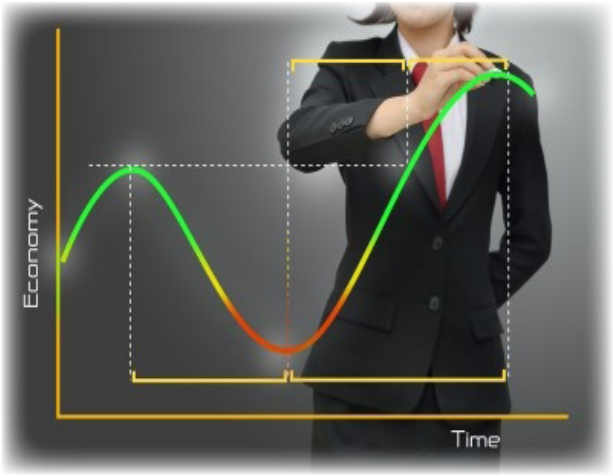
Changes in the business cycle can be intrinsically linked back to imbalances (and sometimes balance) that were discussed in the circular flow model. This relates back to the key concepts of aggregate demand and aggregate supply. There may be a range of aggregate demand (AD) factors that could cause the level of spending in the economy to fall. AD refers to total expenditure on new final Australian made-goods and services, and is the 'aggregated' (added up) value of all demand in the economy. These factors are discussed at length in Section 4.5. Aggregate supply (AS) represents the total volume of goods and services that all suppliers have produced and supplied over a period of time. AS factors will also influence the level of economic activity through their impact on the ability and willingness of firms in the economy to provide goods and services for households. These factors are discussed in Section 4.6.

The **peak** phase of the economic cycle usually arises when AD is growing faster than AS. This tends to put upward pressure on prices, which can ultimately lead to a deterioration in purchasing power and thus spending in the economy. This phase of the cycle could also be driven by investment (as it was during the mining boom in Australia). Once the productive capacity of the economy has been sufficiently expanded, the level of investment can drop suddenly, another reason why it is difficult to maintain a 'peak'. In addition, peaks may also be associated with periods of 'irrational exuberance'. This observation, made by behavioural economists and experienced investors, refers to the tendency for some households and businesses to be unrealistically optimistic about the future state of the economy. Unwise investments may be made and key assets such as houses and shares could experience a price bubble. These bubbles usually 'pop' resulting in capital and wealth losses, which lead to lower levels of spending in the future.

Many **contractions** in the economy can be caused by unexpected events that have a negative effect on the level of AD in the economy. Movement from contraction towards a trough can be slow or very rapid. A contraction can be caused by fear and panic (also a form of irrationality but in the opposite direction to irrational exuberance). The GFC was caused, in part, by the realisation that a number of loans that should never been issued would never be repaid. Those who invested indirectly in the loans lost their savings and this triggered a fall in AD and a significant fall in house prices. During the Great Recession (or GFC), the banking sector ceased to function in its normal fashion and it was much more difficult for households and businesses to obtain finance. This had a significantly downward influence on economic activity all around the world. Governments undertook extensive policy changes to negate the effects of these phenomena, with varying degrees of success.

The **trough** phase of the economic cycle is usually associated with a lack of aggregate demand in the economy. The trough may be short lived or may last for an extended period. It may depend on the damage that has been done to consumer and business confidence and the ability of the government to implement policies that 'kick start' the economy. A recession can be caused by a number of AD factors. In Japan, for example, an ageing population is one factor that has had a significant effect on the level of spending in the economy.

The **expansion** phase of the economy may be started by a number of aggregate demand factors that help to boost the spending in the core of the economy. These factors will be discussed in detail in Section 4.5. One example is that the economy may start to expand if the value of its currency depreciates. The increased spending by foreigners on exports would provide a needed injection into the core of the economy and stimulate more demand and economic activity. Reduced spending on imports will reduce leakages and people may purchase domestically produced goods and services instead, further adding to the level of economic activity.



One of the key explanations offered for changes in the level of economic activity was offered by economists who developed a 'psychological theory of the business cycle'. Economists such as Pigou and Keynes believed that the level of optimism and pessimism in the economy could have a strong influence on the level of economic activity and these emotional elements were somewhat unstable. Keynes referred to them as 'animal spirits' which indicated that there might be a somewhat irrational element to behaviour that leads to changes in aggregate demand (and potential supply). These animal spirits can persist for extended periods of time, which is why he advocated for government intervention to reduce the severity of both recessions and booms.

One example that illustrates Keynes' idea clearly relates to Australia's recent mining boom. During the mining boom phase of the economic cycle in Australia, optimism was high and mining businesses, in particular, sought to expand the size of their operations (they believed, perhaps somewhat unrealistically, that the boom would last for longer than it did). Therefore, the level of investment in their capacity may have been too high and this led to an excess supply of commodities in world markets, placing downward pressure on prices. Falling prices have a damaging effect on confidence, not only for businesses, but also households. When confidence changes so does a firm's willingness to invest and a household's **marginal propensity to consume (MPC).** The MPC tends to be higher during periods when confidence is high. Households with an overly optimistic (and some might consider naïve view of the future), might save little of their income and take on excessive debt. A shock to the economy might help households to re-evaluate their approach to their finances and they might cut back spending- this fall in demand then triggers the reduction in activity that leads to a contraction which could, without government intervention, lead to a technical recession. In some countries, such as Japan, the lack of confidence has led to a significant downturn, which the government has been unable to effectively control.

Activity 4c: Analysis exercise

In your notebook, create a table like the one below. Based on information in the section above, complete the table. Use words like high, low, rising, falling, worsening, improving to describe the likely economic conditions in place during the different stages of the business cycle.

Stage of business cycle	Inflation	Economic Growth	Unemployment	Interest rates
Peak				
Downturn / contraction				
Trough				
Recovery				

Review Questions 4.4

1. Define the term 'technical recession'. At what stage of the business cycle do economies usually experience a recession? When was Australia's last technical recession?
2. Identify and describe the key features of each stage of the business cycle.
3. Explain why the 'boom' phase of the business cycle is unlikely to last for an extended period of time.
4. Identify an unexpected event from the last 10 years that could be used to explain why the economy experienced a downturn.
5. Identify an unexpected event from the last 10 years that could explain why the economy recovered.
6. Explain how excessive optimism can contribute to the cyclical nature of economic activity.

4.5 The meaning and importance of aggregate demand

The total expenditure on new final Australian made-goods and services is referred to as **Aggregate Demand (AD)**. AD influences the level of economic activity because it provides the incentives for firms to increase production levels, thereby requiring the increased use of factors of production and generating income growth in the country. The focus is on **final goods and services** because there will be many transactions that take place in the economy that involve intermediate products (goods that are used to make other goods and services). If the intermediate products were to be included in our calculation of AD, then the same goods and services would be counted twice. For example, if a new car is purchased, the final amount paid represents all of the value added. If the tyres were also included (the car manufacturer will have purchased these from another supplier), then this item would be counted twice, giving an inaccurate picture of total economic activity or production. We also emphasise that the goods being sold are new so that we don't include the value of goods that have been included in previous calculations of AD (when they were first purchased). The sale of second-hand goods can contribute something to AD (such as the 'service' provider by the seller) but they generally do not involve new production.

Changes in the level of AD therefore have a major influence on the phases of the **business cycle**. Following the Great Depression in the early 1930s, economists began to pay more attention to aggregate demand theories that emphasised the role of governments in reducing the severity of fluctuations in the level of economic activity. The main argument for manipulating levels of AD was offered by John Maynard Keynes, who suggested that fluctuations in AD were the main cause of changes in the level of economic activity (the phases of the business cycle). A lack of AD was usually associated with a higher unemployment rate, while a rapid increase in AD could cause an excessively high inflation rate. He believed that AD could remain low for extended periods of time and that this would cause enormous suffering in the economy. His approach to AD and aggregate supply (AS) is discussed in the Applied Economics Exercise at the end of this chapter.

To fully understand the importance of AD and how it affects the level of economic activity, it is worthwhile undertaking an investigation into its key components. The ABS reports on not only changes in the total level of spending in the economy, but also each of the following components. This helps economists to isolate changes and to see where there is strong or weak growth with respect to the different sectors of the economy.

The AD equation is:

$$AD = C + I + G + X - M$$

Where:

C = Private Consumption Expenditure

Private Consumption Expenditure is defined as the total value of all expenditures on individual and collective consumption goods incurred by resident households and non-profit institutions serving households.

The outlays covered include:

- Expenditure on consumer durables such as cars, furniture and high-value, long-lasting household appliances (but excluding dwellings, which are regarded as the fixed assets of an 'industry')
- Consumer semi-durables such as clothing and footwear
- Single-use goods such as food, cigarettes and tobacco, and alcoholic drinks
- Services of all kinds such as hairdressing, dry cleaning and public transport

Consumption expenditure usually comprises approximately 60% of AD in Australia.

Study tip

It is easy to confuse 'Investment' discussed here, which is really capital investment, with 'Investment' often referred to in the general community –which typically refers to financial investment in assets like shares and property. An investment in shares, for example, is not counted as part of AD because the money 'invested' is simply a transfer of ownership from one party to another. In itself, it does not directly lead to any change in AD.

I = Private Investment Expenditure

Private Investment expenditure is defined as the purchase of new equipment and plant, buildings and vehicles. The purpose of investment expenditure is to expand the productive capacity and productivity of the business sector. The addition to inventories over the accounting period also represents a form of investment. The spending by households on new housing is included in this subsection.Investment spending is usually undertaken with the purpose of generating additional goods and services in the future. Private investment expenditure is therefore a volatile component of Aggregate Demand as businesses are continually changing their forecasts about future profitability. It comprises approximately 15% to 20% of AD.

Activity 4d: Classification of spending in the GDP figures

A purchase of a motor vehicle by a household (but not by an associated unincorporated enterprise) is treated as final Consumption expenditure, whereas the same purchase by a business would be classified as 'gross fixed capital formation' (Investment). Accordingly, there are many assets that are purchased by households, including motor cars, white goods or computer equipment, whose AD classification will depend on who purchases them and how they are used. If they are used by businesses in the production process, then they are considered a part of private investment demand (I). If they are used by households for non-business use, then they are considered a component of consumption expenditure (consumer durables) (C).

Questions

1. **Explain the difference between the consumption (C) and investment (I) components of aggregate demand.**
2. **Explain how the purchase of a new taxi would be classified by the ABS in the Aggregate Demand equation.**
3. **Explain how the purchase of a new house would be classified in the AD equation.**
4. **Explain how the purchase of an imported Mini Cooper by a household would be classified in the AD equation. Under what circumstances would the purchase of the same car be considered differently?**
5. **Explain why the purchase of shares would not be included in the calculations for AD.**

G = Government Expenditure

Government Expenditure includes expenditure by all areas of government (Federal, State and Local). It is commonly broken up into G1 and G2 as follows.

Study tip

*Note that welfare payments are not counted as G1 or G2. This is referred to as a **transfer payment**. It has been taken from one group (in the form of taxes) and redistributed (transferred) to someone else. The tax paid is a leakage which is then redistributed back to households (an injection). The government is therefore not purchasing any new goods or services (which is what AD measures) but the welfare recipient is likely to spend the money (which will increase AD if it is spent on Australian products). To count the welfare spending as G1 could lead to double counting. Therefore, welfare payments are only 'counted' in AD when they are actually spent on Consumption.*

G1 is **Government current (consumption) expenditure** on goods and services that are not capital in nature. This includes collective goods and services for current use necessary to run the government. Much of the spending goes towards the provision of government services such as health, education and defence. It also includes spending for government departments on stationery, salaries and rent. It is a relatively stable component of AD.

G2 is **Government Investment Expenditure** on goods that are of a capital nature. This includes spending on new buildings and infrastructure. Spending in this area is deemed to be important, like private Investment, because it adds to the productive capacity of the economy. Infrastructure spending on hospitals, schools, roads, ports and railways may help to reduce costs of production for private firms and may help to boost Australia's international competitiveness.

(X – M) = Net Exports (exports – imports)

X is spending on exports. Exports are Australian-made goods and services that have been purchased by foreign households, businesses, governments and other organisations. **M** is spending on imports. Imports are foreign-made goods and services that have been purchased by Australian households, businesses, governments or other organisations.

'Net exports' is sometimes referred to as the Balance on Goods and Services (or the Balance of Trade - see Chapter 7) and exports and imports each comprise approximately 20% to 24% of AD. They are both highly volatile components of AD and the factors influencing them will be discussed in Chapter 7.

Box 4.1 Why are imports deducted from the AD equation?

Import spending is actually included in each of the other components of AD. For example, when a TV is purchased at a retail outlet, the total value of the TV will be included in the C component of AD (assuming that it is being purchased by a household rather than a business). The retailer will pay the importer an amount and then add a profit margin. The profit represents the value added in Australia. In a sense when you are buying a TV you are paying the retailer for their services: advice, the ability to compare the televisions, and for saving you the trouble of importing the TV yourself. The import component therefore needs to be deducted (because it is included in C) so we can calculate the true value added (contribution to production) in Australia. So, in fact, the AD equation could be restated as: AD= C-Cm+I-Im+G-Gm+X-Xm – where 'm' represents imports (e.g. Cm would be the component of Consumer spending diverted into spending on imports.) Rather than use such a convoluted approach, it is easier to add together all the import spending to create M and deduct it from the overall AD equation when calculating Net Exports.

Review questions 4.5

1. How do economists define and measure aggregate demand?
2. Explain why the level of aggregate demand in the economy is an important determinant of the level of production in the economy.
3. Describe five goods or services that would be considered Consumption expenditure in the AD equation.
4. Consider the reasons that businesses undertake Investment and explain why it is usually the most volatile component of aggregate demand.
5. Describe five items that would be considered private Investment expenditure in the AD equation.
6. Identify one area of spending by households that would be counted as 'Investment'. Explain why this item is classified in this way.
7. Discuss how a product classification as C or I can depend on who purchases it and how it is used in the economy.
8. Explain whether the construction of a road tunnel would be classified as Private Investment (I) or G2.
9. Identify two items of G2 on which spending may have increased in the last 12 months. (Activity 4b may help you complete this question.)
10. Explain how the Balance on Goods and Services is related to AD.
11. Explain why imports are deducted from the AD equation.

4.6 Factors that can influence the level of Aggregate Demand

As part of your studies for Unit 3, you will need to have a detailed knowledge of the factors that affect the level of aggregate demand in the economy. This chapter will review each of these factors from a theoretical perspective, and the effect of these factors will then be discussed with respect to each of the government's domestic economic goals, in Chapter 6. The following factors have the potential to influence the level of aggregate demand in the economy.

Changes in the general level of prices

The general level of prices is an aggregate measure used by economists to indicate how the prices of a representative basket of goods and services have changed over time. It is used to determine the **inflation rate** (the percentage increase in average prices over a designated period of time). The goal of low inflation will be discussed at length, in Chapter 5. The general level of prices is, for the purposes of this analysis, the weighted average of prices for a representative basket of goods and services in the economy.

There tends to be an inverse relationship between the average level of prices and the level of aggregate demand in the economy. Higher prices in the economy tend to have a negative effect on the total spending in the economy because:

- Increases in the general level of prices will reduce the **purchasing power** of economic agents. The real value of a given level of income and the real value of wealth is decreased when prices increase. Purchasing power is therefore reduced and the level of spending decreases. Alternatively, falls in the general level of prices for a range of goods and services can result in greater spending as purchasing power increases and people might feel 'richer' if the value of their wealth is higher in comparison to the general level of prices.

- Higher price levels in the nation will tend to have a negative effect on its **international competitiveness**. This is especially the case if the growth in average prices (the inflation rate) is higher than it is in other countries, against whom Australia might compete in international markets. This may lead to a reduction in the demand for Australia's exports and a substitution by Australian consumers towards relatively cheaper imports. Notice how this leads to an increase in leakages and a reduction in injections, thereby reducing the level of aggregate demand in the economy.

Disposable income

Disposable income is defined as the rewards received by households from their direct contribution (from working) and indirect contribution (from provision of land or capital) to the production process, plus government transfers less direct (income) taxes. This represents the total amount that consumers have to spend on goods and services. Disposable income can increase when a person gets a pay increase, the government cuts individual income tax rates or when a household receives dividends or makes capital gains from buying or selling assets.

Disposable income is therefore the end result of economic activity and can contribute to the on-going strength of the economy. When households provide their resources to firms they are rewarded with disposable income. This in turn gives them the ability to purchase the goods and services that are offered for sale in the economy. If the economy was experiencing a recession, the government may wish to implement policies that seek to boost disposable income of households. For example, during the Global Financial Crisis, the government of Australia (and other governments around the world) provided a once off transfer payment to households, with the hope that the increase in disposable income would increase their willingness to purchase goods and services.

As you undertake a more detailed study of the Australian economy, you may also come across a measure that the ABS includes in the national accounts called 'real net national disposable income'. This measure modifies the disposable income by looking at changes in Australia's terms of trade. This measure will be discussed, at length, in Chapter 8. The **terms of trade** is defined as the price of exports divided by the price of imports. A fall in the terms trade could be the result of a decrease in Australia's export prices or an increase in import prices. Either of these outcomes would result in changes to purchasing power (because each item sold overseas generates less income and the value of disposable income is reduced if households choose to buy imports). This fall in net national disposable income can therefore have a dampening effect on aggregate demand and economic activity in the nation.

Interest rates

Interest rates were discussed as a microeconomic factor that affects consumers' discretionary income. Changes in interest rates also have macroeconomic implications because they affect both household consumption decisions as well as business' investment decisions. This happens as follows:

- An increase in interest rates will negatively affect the **discretionary income** of those households who have taken out **variable interest rate** loans. They will need to pay back more to the bank each month, leaving less available for the purchase of goods and services. It also raises the costs of borrowing for consumers, which may affect the decision to purchase expensive items such as houses and cars. The opportunity cost of spending also increases because those who do buy goods and services now forgo the opportunity to earn more interest.

- Businesses who have also taken out variable rate loans will also experience a reduction in their **cash flow**. This reduces the profits that they may have available to reinvest in new capital and equipment. The higher interest rates also reduce the profitability of any future investment project because the potential revenue from sales might decline (because households are likely to spend less) and their borrowing costs have increased.

Interest rates in Australia are indirectly influenced by the manipulation of the **cash rate** by the Reserve Bank of Australia as part of **monetary policy**. The decision to raise interest rates will usually be made when aggregate demand is growing excessively when compared to aggregate supply (thus causing excessive inflation). In contrast, the RBA may seek to stimulate spending by lowering the cash rate when the level of economic activity is below that needed to stimulate employment growth. The operation of monetary policy will be discussed at length in Chapters 10 and 11.

Consumer confidence

Consumer confidence measures the general level of optimism (or pessimism) about the future state of the economy (from a consumer's perspective). The main measure of consumer confidence (also called consumer sentiment) uses an index number, with an average rate of confidence of 100 since 1980. If consumer sentiment is above 100, this means that optimists tend to outweigh pessimists in the period measured. If consumer sentiment is below 100, this means that pessimists have outweighed optimists in that period. An increase in confidence may indicate that households expect that their future income and employment prospects are improving. As a result, they may be less inclined to save and/or be willing to increase debt levels. During periods of low consumer confidence marginal propensity to consume tends to decrease. Marginal propensity to consume measures the increase in consumption that would result from a one- dollar increase in disposable income. If confidence in the economy were higher, it would be expected that the level of consumer spending would increase, resulting in an increase in AD. The level of consumer confidence can be affected by a range of sub-factors including (but not limited to):

- Perceived employment prospects
- Media reports on global economic conditions
- Geopolitical events such as terrorist attacks or a decision by the two major economies in the world - the US and China - to engage in a trade war
- Climatic conditions
- Changes in the government or its leader.

Business confidence

Business confidence measures the general level of optimism (or pessimism) about the future state of the economy (from a firm's perspective). If firms expect economic conditions to improve then they may be more willing to invest in new plant and equipment, so that they can meet the anticipated increases in demand and maximise potential profits. The level of business confidence can be influenced by:

- The future state of the economy
- Future demand for the firm's goods and services
- Future costs associated with the production of their products and the availability of inputs
- The likelihood of increased competition
- Expected rates of inflation
- Changes in, or uncertainty surrounding, government policy.

Investment is the most volatile component of aggregate demand because businesses are making a decision about their spending based on a number of 'unknowns'. The decision to invest, or not, is therefore a risky one and small changes in economic indicators can lead to significant changes in investment intentions.

The exchange rate

The **exchange rate** measures the value of one currency in terms of another currency. For example, on a particular day, one Australian dollar may be able to buy one US dollar. The exchange rate for Australia is therefore expressed in term of how much it can be exchanged for in terms of a foreign currency. Up to date exchange rates can be found at www.oanda.com, but at the time of writing, the Australian dollar could be exchanged for 0.55 British Pounds (GBP), 0.70 USD, 4.8 Chinese Yuan Renminbi (CNY) and 79 Japanese Yen (JPY). The RBA also provides information on the **Trade Weighted Index (TWI)**, which is a measure of the value of the Australian Dollar, expressed in terms of a weighted basket of the currencies of Australia's major trading partners. Over the course of 2018, the Australian dollar depreciated significantly, falling from 0.81 USD (or a TWI of 65.1) at the end of January to 0.70 USD (TWI of 61.3) by the end of October.

Changes in the exchange rate affect the structure of **relative prices** and this, in turn, has an effect on the demand for Australian-made goods and services. The change in the value of the dollar can theoretically affect each component of the aggregate demand equation but for the most part, demand for exports and imports will be the components that are most affected.

The impact on exports

Some exporters operate in highly competitive markets. They sell relatively **homogenous goods** into the world market and therefore must *accept the price that is determined in these markets*. This includes a large number of the **commodities** that Australia exports. For example, coal exporters receive the world price for coal that is set through demand and supply conditions in the world market. The price is usually expressed in USD. If a miner can sell each tonne of coal for 50 USD, the value of this export to the mining company will be determined by the exchange rate (the value of the Australian dollar in terms of the USD). If 1AUD = 1USD, then every tonne sold would generate AUD50 of revenue. Following a depreciation of the Australian dollar to say, 1AUD = 0.50USD, the exporter will now earn AUD100 per tonne. This boosts the value of exports (even though the same amount may be sold) and results in an increase in revenue for the exporter. This extra revenue is an injection into the circular flow model that results in an increase in economic activity.

Firms who compete in world markets where they *set their prices in Australian dollars* may also find that the demand for their good or service increases. The depreciation of the AUD discussed above effectively reduces the amount of currency that the foreign purchaser must sacrifice in order to obtain the Australian product. For example, if a Chinese tourist is looking to stay in a Melbourne hotel, they may be charged AUD500 per night. If the exchange rate was 1AUD = 5CNY, then the Chinese resident would have to pay 2,500CNY per night. A depreciation to 1AUD = 4CNY, would reduce the price for the Chinese tourist to 2,000CNY.

The **law of demand** is relevant here because the lower price that can be offered to the foreign resident (as expressed in terms of their currency) is likely to lead to an increase in demand (although the extent of the change will depend upon the PED of the product being purchased). The lower relative price of accommodation in Australia increases the purchasing power of the foreign resident and may make Australia a relatively more attractive destination when compared to other countries. (Of course, this analysis assumes that the value of the CNY does not change relative to other currencies). With a greater volume of exports being sold, this leads to an increase in AD.

The impact on imports (and import-competing businesses)

The price that Australian importers charge for the goods they buy from overseas is usually determined in world markets and Australian consumers usually have little influence over those prices. When the value of the AUD changes, the structure of relative prices with respect to imports and Australian-made goods and services also changes. Following a **depreciation of the AUD**, Australians will now need to exchange more AUD for each unit of foreign currency. This effectively increases the AUD price of any imported item (assuming the world price does not change), and reduces the purchasing power of the Australian incomes. As a consequence, the demand for imports is likely to fall, which decreases leakages from the circular flow. Importantly, the higher relative prices for imports encourage consumers, businesses and even the government to substitute their demand towards goods and services made by 'import-competing' businesses. This may cause an increase in AD and promote higher levels of economic activity.

Rates of economic growth in overseas economies

Economic growth measures the percentage change in the volume of goods and services produced in a nation from one measurable time period to another (usually reported every quarter, with yearly changes also quoted). An increase in economic growth is usually associated with an increase in a nation's real disposable income and the need for inputs to facilitate the growth.

Australia has an abundance of natural resources and therefore growth in other countries that require these primary resources will be of great benefit to the Australian economy. For example, growth in China means that their demand for raw materials continues to increase so that key infrastructure can be built and sources of energy (such as coal) are sold so that the goods and services that China sells to the world can be produced.

Strong growth in other countries is also associated with growth in disposable income. Some consumers, who now have extra income, will choose to purchase goods from countries like Australia. The rise of the middle class in China for example, has had a positive effect on the demand for two of Australia's key service exports. With increased disposable

income, Chinese families are increasingly willing to send their children to Australia for **educational services**. The income is also being allocated to tourism, helping to facilitate further growth in AD in Australia. This spending is seen as an injection into the core of the economy.

Review Questions 4.6

1. Explain two reasons why the level of Aggregate Demand might fall when the general level of prices is rising rapidly.
2. How might an increase in interest rates affect the Consumption and Investment components of AD?
3. Outline two reasons why consumer confidence might increase. How might an increase in consumer confidence affect the MPC and therefore the level of AD in the economy?
4. Outline two reasons why business confidence might decrease. Explain how this affects the behaviour of businesses and the level of AD.
5. Explain, with reference to key elements of the circular flow model, how a depreciation of the AUD might affect the level of economic activity.
6. Explain why the rate of economic growth in China might have a significant impact on the level of AD in Australia.

4.7 Aggregate Supply

Aggregate supply (AS) represents the total volume of goods and services that all suppliers have produced and supplied over a period of time. It is a measure of the ability of an economy to make available the goods and services to meet demand. Businesses and governments supply goods and services in a mixed economy and the total amount supplied can be intrinsically linked to the nation's **production possibility frontier** (and therefore its productive capacity).

When an economy has reached the point where it is supplying the maximum possible at that point in time, it is said to have reached **productive capacity.** This means that all relevant factors of production are being employed and productivity is currently being maximized. If an economy reaches its productive capacity, then it might be more difficult for the nation to achieve an increase in output in the future. For example, AD might be increasing but if businesses and the government cannot increase their production levels to meet this demand then growth is likely to stagnate. Therefore governments have, over time, focused their attention not only on AD but also on factors that influence the level of AS. To grow the economy on a continual basis, the nation's AS must expand so that growth in AD can be met with AS.

The following factors have the potential to influence the level of aggregate supply in the economy.

Changes in the general level of prices

The relationship between the level of **aggregate supply** and the general or **average level of prices** is not as straightforward as it was with regards to AD. In fact, there is much debate about a) whether there is a relationship between price levels and aggregate supply and b) the extent of that relationship. For the purposes of this area of study, only a small fraction of the debate will be considered.

New Classical view of AS

When using this model, an increase in the general level of prices can lead to an increase in aggregate supply but only in the short run. The short run can be defined as that period of time when the prices of the factors of production are relatively fixed. This is especially relevant in the labour market because wages often take time to respond to changing conditions of labour demand and labour supply. Wages tend to be 'rigid' (they don't move very much) in the short run because:

- workers sign contracts that stipulate their income (this could be between 1 to 4 years in some enterprise bargaining agreements)
- minimum wage legislation stops the market from moving to the equilibrium wage
- unions have used their negotiating power to achieve above equilibrium wages
- it may be difficult to give workers a pay cut due to the effect on morale and possible negative media coverage that harms an employer's reputation

Study tip

Teachers and students are advised that knowledge of all the various aggregate supply models presented in this chapter is not a requirement of the VCE Economics study design. Knowledge of 'the aggregate supply curve' is all that is required. Accordingly, teachers can decide to teach about one particular AS curve. It is beyond the scope of the study design for students to be asked to demonstrate an understanding of a specific AS curve in an assessment task or examination.

The long run is therefore seen as a period of time when all prices, including those in both product and factor markets, are fully flexible.

Given this key assumption, the increase in the general level of prices has a positive impact on the profitability of firms, but only in the **short run**. An increase in prices means the firms' profitability has increased, because the price received by the firms has increased but, due to lack of change in prices of their inputs (explained above), their costs of production have not increased. When revenues increase while expenses stay the same, the willingness of firms to increase supply will increase. In the **long run**, however, it could be argued that there is no real response of AS to changes in prices. At the next round of wage negotiations, the workers may be able to argue effectively for wage increases (which are more likely to be granted if strong levels of growth causes inflation and the unemployment rate is low, because this gives the workers more bargaining power). The increase in the costs of production over time thereby negates the previous increase in profitability and the real cost of production is unchanged in the long run, resulting in a return to the original level of AS. It is therefore argued that AS is not affected by the general level of prices in the long run because resource prices adjust to the changing market conditions.

The slope of the **New Classical Short Run Aggregate Supply (SRAS)** curve is therefore upward sloping because, in aggregate, firms are willing to supply more, due to the temporary boost to the profits. In the long run, the New Classical economists believed that the general level of prices had no effect on the level of AS. The prices of the factors of production (and, in particular, labour) would 'catch up' to the increase in prices and the profitability at each price level would be the same (assuming the other factors affecting AS remain the same). For a more detailed explanation of the economic processes that underpin the New Classical model, refer to Box 4.4. In addition, a full explanation of how AD and AS curves are utilised in each of the models is undertaken in Section 4.8.

The Keynesian view of AS

Keynes did not agree with the New Classical economists about the behaviour of prices and wages. He based his view of the reaction of AS to prices on a number of alternative assumptions. Firstly, Keynes believed that as long as the economy had spare capacity, AS would essentially be perfectly elastic (with regards to the general level of prices). He argued that firms would be easily able to increase their output and would not need an increase in price to motivate an increase in supply. A key feature of the Keynesian model is that both wages and prices are sticky (especially in a downward direction) and this lack of flexibility helps to explain why the AS curve is flat for most of the model). Notice how prices don't tend to decrease, even if the economy is operating well below its productive capacity.

If, however, production reached a point where the economy operated near full capacity, then '**bottlenecks**' will start to appear. Bottlenecks refer to those points in the economy where, if the economy is working at its full capacity, any increase in demand will just block the production process, rather than increase output, slowing down the whole process. This operates much like the narrowing at the neck of a bottle - which slows the flow of liquid from the bottle. When bottlenecks appear due to lack of **spare capacity,** the firms would need to be offered higher prices to motivate them to increase supply (because it might be harder to attract the resources needed to increase supply).

Keynes agreed with the New Classical economists in terms of the potential output or productive capacity of the economy. At this point, increases in the general level of prices will have little impact on the ability of firms to supply because they are unable to access the resources to increase production.

The implications of these alternative viewpoints have been the subject of much economic debate over time. They have influenced the degree of government intervention that has been seen as appropriate in the face of different economic problems and both viewpoints have been in and out of favour with governments at different points in time. It is advised that students have a good understanding of at least one of these viewpoints/theories so that you can accurately describe the impact of changes in the general level of prices on the ability and willingness of firms to supply.

The factors that follow are not as controversial as the general level of prices and both the Keynesian and the New Classical Economists are largely in agreement about how they will affect the level of AS in the economy.

The quantity of the factors of production

Firms use resources as inputs in the production of goods and services. Natural resources are needed for all areas of production, either directly or indirectly. Consider the following:

- The discovery of oil, which could be used as an **input** in the production process, had a significant impact on the ability of firms to supply. Food production, for example, has benefited from increased mechanisation, the use of oil in the production of fertilisers and pesticides and the increased ability of firms to access resources from overseas. In contrast, a drought makes it more difficult for farmers to supply agricultural goods to the market place due to the lack of a key resource - water.

Study tip

Students should be careful when using the example of investment in technology as a factor affecting AS, that they focus on the AS effect of the investment i.e. its potential to improve productive capacity and potential output, not on the effect on spending and hence AD.

- Australia's relatively high level of immigration adds to the pool of available of **skilled labour**, which can be utilised in the production process. This policy response helps to deal with, in part, the ageing of the Australian population and skills shortages in some professions. The increase in the proportion of the population retiring from paid employment as the population ages has the potential to significantly reduce the ability and willingness of firms to supply. (Immigration policy and its effect on AS is covered extensively in Chapter 12.)
- Increased investment spending on technology and capital equipment, as well as being included as a component of AD, also increases the amount of capital resources that are available for firms to produce goods and services and therefore can positively affect AS. For example, a firm that introduces robots into the production process has an increased capacity to supply as the robots can work for extended periods (unlike humans who tend to get tired). Government spending (G2) on infrastructure can also increase the availability of valuable capital that can facilitate expansion in economic activity.

The quality factors of production

The ability of firms to maintain and increase their supply will depend not only on the *volume* of resources, but also how *valuable* those resources are. Consider the following examples of how improved **quality** of resources can influence AS.

- Over time, if land is used in an unsustainable manner, the ability to supply may be reduced. Farming businesses, looking to increase yields in the short term, might decide to use artificial fertilisers and pesticides such that the quality of the soil is gradually reduced over time. This directly affects the ability of the farmers to grow food over time and therefore the AS in the economy.
- The **quality of labour** resources in an economy is intrinsically linked to the health and education outcomes of the population. A more educated population is likely to be more productive. A higher quality labour force may be able to suggest more efficient methods of production, undertake research that leads to the development of new technology and be engaged in activities that generate higher end use products. A healthier workforce is also likely to be more productive because fewer days are spent away from work due to illness and they enjoy the work they are involved in.

- The **quality of capital** resources can also affect aggregate supply. Better technology is constantly being developed and these improvements make available the supply of some goods and services that were previously impossible. For example, access to a faster broadband network may increase the ability of firms to offer their goods for sale in foreign markets. Artificial intelligence may also result in less wasteful and more productive production methods that increase the ability and willingness of firms to supply.

The costs of production

Costs of production were discussed as a key factor that affected an individual firm's ability and willingness to supply (see Chapter 2). By shifting each individual supply curve to the right, the economy's ability to supply more goods and services overall (i.e. AS) might be increased. The following examples illustrate the effect of changing costs of production on AS.

- Falling **oil prices** could be seen as a key factor that increases aggregate supply in a nation. Many firms are affected directly by falling oil prices while others are affected indirectly. Delivery companies would be able to increase

their supply due to the falling oil prices and perfume makers would also experience a decrease in their costs of production (because oil is an ingredient in many synthetic perfumes).

- Slower growth in wages (especially if they are below the inflation rate) will also decrease the **real unit labour costs** for firms. They may be able to hire more workers such that the firms' ability to supply increases and AS thereby increases. In contrast, excessive wage claims can reduce the ability and willingness of firms to supply because their costs of production are excessive relative to the prices firms can charge in the market.

- Falling **technology** prices can also affect the costs of production. Over time, computers and Internet access have become cheaper to purchase, resulting in lower costs for firms who need them to remain competitive. The fall in this cost of production allows aggregate supply to increase.

Box 4.2 The value of infrastructure spending

The government can have a significant impact on the quality and quantity of productive resources that are available to firms to increase their supply. Spending on education and training can affect the quality of labour resources and the laws relating to immigration also affect the labour market. The government also allocates part of its budget to infrastructure spending. This is a form of government investment that provides the foundations for a wide range of economic activities. Infrastructure spending is discussed at length in Chapter 12, but it is worthwhile briefly considering its impact on the ability of private firms to increase their supply. For example, the government could build new road and rail infrastructure. This should, if planned effectively, enable less time to be spent on roads when travelling from one place to another. This has multiple benefits:

- **Delivery firms will be able to make more deliveries per hour.**
- **Worker might arrive at work feeling more refreshed and therefore they may be more productive.**
- **Vehicles used in business will use less petrol and this helps to lower production costs.**
- **Rail infrastructure might reduce carbon emissions, helping to reduce the severity of future climate change impacts, and the damage to potential supply caused by those impacts.**

Technological change

A change in technology is a significant factor that has affected the quality of resources available, productivity growth and the cost of production. Many workplaces around the world have introduced technology that has replaced humans in the production process. This started with repetitive, low-skilled tasks, but increasingly technology is being developed with some form of artificial intelligence. The use of technology increases the ability of firms to increase supply from a given workforce and helps to reduce the costs associated with hiring labour in the long term. For example:

- The **Internet** has been utilised by a wide range of firms to increase their ability to supply. For example, a customer seeking a new insurance quote can do so using a single comparison site, rather than wasting time ringing up each competitor in the market. This means that the insurance companies no longer have to hire people to answer the phone. The technology therefore helps to reduce the cost of production for the firm and helps to increase their ability to supply.

- The **mechanisation** of industries that were once labour intensive also increases the ability of firms to supply. Farm machinery can complete the work of 100s of people and therefore aggregate supply can be increased. Similarly, technological developments in the energy industry have allowed companies to extract far more oil and gas using fracking techniques.

- The **advances in technology** that have occurred over recent years have allowed mining companies to integrate the use of driverless trucks and trains as part of their operations. This cuts down on labour costs (which at the height of the mining boom were quite high) and the number of accidents is reduced due to less human error, which also raises productivity. This saves the company money and less time is wasted because fewer accidents disrupt the ability of the firm to supply.

Productivity growth

Productivity is measured as the output per unit of input. It describes how efficiently resources are being used in the production process to create the goods and services demanded. One measure commonly reported by the ABS is **labour productivity**. This measures total output (as measured by GDP) divided by the total hours worked. Alternative measures of productivity include **capital productivity** and **multifactor productivity** (the productivity of the combined use of capital and labour).

Productivity growth is usually associated with an increase in the ability and willingness of firms to supply because:

- A greater volume of goods and services can be produced from the existing (or in some cases fewer) inputs. This increases the firm's productive capacity.
- The costs of production will fall because the **cost per unit** decreases if the increase in output is greater than the compensation required for the increase in output.

Productivity growth across a range of firms in the economy leads to an increase in the nation's AS. The importance of productivity growth is further discussed in terms of its impact on AD and AS in Activity 4e.

Study tip

Note how the appreciation of the AUD has a contrasting effect on AD and AS. While a deprecation in the AUD tends to boost AD, it reduces the ability and willingness of firms to supply. Generally speaking, the demand side effect will be greater as the change in the value of the currency has a bigger impact on final goods and services that are traded in the market than it does overall on only a part of the final price (i.e. the input prices).

Exchange rates

The exchange rate is considered a supply factor because it affects the cost of production. A **depreciation** of the AUD will make it more expensive for firms to purchase inputs that might be utilised in the production process. For example, firms that require foreign-made computers to operate will experience an increase in their cost of production. The increase in the price (when converted to AUD) may also make it more difficult for firms to afford the capital that could boost supply. Therefore the ability to increase AS over time could be hampered by a low exchange rate. In contrast, an **appreciation** of the AUD would make it much easier for a firm that imported clay from overseas to make their pots, and therefore to increase supply. The general level of AS is therefore likely to be positively influenced by an increase in the value of the AUD.

Climatic conditions and other disruptions to AS

As was discussed in Chapter 2, favourable weather conditions help firms to increase the supply of a wide range of goods and services, because favourable weather increases the availability of key resources used to make goods and services and helps to reduce input costs for firms. Chapter 3 also discussed the impact of potential alterations to weather patterns that could be linked to climate change. Some climate scientists believe that the increased incidence of erratic weather patterns experienced in Australia in recent years (such as more severe droughts, floods, storms and bushfires) can be traced back to warming of the planet. Each of these events resulted in a significant disruption to supply. For example, the drought in NSW in 2018 had a significant impact on the ability of the farming community to supply key foods and beverages in Australia.

Study tip

Governments have recognised the importance of adding to the supply potential of the economy, because once the economy reaches its productive capacity, it will be difficult for firms to further expand production levels. This can then become a limit on the potential increases in economic activity and incomes. For example, an inability to attract suitable labour may be a constraint on a firm's ability to expand. To address this issue, the government could increase spending on vocational education and training and/or increase the skilled immigration intake. Aggregate supply policies specifically designed to boost the nation's productive capacity through productivity growth and the lowering of production costs are discussed at length in Chapter 12.

Humans can also disrupt supply through their destructive and sometimes negligent behaviours. Acts of war tend to destroy key infrastructure and businesses, significantly reducing aggregate supply in those regions.

Review Questions 4.7

1. What is meant by the term aggregate supply?
2. Explain why growth in AS is important for maintaining healthy levels of economic activity.
3. Explain why, according to New Classical economists, the willingness and ability of firms to supply might increase when the general level of prices rises, but only in the short run.
4. Explain why New Classical economists believe that the general level of prices has very little impact on the long run level of supply in the economy.

5. Explain how Keynes provided a different explanation for the relationship between the general level of prices and the level of AS in the economy. In your answer, explain how his assumptions may have differed.
6. Identify one reason why the quantity of productive resources may have increased in Australia over the last 2 years.
7. Identify one reason why the quantity of productive resources may have decreased in Australia over the last 2 years.
8. Identify and explain one factor that could lead to an improvement in the quality of labour resources and how this might influence the level of AS in the economy.
9. Explain how an increase in the common costs of production might reduce the ability and willingness of firms to supply. Refer to two specific current examples in your response.
10. Explain how the depreciation of the AUD might affect the costs of production and therefore the level of AS.
11. What is meant by the term productivity? Explain how productivity growth helps to expand the productive capacity of the economy.
12. Identify two significant technological developments from the last 10 years and explain how they have helped firms to increase AS.

Activity 4e Productivity - why is it so important?

Economists generally agree that boosting productivity will help an economy to achieve higher rates of economic growth and higher living standards. Productivity is a measure of how efficiently the scarce resources of land, labour and capital have been used to produce goods and services. An increase in productivity (productivity growth) means that a greater volume of goods and services can be produced using the same or fewer inputs. This would represent an increase in technical efficiency, as described in Chapter 1. Students often confuse the concepts of productivity and production. While they are related, they are different concepts. Production can be described as the final output of goods and services (a noun) or the act of converting raw materials into intermediate or final products (verb). Productivity differs in that it measures how efficiently the final product has been achieved.
Productivity growth helps to promote increases in both AD and AS. If more output can be generated from existing resources then the economy is technically able to supply a greater volume of goods and services to the population. Not only that, the increase in productivity can help to lower the cost of production for firms. Assuming that workers are able to produce more items per hour and that their wages are not increased, then the cost of producing each unit has fallen. This shows the link between macroeconomics and microeconomics because the lower costs of production will increase the willingness and ability of individual firms to supply. Collectively this adds to an increase in AS and productive capacity of the economy is expanded.

Productivity growth is also seen as important for Australia's international competitiveness. When firms in Australia can boost production with fewer inputs then they have the opportunity to lower their costs of production, and hence they are able to charge lower prices for their products. If prices are lower than those offered in other countries then greater sales may be made (more exports sold and more local products purchased instead of imports). The lower prices may also, according to the law of demand, result in greater affordability for customers, further helping to boost AD.

As you progress further through the book, the concept of productivity will be revisited. It is an essential reason for the adoption of aggregate supply policies such as infrastructure spending and microeconomic reforms. Look out for news items and articles during the year, which discuss the importance of productivity growth and the changes that may need to be made to the structure of the economy to achieve this.

The link between productivity and living standards is a little less clear. When households have access to cheaper goods and services then it is evident that their material living standards have increased. They are able to purchase more with a given income because the price of some items may have fallen (at least in real terms).

Productivity growth may also result in more time being available for recreational pursuits. Given that people may now be able to afford the same volume of goods and services with less income, they may decide that they can work less. This would boost non- material living standards because more time could be spent on hobbies and building meaningful relationships, and allow the body and mind time to rest and reflect. Unfortunately, while many economists predicted in the 1960s that we would experience this idealistic lifestyle in the future, it has not eventuated. The drive for productivity growth has, in many cases, had a negative impact upon non-material living standards. Workplaces may now be more accountable with workers expected to boost their output and stop wasting time. This may have increased stress levels and put pressure on health and relationships. Technology has certainly boosted productivity but it has also meant that some workers have been displaced and feel less connected to each other.

Questions

1. **Define the term productivity and explain how it can be measured.**
2. **Distinguish between productivity and production.**
3. **Explain why an increase in productivity is likely to boost aggregate supply.**
4. **Explain how an increase in productivity might affect the general level of prices and AD.**
5. **Explain why an increase in productivity may be associated with an increase in living standards.**
6. **Explain why an increase in productivity may be associated with a decrease in living standards.**

4.8 Alternative models of AD and AS

Changes in AD and AS can be illustrated graphically to show how employment, the general levels of prices and the nation's output may be affected. Section 4.7 highlighted that the two different schools of economics (New Classical and Keynesians) could not agree on how the general level of prices affected the real output in the economy, so it is not surprising, that when these models are constructed the AS curves and the conclusions from each of the models is different.

The Aggregate Demand (AD) curve

When the AD curve is drawn, AD is redefined as the total quantity of aggregate output (or real GDP) that all purchasers in the economy are willing to buy at different general price levels. Similar to the microeconomic demand curve, the AD curve shows an **inverse relationship** between the general level of prices and the total quantity of output demanded in the economy.

Remember, however, that AD is not just the demand from consumers but includes each component that was discussed in Section 4.5 (AD =C+I+G+X-M). The AD curve is downward sloping. This means that:

- An increase in the general level of prices will cause the total demand for goods and services to decrease
- A decrease in the general level of prices will cause the total demand for goods and services to increase

The reasons for this relationship are different to those provided in Chapter 2 when microeconomic demand curves were discussed. The reasons for the downward slope of the AD curve are:

The wealth effect

Higher prices on average (the general level of prices) will reduce the purchasing power of any given amount of **savings**. The public as a group will tend to feel poorer as prices are rising. When prices are falling, an existing amount of savings can be used to purchase more goods and services. The change in the general level of prices therefore affects the purchasing power of households across the economy and therefore has an impact on Consumption spending, changing AD in line with the changing general level of prices.

The interest rate effect

A fall in the general level of prices is likely to mean that consumers have more of their income left over to save in the economy. In addition, there will be less incentive to borrow given that purchasing power has risen. This fall in the demand for money (or loans) relative to supply will exert downward pressure on interest rates, which in turn can stimulate Investment demand in the economy.

Study tip

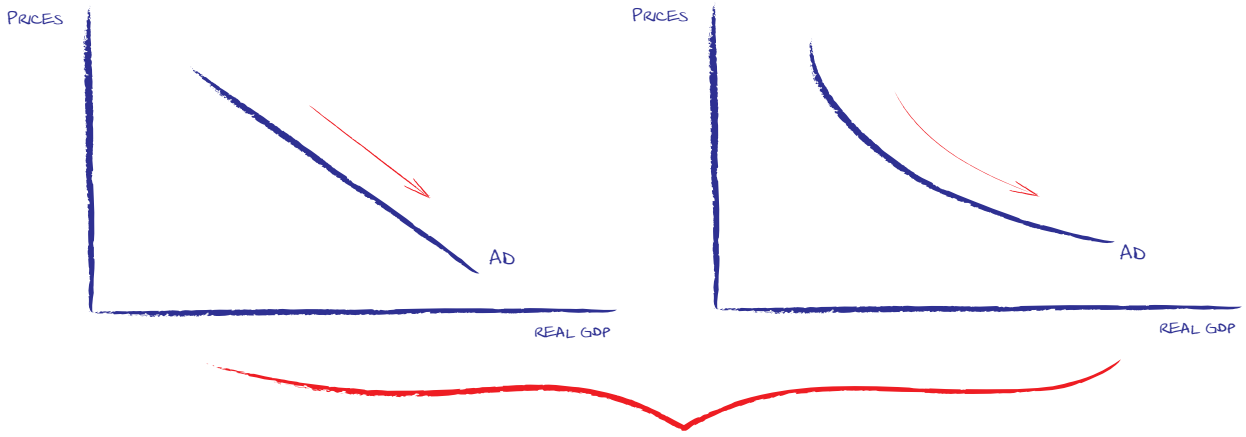
It may be tempting to explain why the AD curve is downward sloping using the theories presented for the microeconomic demand curve. The reasons for the inverse relationship are different. Remember that this is looking at the purchases across the whole economy. It is not sufficient to say that more will be purchased because goods and services are cheaper. It is recommended that you understand at least one of the three reasons given for the inverse relationship between the general level of prices and AD.

International competitiveness

When the general level of prices in Australia decrease and it is assumed that prices in other economies remain the same, the international competitiveness of the domestic economy improves. Exports become more attractive to foreign buyers and local purchasers may substitute towards locally made goods rather than imports. Therefore a lower general level of prices leads to an increase in Net Exports and an increase in AD.

Either a straight or a 'curved' line can be drawn to represent the AD curve and both examples are illustrated in Figure 4.3. The diagram illustrates the inverse relationship between the total demand for goods and services and the general level of prices.

Figure 4.3: AD curves



Downward sloping AD curve because of:
1. Increased purchasing power and wealth effect
2. Lower interest rates
3. Increased international competitiveness

Note that the AD curve (like the microeconomic demand curve) is drawn with a number of conditions that affect the position of the curve. Factors that affect AD are those, other than the general level of prices, that will influence any of the components of AD (C, I, G, X or M), which in turn results in the AD curve shifting either to the left or to the right. Each AD curve is drawn assuming that these factors remain constant (*ceteris paribus*). For example if there was a decrease in income tax rates, this would increase the disposable income of households, which encourages people to increase their consumption at each price level. This is represented by a shift of the demand curve to the right. The effect of changing AD and AS will be discussed at length in Section 4.9

The Aggregate Supply (AS) Curve

Study tip

If you choose to use this model to make predictions about the effect of changes in AS on the level of employment, output and the general level of prices, then it will be sufficient to use an upward sloping AS curve. Note that your conclusions will only be appropriate for the short run (which could, in some instances be a long period of time).

You may recall from Section 4.7 that changes in the general level of prices can have different effects on the total aggregate supply in the economy, depending on the assumptions made by those creating the models. Two models of aggregate supply will be presented here and you will be free to choose the model that you believe best fits with your understanding of the economy.

For each model, the aggregate supply curve represents the total real value of production that producers are willing and able to supply at various general (or average) price levels.

Model 1: The New Classical AS curve

You may recall from Section 4.7, that the **New Classical economists** believed that there was a positive relationship between the general level of prices and the willingness and ability to supply, but only in the short run. The short run was assumed to be a period where the prices of the factors of production were 'sticky' in that they don't necessarily change in response to changing conditions in that particular market. For example, one might expect that during a period of below average production, the unemployment rate might increase. In a free competitive market based on the models discussed in Chapter 2, it would be predicted that wages would fall to clear the labour market. Wages, however, are usually unresponsive to changes in these conditions due to:

- Employment contracts that stipulate wages and conditions for a period of time
- Minimum wage legislation
- Strong union representation that might push wages higher than the equilibrium
- The npotential negative psychological effect of reduced wages.

Based on these key assumptions, the New Classical economists concluded that the Short Run AS (SRAS) curve was

upward sloping. An increase in the general level of prices temporarily leads to an increase in the firms' profitability (their revenues are increasing from a given sale but their labour expenses remain fixed). The increased profitability provides the incentive for firms to increase the amount they make available for sale in the economy. In contrast, a fall in the general level of prices reduces the profitability of firms. The price they receive for the products fall so their revenue falls but the amount they pay for labour may be sticky in the short run. The SRAS curve is therefore drawn, holding a number of conditions constant. The most important of these conditions is wages and salaries of the employees but it also assumes that the other conditions discussed in Section 4.7 are held constant. The SRAS is shown in Figure 4.4 below.

Figure 4.4

New Classical SRAS curve

The New Classical economists assumed that in the long run factor markets would adjust to the changing price levels and therefore respond to the relative levels of labour demand and labour supply in the market. For example, an increase in the unemployment rate would be associated with a surplus of labour. This would provide the incentive for some of the unemployed to offer their labour services for a lower wage than that currently offered in the market. A higher rate of unemployment also reduces the bargaining power of existing employees and their wages may be cut in line with the changing economic circumstances. Firms, when they seek new employees, will also be able to offer jobs at lower wages, knowing that some people, who may have been unemployed for a while, are desperate to get a job. The flexibility of wages in the long run is a key assumption of the New Classical model. Therefore, if there is an increase in the general level of prices that makes it more profitable to produce in the short run, it cannot be sustained into the long run. Factor markets will catch up, the costs of production will eventually rise, and the SRAS curve will shift to the left. The implication of this is that the **Long Run Aggregate Supply (LRAS) Curve** is vertical. The more flexible the prices for resources, the less likely there is to be a relationship between the general level of prices and the willingness and ability of firms to supply.

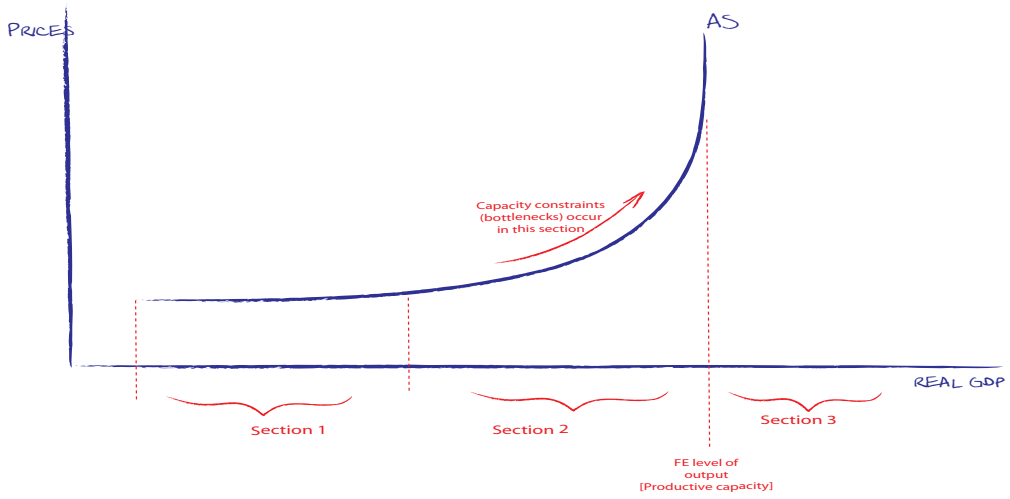
This model leads to the conclusion that AS is perfectly inelastic with respect to the general level of prices. The New Classical economists believed that the economy would have a natural tendency to move back to the same level of production (called potential output) because prices (for both products and the factors of production) were fully flexible. This is discussed fully in Box 4.4.

Model 2 – The Keynesian AS curve

The **Keynesian model** of AS makes similar predictions about the nature of resource prices in the short run. Keynes' model suggested that wages may be sticky (especially in a downward direction) even in the long run. If there are strong economic conditions and skills shortages start to develop in the labour market, wages are likely to increase. In the event of an economic downturn, however, where there is a high degree of unemployment, Keynes believed that it would be difficult to cut the wages of those employed. The reasons for the stickiness of wages are similar to the reasons quoted in the New Classical model, except that he believed that these reasons would persist.

Another key assumption that Keynes made in his model was that prices might also be sticky, especially when the economy was operating with spare capacity. He predicted that firms might be unwilling to drop their prices because their wages remain high. He also believed that firms operating in less than competitive markets might be reluctant to start a price war because all firms would end up being worse off. The assumptions made by Keynes lead to a different shape for the AS curve than that predicted by the New Classical economists. . In the Keynesian model, the AS curve actually has three sections, which are highlighted in Figure 4.5.

Figure 4.5: Keynesian AS curve



Section 1: This section of the AS curve is relatively flat. The level of GDP is low and the economy is assumed to be operating below its full capacity. The level of unemployment is assumed to be high and firms have other resources that they are not fully utilising. Firms have the capacity to increase their output easily and it is assumed that this would not require an increase in the general level of prices in order to do so.

Section 2: In section 2, some shortages develop in the market, as the economy gets closer to its productive capacity. Bottlenecks might start to appear and the workers may be able to bargain for higher wages (and may not increase their efforts unless wages are increased). This increases the costs of production, so at this stage the firms will only increase aggregate supply if they are able to sell their products at a higher price. This area looks a little like an 'elbow' because, as AS rises in this section, average prices are also beginning to rise.

Section 3: Once the economy reaches section 3, it has reached its current productive capacity. It will be impossible for firms across the economy to increase their output even if they can generate more revenue from doing so. This is sometimes referred to in economic commentary as a very high degree of capacity utilisation. When this figure gets closer to 100%, then the economy faces serious capacity constraints, which make it very difficult (and in the case of 100% capacity utilisation, impossible) to boost aggregate supply.

Note how the AS curve in this model is horizontal when the economy is operating below full capacity and transitions to a vertical curve when the economy has reached full capacity. In between there is a phase where skills shortages and bottlenecks develop that cause an upward sloping section of the AS curve.

When the Keynesian AS curve is drawn it is also assumed that all of the factors that affect AS are held constant. For example, if there is an increase in labour productivity, then this effectively means that more output is being produced for each hour worked. This means that at each price level firms are able to supply the market with more output, resulting in a shift of the aggregate supply curve to the right. Higher productivity also reduces the cost per unit which may mean that firms are willing and able to supply goods and services to the market at a lower price (also represented by a shift of the AS curve to the right). The implications of movements of the AS curve will be discussed in the next section.

Review questions 4.8

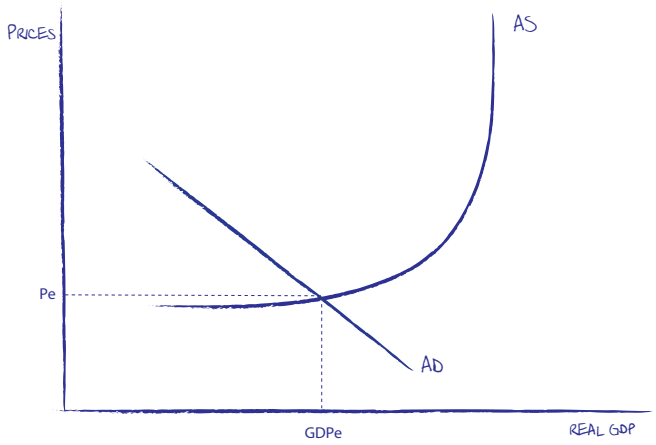
1. Distinguish between the reasons for the AD curve sloping downwards from those relating to the downward sloping demand curves for specific products.
2. Explain why the AS curve is upward sloping (reference to only one of the AS curves presented is sufficient).
3. Explain the significance of the relatively steep part of a Keynesian AS curve. In your answer refer to capacity constraints.

4.9 How changes in AD and AS affect economic growth, employment and the general level of prices

The models that were presented in the last section can be combined with economic theory to make predictions about the effect of changing AD and AS condition on key economic indicators. The equilibrium level of output that occurs in the economy is determined where the AD and AS curves intersect. This is illustrated in Figure 4.6 using a Keynesian model.

The model drawn below more closely resembles the Keynesian model of the economy (because of the changing shape of the AS curve). The equilibrium level of output and general price level is determined by the intersection of the AD and AS curve. Therefore the economy is operating at GDPe and Pe. The diagram is not able to show the level of employment directly. It therefore requires some economic intuition. Given that the economy is not operating at full capacity at GDPe, it can be assumed that there will be some idle resources. Therefore the unemployment rate is more than likely going to be higher than the government's goal for full employment (which will be discussed in more detail in Chapter 5).

Figure 4.6: AD and AS



The level of output, employment and general level of prices will therefore be altered by changes in AD and/or AS.

Changes in AD

The AD curve will shift to the right when any of the *ceteris paribus* conditions for aggregate demand change, such that AD increases at each average price level. These factors, which were described fully in Section 4.6, are as follows:

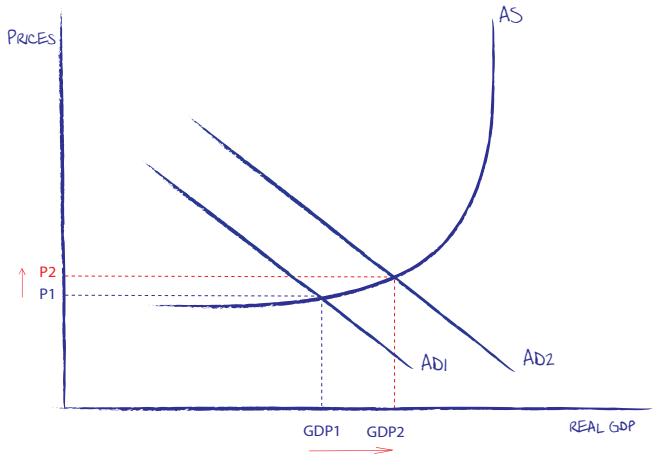
- Interest rates
- Consumer confidence
- Business confidence
- The exchange rate
- Rates of economic growth overseas
- Personal disposable income

Study tip

Students are reminded that they are only required to demonstrate a knowledge of 'the aggregate supply curve' for the purposes of the VCE Economics study design. It is entirely up to each individual to determine which AS curve to use in an assessment task or the examination.

Note also, that the general level of prices was included as a factor in Section 4.6, but it is not seen as a factor that shifts the AD curve. This factor is inherent in the diagram because prices appear on the y axis which means that increases in AD that occur in response to lower average prices will be reflected in a movement along the AD curve. In contrast, higher average prices will cause AD to decrease along the AD curve.

Figure 4.7: An increase in AD



A change in any of these factors that causes the AD curve to shift to the right will therefore lead to a new equilibrium quantity and output in the economy. The AD curve shifts from AD1 to AD2 as illustrated in Figure 4.7. The equilibrium level of output increases and the general level of prices increases (but only by a small amount because the economy is moving from a position where it was operating below full capacity). A specific example is discussed in Box 4.3 to enhance your understanding of this model.

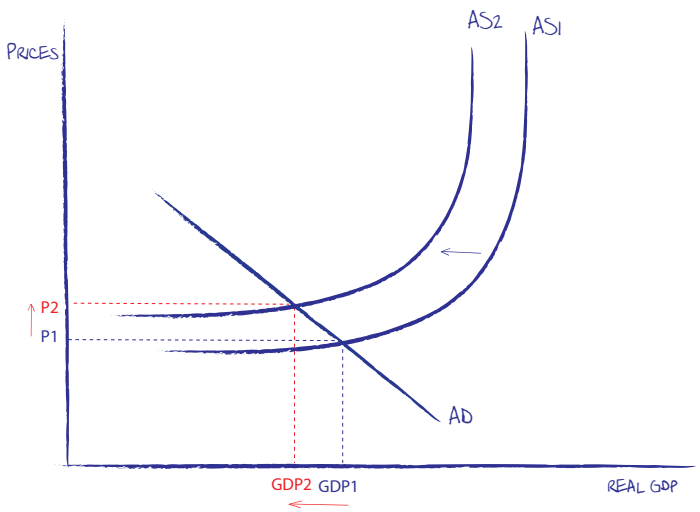
Changes in AS

The AS curve will shift when any of the *ceteris paribus* conditions for aggregate supply change, such that AS increases or decreases at each price level. These factors, which were described fully in Section 4.7, are as follows:

- Quantity of factors of production
- Quality of factors of production
- Costs of production
- Technological change
- Productivity growth
- Exchange rates
- climatic conditions

While the general level of prices was discussed as a factor affecting AS in Section 4.7, it is already on the vertical axis so changes in it will be reflected as a movement along the AS curve.

Figure 4.9: A decrease in AS



Imagine that Australia experienced a favourable year in terms of weather conditions. This led to bumper crops for farmers and an increase in the nation's aggregate supply. This could potentially increase the quantity and quality of the resources available for supply and lead to lower costs of production for firms who use these goods as inputs in the production process. The aggregate supply curve would shift right (as depicted in Figure 4.8). The total supply being made available in the economy has been shown to increase at each price level. In order to encourage extra demand in the economy, however, the firms may need to offer their products for sale at a lower price. The increase in the nation's AS therefore leads to a reduction in the general level of prices, which causes AD to expand (a movement along the AD curve). For example, the lower prices offered for these goods could encourage greater demand from overseas buyers. The new equilibrium level of output has increased at a lower general level of prices (in this case the increase in AS has been somewhat deflationary). Given that the economy is now producing more goods and services, it can also be expected that the increased level of economic activity will be associated with an increase in the number of people who are gainfully employed.

In contrast, a decrease in AS (which might be caused by a depreciation of the AUD as discussed in Box 4.3) is likely to cause the equilibrium level of output to fall. The AS curve will shift to the left (and upwards), from AS1 to AS2 (as depicted in Figure 4.9). The general shortage of goods and services in the economy causes an increase in the general level of prices and a contraction in demand (people will feel poorer and may not be as willing and able to spend). The fall in production will be associated with a decreased need for resources so the demand for labour is also likely to decrease (causing a fall in employment/increase in unemployed persons).

Review questions 4.9

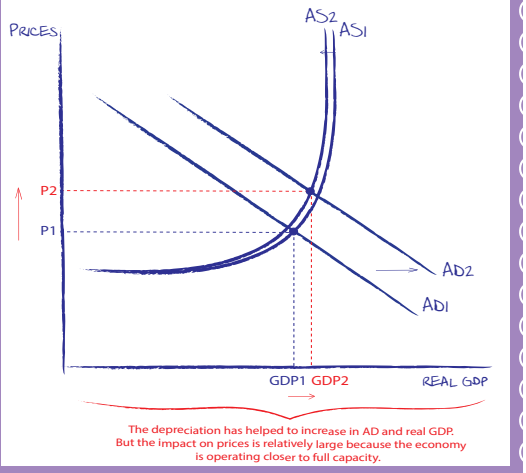
1. With reference to one of the key assumptions, explain why the New Classical short run aggregate supply curve is upward sloping.
2. Explain why Keynes believed that the AS curve was horizontal when the economy was operating with some degree of spare capacity.
3. Explain why the second section of the Keynesian AS curve is upward sloping.
4. Explain how output and prices respond in the event that there is an increase in AD, assuming that the economy is operating on the upward sloping section of the Keynesian AS curve.
5. Using the Keynesian model, explain how output and prices respond in the event that there is an increase in.
6. Explain how it is possible for a large increase in AD to have minimal impact on output.
7. Explain how it is possible for a large decrease in AD to have minimal impact on output.

Box 4.3 Using the AD/ AS model to explain the impact of a change in a factor of AD.

Over the course of 2018, the AUD depreciated by more than 10%, from 0.81USD in late January to 0.70USD in late October. This increases the ability of Australian producers to sell their exports to foreigners and encourages some Australians to purchase Australian made products instead of imports. This increase in net exports (X -M) would result in a shift of the AD curve to the right because the conditions of AD have changed. In the economy, the producers should notice the increase in AD because they are likely to be busier and their stocks will be falling. To meet the increase in demand, they will look to replenish stock levels and increase production volumes. In doing so, their demand in factor markets will also increase because they need resources to produce additional products. Therefore, the derived demand for labour should increase and the unemployment rate is likely to fall.

The effect on the general level of prices will depend upon where the economy is operating in terms of its use of its productive capacity. If there is plenty of spare capacity, the increase in AD may not cause excessive price increases because firms can easily increase production to meet demand and do not need an increase in price to provide this incentive. As you will discover in the next chapter, in 2018 Australia had some degree of spare capacity, evidenced by the trend rate of unemployment being above the 'full employment' level, and labour force underutilisation rates remained high. Therefore, the AD effect of the depreciation on real GDP was positive with little impact on inflation (as depicted in Fig 4.7).

Diagram A
Possible effect of further exchange rate depreciation in 2019



However, if the exchange rate continued to fall in 2019 and the economy began to operate closer to full capacity, then the general level of prices would rise and there would be minimal impact on real GDP and employment. The depreciation of the AUD will, however, also have a negative impact on AS given that more than 50% of imports are either intermediate goods (e.g. raw materials) or capital goods (e.g. machinery). Those firms using imported components would need to exchange more AUD to buy their resources from overseas, which results in a shift of the AS curve to the left. This possible scenario for 2019 is highlighted in Diagram A to the right.

Notice how the depreciation causes the AD and AS curves to move in opposite directions, so, at first glance, it might be difficult to determine whether GDP will increase and what will happen to the unemployment rate. Both the AD and AS effect will place upwards pressure on prices (which will depend, in part, on the stages of the business cycle). Overall, the AD effect will be greater than the AS effect (in part because on the demand side the price of the whole good/service is affected but on the supply side, only part of the cost of production is affected). This means that a depreciation of our exchange rate is generally good for economic growth (unless the economy is already operating near productive capacity or we are using the New Classical model).

Using the same model of the economy, it would be logical to conclude that an appreciation of the exchange rate will have the reverse effects on the economy. While the (aggregate) supply side effects would be positive, it would be outweighed by the effects on AD. Overall, a higher exchange rate would reduce net exports and AD, causing real GDP to fall and the unemployment rate to rise. In the Keynesian model, where the economy is operating below full capacity, a fall in AD would not necessarily cause a fall in the general level of prices (due to the assumptions he made about sticky wages and prices even when the economy is operating at below full capacity). In Australia, it has been rare to see deflation (where the general level of prices decreases), but the economy has continued to produce more goods and services each year for the last 25 years. Applying the Keynesian model, the fall in the general level of prices would only occur if the economy had previously been overheating and the excessive demand that was causing the inflationary pressure was removed. This decrease in AD would therefore have the reverse impact on the economy as that shown in Diagram A.

Activity 4f Factors affecting AD and AS

This activity is designed to test your understanding of the AD/AS model and the factors that affect both Aggregate Demand and Aggregate Supply. For each factor, you are required to illustrate, using a fully-labelled diagram, how the movement (shift) in the AD and/or AS curve will affect the level of economic output (GDP) and the general level of prices. You should also predict how the changes may affect employment in the economy. While you are just beginning your study of this areas, your knowledge and skills in this area will improve as you progress through the next two chapters, and this is a good place to begin practising. You may use either the New Classical model or the Keynesian model.

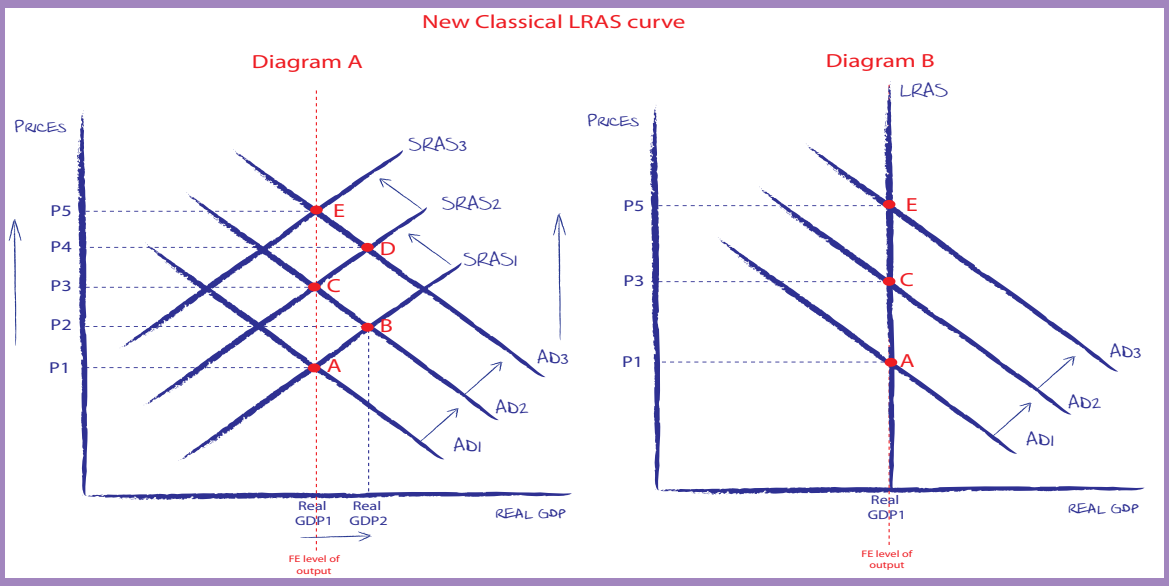
Questions

1. **A reduction in interest rates**
2. **An increase in the rate of economic growth in China**
3. **A severe drought across Australia**
4. **A warning by the IMF about the excessive debt that has built up in the economy**
5. **The government grants tax cuts across all income levels**
6. **The Victorian government increases spending on new road and rail infrastructure**
7. **A depreciation of the Australian dollar against a wide range of foreign currencies**
8. **The introduction of artificial intelligence into the production process for a wide range of goods and services**

Box 4.4 Why the New Classical LRAS curve is vertical.

The New Classical SRAS curve is upward sloping. This reflects the fact that as the general level of prices increases, profitability also temporarily increases because the firms are charging higher prices but their costs of production have probably not increased by the same rate (it is hard for the wages to increase in the short run). But what happens in the long run? When the workers become aware of the conditions in the economy (and the labour market in which they work), they will know that they have greater ability to bargain for higher wages. When wage rises are granted they cause the cost of production to rise at each general price level so the aggregate supply curve shifts to the left.

Consider Diagram A below, showing the SRAS as upward sloping with a downward sloping AD curve. As with the AD curve, the AS curves, are drawn with real GDP (output) on the horizontal axis and the general level of prices on the vertical axis. The diagram is therefore useful to explain how output decisions are made in response to changes in average prices in an economy, according to the New Classical economists' model.



The economy initially operates where AD1 = LRAS = SRAS1 at point A. This level of output is sometimes referred to as the potential output or the full employment level of output. The economy cannot produce beyond this level of output for a long period of time because factor markets become too stretched. For example, workers might be able to work overtime for a period of time, but it cannot be sustained. Accordingly, output can increase beyond real GDP 1, but only for a short time - and at a cost!

Assume that the level of AD increases for some reason (any of the factors that were discussed in Section 4.6). This shifts the AD curve to the right, from AD1 to AD2 and more goods and services are sold, with output rising from real GDP1 to real GDP2 and prices rising to P2. Accordingly, a new temporary equilibrium occurs at point B. More is being produced and firms are making bigger profits (because prices have increased but costs such as wages remain fixed in the short run). However, the economy cannot remain at this point because the added demand and output (at real GDP2) creates capacity constraints, with a number of markets experiencing shortages, including labour markets. Firms will find it harder to attract labour, and workers will eventually be successful in bidding up wages in light of the tightness in the labour market. The higher wages will combine with higher input costs more generally to increase the costs of production. This will eventually shift the SRAS curve back to the left (to SRAS2) and in the long run, the economy retreats back to the point where the SRAS, LRAS and AD curves all intersect at point C, which remains the economy's full employment level of output.

If AD increased again, with the AD curve shifting to the right from AD2 to AD3, the process will repeat itself with the economy moving to a short run equilibrium position at point D, before eventually returning to its long run equilibrium position, this time at point E. The fact that the level of output does not change in the long run in response to a change in AD and prices makes the LRAS vertical. This is highlighted in Diagram B, with the SRAS curves removed and the LRAS effectively becoming the red dashed line from Diagram A. The long run position for the economy following periods of stronger AD can be seen clearly. Growth in AD from AD1 to AD3 will only result in higher prices, from P1 to P5, with no change in output.

Economists who hold this view of the world will therefore argue that it is futile for the government to manipulate AD in order to achieve long run stimulus to economic growth. They argue that the only way to achieve long term improvement to the size of the economy is through the effective use of AS policies which will shift the LRAS curve to the right. Consideration of these AS policies is delayed until Chapter 1.

Activity 4g Debt and economic activity

You have looked at a number of aggregate demand and aggregate supply factors that have influenced the level of economic activity. Australia has not experienced a technical recession for over 27 years. This is an unusual phenomenon given that Australia did experience recessions in the early 1990s, early 1980s and the mid-1970s and there have been a number of world-wide shocks that have caused other economies to experience severe economic downturns. There are a number of factors that may have contributed to this positive outcome, but this activity looks closely at how the changes in debts levels have affected economic activity and how they might constrain future growth potential.

A number of economists have suggested that the growth in the economy has been primarily driven by the increased ability of households, businesses and governments to take on debt. Central banks (such as the RBA and the US Federal Reserve) have implemented policy changes that have encouraged low interest rates, and governments around the world have deregulated financial markets, such that access to cheap credit has increased significantly. Greater access to cheap credit increases the ability of economic agents to alter when they purchase their goods and services. They effectively 'bring forward' their purchases by borrowing to purchase that which they cannot currently afford.

One economic commentator, Satyajit Das, who in 2006 predicted the global financial crisis(two years before the GFC occurred) highlights that it now takes a $5 increase in national debt to induce a $1 increase in economic activity. He believes therefore that the growth the world has experienced over the last 30 years (driven by ever increasing levels of debt) has set the stage for serious declines in material and non-material living standards in the future. The reason it takes so much debt to generate activity is that much of the debt is utilised to purchase existing assets, particularly houses, but also shares. These are sometimes referred to as 'non-productive' assets and the transfer of these assets from one person to another adds very little to new production, and also does not expand the nation's productive capacity.

One of the key consequences associated with increased access to cash in the economy (sometimes referred to as 'liquidity') is that the prices of key assets rise by more than individuals' incomes. House prices in Australia have undergone rapid increases in the last 30 years, with many younger Australians fearing that they may never be able to own their own home. This has negative consequences for both material and non-material living standards. It obviously reduces the capacity to access housing for some individuals (because it also causes rent prices to increase) and can lead to anxiety and other mental health issues. Those who can access a loan from the bank usually become heavily indebted and feel burdened and stressed about their debt levels. The 2018 Financial Services Royal Commission also highlighted how incentive structures within the banking system promoted the sales of excessive loans to people who may not have had the capacity to pay them back, especially if interest rates were to increase in the future. The Royal Commission also suggested that many people had been granted 'liar loans' because they effectively provided misinformation about their 'capacity' to repay loans. This resulted in the signing of loan contracts that increased the vulnerability and stress levels of households.

Accumulation of debt by households, businesses and governments is predicted to be a factor that will limit the ability of the economy to grow in the future. An increased proportion of household consumption spending will be allocated towards the servicing of debt. A decision to borrow effectively increases current consumption at the expense of future consumption (which is negative for inter-temporal efficiency as explained in Chapter 3). Each time the government runs a budget deficit, it also tends to increase debt held by government. This also reduces their future ability to allocate funds to productive infrastructure and other spending that might increase the quality of resources used in the production process. Higher debt levels also make the economy more vulnerable in the event of an unexpected shock. The high house prices are sometimes referred to as a 'bubble', meaning that any event that triggers a fall in house prices (as has occurred over 2018) could significantly destabilise the economy as people experience falling wealth and the potential for negative equity (where they owe more to the bank than the value of their house). Accumulated debt also reduces the ability of the government to increase its spending during a future economic downturn. Satyajit Das, along with a small number of economists, believes that it will be much harder to boost economic activity in the future and that this could be the 'end of economic growth'.

As you progress through the course and look more closely at economic growth and unemployment rates, look out for news articles on 'stricter borrowing requirements', 'falling house prices' and a need for households to 'repair their balance sheets'. These topics are indirectly related to the high levels of accumulated debt and how they are likely to affect consumer and business confidence.

Questions

1. **Explain why debt levels have been able to rise significantly over the last 30 years.**
2. **Explain how increasing access to 'cheap money' may have affected the circular flow model of the economy.**
3. **Explain why access to cheap credit is an aggregate demand factor that has influenced the level of economic activity.**
4. **Explain how higher debt levels may have affected living standards in Australia. Refer to the short run and the long run in your response.**
5. **Explain why the accumulation of debt may negatively influence future consumption demand.**
6. **Explain why governments may experience a reduced capacity to respond to any future economic crisis.**
7. **Explain how falling house prices over 2018 may influence AD and economic growth over 2018-19.**

Multiple choice review questions

1. A study of macroeconomics is likely to focus on
a) the causes of unemployment.
b) the impact of a depreciation of the AUD on the rate of inflation.
c) the effect of the government's budget on the rate of economic growth.
d) all of the above.

2. The level of economic activity is unlikely to be measured by
a) Gross Domestic Product.
b) Gross State Product.
c) Gross National Income.
d) Gross National Happiness.

3. A transaction that is likely to cause the Investment component of AD to increase is
a) the purchase of a new laptop to complete your homework.
b) the building of a new set of townhouses.
c) the sale of a hotel room to a Chinese tourist.
d) the purchase of a significant piece of artwork by Pablo Picasso.

4. The purchase of a new Mini Cooper by an Uber eats contractor would be classified as
a) C
b) I
c) G
d) X

5. Which of the following is likely to lead to the smallest negative effect on AD if the economy was already in a recession?
a) A 10% fall in Consumption expenditure
b) A 10% fall Investment expenditure
c) A 10% fall in Government spending
d) A 10% fall in import spending

6. 'Leakages', in the circular flow model of the economy, are likely to increase if
a) there is an increase in employment in the economy
b) the government reduces the tax burden
c) the Reserve Bank of Australia reduces interest rates
d) the AUD appreciates

7. Injections, in the circular flow model of the economy, are likely to increase if
a) the savings rate increases.
b) there is an increase in economic growth in China.
c) the government increases the size of the budget surplus.
d) banks make it more difficult to obtain a home loan.

8. Average material living standards are likely to increase if
a) national income increases by more than the population growth rate.
b) national income increases.
c) the population growth rate increases.
d) the population shrinks, and the economy goes into a recession.

9. Which of the following will have an effect on non-material living standards that is different to the other three?
a) An increase in crime rates
b) A decrease in the incidence of positive externalities
c) An increase in the provision of public goods
d) An increase in the unemployment rate

10. The willingness and ability of businesses to increase AS is likely to be the result of
a) rising real unit labour costs.
b) a reduction in company taxes.
c) a depreciation of the AUD.
d) an increase in extreme weather conditions caused by climate change.

11. The Keynesian AS curve is steeper at higher levels of Real GDP because
a) aggregate demand is downward sloping.
b) at higher levels of real GDP, skills shortages may be more prevalent.
c) the unemployment rate is likely to increase.
d) it is more difficult to purchase imported components.

12. The AD curve is likely to shift to the left if
a) productivity increases.
b) oil prices increase.
c) more artificial intelligence is used in the production process.
d) rainfall increases across Australia, reducing the severity of the drought.

13. The AD curve and the AS curve are both likely to shift to the right if
a) minimum wages are increased.
b) the Australian dollar depreciates.
c) the Australian government places tariffs on all imported goods.
d) interest rates decrease.

14. Material living standards are likely to improve if
a) population increases, GDP increases, and the price received for commodity exports decreases.
b) productivity increases, population falls, and the price received for commodity exports falls.
c) productivity remains unchanged, Real GDP per capita remains unchanged and the prices received for commodity exports increases.
d) productivity increases, Gross National Happiness increases, and the price received for commodity exports falls.

15. There will be a movement to the right along the New Classical SRAS curve when the general level of prices increases because
a) firms will face an increase in their costs of production.
b) real wages will increase in the long run.
c) real wages will decrease in the short run.
d) profitability will decrease in the short run.

16. A major difference between the Keynesian and the New Classical model of the macroeconomy is
a) the Keynesian model assumes wages are sticky, whereas the New Classical model doesn't.
b) the Keynesian model advocates intervention to smooth the business cycle, whereas the New Classical model implies that government intervention should be minimised.
c) the Keynesian model has a downward sloping AD curve but the New Classical model has a vertical AD curve.
d) the Keynesian AS curve would shift to the left if the costs of production increased, but the New Classical SRAS curve would not shift.

17. A drought is likely to
a) shift the AD curve and the AS curve to the right.
b) shift the AD curve to the left and the AS curve to the right.
c) shift the AD curve and the AS curve to the left.
d) shift the AD curve to the right and the AS curve to the left.

18. The New Classical LRAS is vertical because
a) an increase in AD will always cause real GDP to increase in the long run.
b) wages are sticky in the short run.
c) wages are fully flexible in the long run.
d) the government ultimately controls how much can be produced in a nation.

19. Australia's potential output is likely to decrease if
a) workers are placed on performance-based contracts.
b) firms and governments invest in human capital.
c) businesses receive tax benefits when engaged in research and development.
d) there is an increase in tariffs on all imported goods.

20. The general level of prices, as represented on the AD/AS diagram is likely to increase if
a) the Australian dollar depreciates.
b) the government decreases spending on public servants' wages.
c) there is a decrease in injections in the circular flow model.
d) the interest rates on business loans are increased.

Chapter 4 Applied Economics Exercise – The Keynesian multiplier

When Keynes developed his model of the macroeconomy, he believed that markets were inherently unstable and this was essentially responsible for changes in the level of output (i.e. the business cycle). People were likely to engage in herd-like behaviour, sometimes acting somewhat against the benefit of the economy as a whole. For example, when there was a decrease in consumer confidence, people would have a natural inclination to increase their savings and this would lead to a fall in aggregate demand. This fall in aggregate demand would lead to an increase in the unemployment rate and a fall in living standards. Keynes called this the 'paradox of thrift' or the paradox of saving.

Keynes' theory led to the development of the 'multiplier'. The basic premise was that when a component of AD is affected (in either a positive or a negative direction), there is likely to be a much larger impact on AD and real output. He described this as a chain reaction that occurred throughout the economy, such that increases (or decreases) in one sector of the economy, led to increased (or decreased) spending in the rest of the economy (via the core section of the circular flow model).

For example, imagine that there is a recession in one of Australia's key trading partners e.g. Japan. The reduction in production in Japan, for example, would be an external shock for Australia and will have ramifications for the level of economic activity. With declining incomes in Japan, their demand for a wide range of goods and services will decline. They may choose to holiday less in Australia and the demand for export services such as tourism might decrease. The lower level of demand in the economy would encourage tourist operators to look at their production activities and they will recognise that their need for labour has decreased. This might lead to a reduction in hours worked or the number of employees who are hired. The reduced sale of accommodation therefore leads to a reduction in incomes; the business owner's profits decrease and the workers' wages are reduced (either from reduced hours or from unemployment). The secondary and subsequent round of effects is sometimes referred to as 'induced' spending.

The reduced level of activity in the tourism sector will also tend to flow through to other sectors in the economy. The fall in incomes for the hotel owner and the workers reduce their ability to purchase other goods and services offered for sale in the economy. They may spend less at nearby shops, which leads to a reduction of income for those shopkeepers and their employees. This reduces their willingness and ability to consume, and the cycle continues. Keynes therefore believed that governments needed to intervene in the economy so that these 'induced' changes were stabilised and the severity of the business cycle was reduced.

Keynes based his theory upon the key assumption of 'sticky' wages and prices in his model of the economy. When the economy experienced a decrease in aggregate demand for some reason, this would lead to a decrease in supply because producers would not want to produce goods that could not be sold in the market. The lower level of demand in the economy would lead to a decrease in the derived demand for labour and the unemployment rate would increase. In a fully flexible labour market, a higher unemployment rate should lead to a lower equilibrium wage rate because labour demand would have fallen relative to labour supply (labour is essentially less scarce). If wages were able to fall then the incentive to hire would return and the AS would increase. If wages were 'sticky', however, the equilibrium wage would not fall (workers may be on contracts or protected by minimum wages) and hence the unemployment would persist. Keynes also believed that even when there were unemployed resources and the economy was operating below full capacity, prices were also relatively sticky (firms would be reluctant to lower prices if their costs of production remained high).

Another key aspect of the Keynesian model is the emphasis on 'animal spirits'. This is a term used to describe the general level of optimism or pessimism that may be pervasive at different stages of the business cycle. During a downturn (as described above), there would be a change in both consumer and business attitudes to the future and this could last well into the future. People who have lived through a severe recession (or the Great Depression) may remember their suffering and this might encourage them to maintain high savings rates into the future. This is another reason that the economy could get 'stuck' in a period of low or negative economic growth. Businesses would also tend to be operating their full capacity and have little reason to increase their investment spending.

This combined lack of flexibility in prices and wages and lack of animal spirits would mean that to get out of a recession, the government would need to compensate for the lack of private demand and stimulate the economy themselves (for example, by building infrastructure). The building of infrastructure would create a new source of income for a wide range of people. People would need to design, plan, build and maintain the infrastructure and this generates a new source of income for them. The recipients would then spend a portion of their income in the economy, generating extra economic activity in a number of other sectors. The size of the multiplier, and therefore the benefits of any change in government spending to alter the level of economic activity, is ultimately determined by the leakages and injections that an economy ordinarily experiences. If the marginal propensity to spend is high, then any increase in income will generate a significant increase in induced spending. If, however, recipients of the increased income like to spend a large portion of their income on imports then the size of the multiplier effect may be reduced.

The Keynesian approach to managing the economy went out of favour during the 1970s, '80s and '90s, with greater emphasis being placed on Aggregate Supply Policies (to be covered in Chapter 12). The Keynesian model was not equipped to deal with the supply side shocks and the existence of stagflation (high unemployment and high inflation simultaneously). It wasn't until the Great Recession (which Australians refer to as the Global Financial Crisis), that policy makers started to, once again, focus on how the government could increase its level of intervention to managing the level of economic activity, using the Keynesian approach.

1. **Identify one aggregate demand factor that could lead to an increase in economic activity.**
2. **Explain, with reference to the example used in question 1, why this change in AD might lead to an increase in employment and incomes.**
3. **Explain how the increase in incomes might lead to a new round of 'induced spending'.**
4. **Why did Keynes' assumptions about sticky wages and 'animal spirits' lead to his conclusion that governments need to intervene in the market? (As an extra challenge, consider the case where there are excessively high rates of economic activity.)**
5. **Explain how an increase in the marginal propensity to consume might affect the magnitude of the multiplier effect in the economy.**

Chapter summary

1. Macroeconomic analysis involves an investigation and evaluation of those factors that influence aggregate economic variables such as unemployment, inflation and economic growth.
2. Macroeconomic theory is derived from the models developed in Microeconomics.
3. The level of economic activity refers to the volume of production, employment, incomes and expenditure in an economy.
4. Material living standards are related to the ability of households to purchase goods and services.
5. The most common way to measure material living standards is real GDP per capita as this is a measure of average purchasing power.
6. Non-material standards may be more difficult to measure as they are influenced by non-monetary factors and is linked to 'quality of life' which is multifaceted.
7. Both material and non-material living standards can be affected by access to goods and services, environmental quality, physical and mental health, life expectancy, literacy rates and crime rates.
8. The circular flow model can be used to illustrate how different sectors of the economy interact to generate economic activity.
9. The flows of income and money between the households and businesses forms the core of the circular flow model. Households provide businesses with the factors of production and in return they are compensated with income. The households then spend their income and in return get goods and services.
10. The leakages (outflows from the core of the economy) include taxes paid to governments, savings deposited in financial institutions and imports purchased from overseas nations.
11. The injections (inflows back into the core of the economy) are government spending, loans received from financial institutions and the revenue generated from sales of exports to foreign nations.
12. The level of economic activity can fluctuate and empirical research has suggested that there is a cyclical pattern, which has been described as the business cycle.
13. The business cycle is said to go through 4 identifiable stages: the trough when the rate of economic growth is at its lowest in the cycle, the expansion phase, moving into a peak when economic growth rates are at their highest and this is followed by a contraction.
14. A range of psychological and external factors that influence the ability and willingness of economic agents to spend can cause the business cycle. Supply side shocks can also result in changes in the level of economic activity
15. The most common measure of economic activity is Gross Domestic Product (GDP), which measures the total value of goods and services produced in a given time frame (usually 3 months and 1 year).
16. Aggregate demand (AD) is the total spending on new final domestically-made goods and services.
17. AD is broken up into 5 components to facilitate more detailed analysis of changes in the level of economic activity.
18. Consumption expenditure (C) is the largest component of AD and includes spending by households on a range of durables and non-durables.
19. Investment expenditure (I) is the most volatile component of AD and includes spending by businesses on new plant and machinery.
20. Government spending (G) is the sum of all spending by Federal, State and Local Governments on consumption and investment.
21. Exports are those goods and services that are made in Australia and purchased by foreign residents.
22. Imports are those goods and services purchased by Australians that are made overseas.
23. An increase in the general level of prices may be associated with a decrease in AD because it reduces the value of accumulated wealth, may lead to higher interest rates and can be linked to lower international competitiveness.
24. An increase in disposable income across the economy is usually associated with an increase in AD, as recipients will spend some of their extra income (i.e. the MPC>0).
25. Lower interest rates generate increased aggregate demand via a number of transmission mechanisms (which will be further discussed in Unit 4).

26. When consumer confidence increases, households are more willing to take on new debt and may reduce their savings rate, leading to an increase in consumption.
27. If businesses believe that their profitability is likely to increase in the future, this will be reflected in higher business confidence and this will boost investment.
28. A depreciation of the Australian dollar will usually boost spending on exports and decrease spending on imports, helping to raise the level of AD in the nation.
29. When Australia's major trading partners experience strong rates of growth, they may be more likely to purchase its exports because their incomes are higher and they may need the commodities to facilitate their expansion activities.
30. Aggregate supply represents the total value of goods and services available for sale in an economy in a given time frame.
31. Aggregate supply will tend to increase if businesses and governments within the economy have access to a greater volume of productive resources.
32. Improvements in the quality of resources, through better land management techniques, access to education and healthcare and improvements in technology can help increase a nation's aggregate supply.
33. Productivity growth occurs when a greater volume of goods and services can be produced using existing or fewer inputs. This helps to boost the productive capacity of a nation.
34. The total AS can be affected positively or negatively by unpredictable changes in weather patterns. This can affect the ability to grow a range of natural resources and may disrupt supply through the destruction of infrastructure and businesses.
35. The level of economic activity can be represented using an AD/ AS model. Each of these curves is drawn with the general level of prices on the vertical axis and the level of output on the horizontal axis.
36. The AD is downward sloping indicating that when the general level of prices increases the total spending in the economy decreases (based on the reasons described in point 23).
37. There are two opposing views on the AS curve because the Keynesian economists and the New Classical economists based their theories on different assumptions about human behaviour.
38. In the New Classical model, the positive relationship between prices and economic activity is only relevant in the short run because in the long run all wages and conditions that affect the cost of production are fully flexible. Therefore the New Classical economists believe that LRAS is vertical.
39. The Keynesian economists believe that the relationship between the general level of prices and real GDP is dependent upon the stage of the business cycle. When the economy has plenty of spare capacity the AS curve is flat but as the economy approaches its productive capacity, the curve gets gradually steeper until it is vertical (at which point extra output is not possible, even if prices rise).
40. The AD/ AS model can be used to show how changes in AD and AS factors lead to changes in the general level of prices (the inflation rate) and changes in real GDP (economic growth).

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