14 AGGREGATE DEMAND

REAL-WORLD ISSUE:
Why does economic activity vary over time and why does this matter? How do governments manage the economy and how effective are their policies?

By the end of this chapter, you should be able to:

- Distinguish between demand and aggregate demand
- Define and illustrate aggregate demand
- Define and describe the components of aggregate demand
- Explain the determinants of the components of aggregate demand
- Illustrate shifts of the aggregate demand curve.

What is aggregate demand (AD)?

If you are confident in your understanding of the microeconomic concepts of demand and supply, then you have the necessary groundwork to understand the macroeconomic concepts of aggregate demand and aggregate supply.

In this chapter we begin our macroeconomic analysis by examining the concept of aggregate demand. By definition, aggregate demand is the total spending on goods and services in a period of time at a given price level. On a diagram it looks very much like the demand curve in the sense that it is downward sloping, as shown in Figure 14.1.

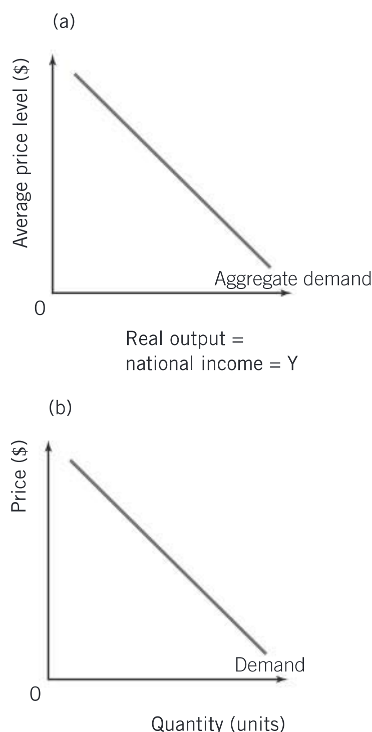


Figure 14.1 (a) Macroeconomic aggregate demand curve; (b) microeconomic demand curve

However, the demand curve shows the relationship between the price of one good – for example, soccer balls – and the demand for that one good. The fact that it is a demand curve for one market makes it a microeconomic concept. Macroeconomics considers the working of the whole economy, including all the goods and services demanded. Where the microeconomic demand curve has the "price" of the one good on the *y*-axis, the macroeconomic aggregate demand curve has a measure of the average price level of all goods and services. Where the microeconomic demand curve has the "quantity" of the one good on the *x*-axis, the macroeconomic aggregate demand curve has the total quantity of all goods and services, which is national output.

Given what you learned in Chapter 13, you will also realize that national output is equivalent to national income and national expenditure. In macroeconomic analysis the *x*-axis is commonly labelled "real output" (the value of national output adjusted for inflation) or national income (Y). Thus the aggregate demand curve shows the relationship between the *average price level* and *real output*. The two different diagrams are shown to help you see and learn the difference between the microeconomic concept of demand and the macroeconomic concept of aggregate demand.

The AD diagram illustrates the inverse relationship between the average price level and the total real output demanded; at a lower average price level, a higher quantity is demanded. Essentially, this is the Law of Demand on an aggregate level. The word "aggregate" means "total". Therefore, in constructing an aggregate demand curve, we look at the demand from all possible sectors within the economy. This gives us the components of aggregate demand described in the next section.

What are the components of aggregate demand?

There are four components of aggregate demand, ie there are four things that make up aggregate demand.

1. **Consumption**

   Consumption (C) is the total spending by consumers on domestic goods and services. In looking at consumer demand for goods we look at two categories of goods—durable goods and non-durable goods. Durable goods are goods such as cars, computers, mobile phones and bicycles that are used by consumers over a period of time (usually more than one year). Non-durable goods are goods such as rice, toilet paper and newspapers that are used up immediately or over a relatively short period of time.

2. **Investment**

Investment (I) is defined as the addition of capital stock to the economy. Investment is carried out by firms. Firms have two types of investment:

- Replacement investment occurs when firms spend on capital in order to maintain the productivity of their existing capital.
- Induced investment occurs when firms spend on capital to increase their output to respond to higher demand in the economy.

The economy's capital stock includes all goods that are made by people and are used to produce other goods or services, such as factories, machines, offices or computers. Investment is not to be confused with buying shares or putting money in a bank – we tend to call this "investment" in everyday English, but it is, in fact, "saving" as it is a leakage from the circular flow.

3. **Government spending**

Governments at a variety of levels (federal, state/provincial, municipal/city) spend on a wide variety of goods and services. These include health, education, law and order, transport, social security, housing and defence. The amount of government spending (G) depends on the policies and objectives of the government.

4. **Net exports (X–M)**

Exports are domestic goods and services that are bought by foreigners. When the firms in a country sell exports to foreigners, it results in an inflow of export revenues to the country. Imports are goods and services that are bought from foreign producers. When imports are bought it results in an outflow of import expenditure. The net trade component of AD is actually export *revenues* minus import *expenditure*, but it is simplified by noting it as exports minus imports (X–M). The figure can be either positive, whereby export revenues exceed import expenditure, or negative, whereby import expenditure exceeds export revenues. If the net figure is positive it will add to AD but if the net figure is negative it will reduce AD.

So, aggregate demand is equal to consumption + investment + government spending + net exports, which is equivalent to GDP using the expenditure method of calculation.

Exercise 14.1

ATL Thinking and Communication

1. Make a list of five durable goods and five non-durable goods used in your household.
2. Compare the contents of your list with the lists of others in your group.

What is the shape of the AD curve?

Aggregate demand can be presented as a formula, **C + I + G + (X – M)**, and as a diagram, as shown in Figure 14.2.

When the average price level in the economy falls from PL_1 to PL_2, the level of output demanded by consumers (C) plus firms (I) plus governments (G) and the net foreign sector (X–M) increases from Y_1 to Y_2.

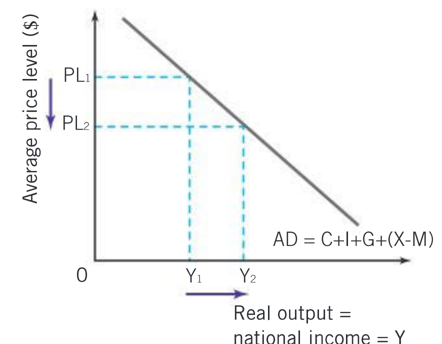


Figure 14.2 The aggregate demand curve

Note

You will find that different books use different labels for the *x*-axis. You may find any of national income (Y), national expenditure, national output or real output. Whichever one you choose, be sure that it is distinct from simply quantity or Q, which would indicate a single market in a microeconomic analysis.

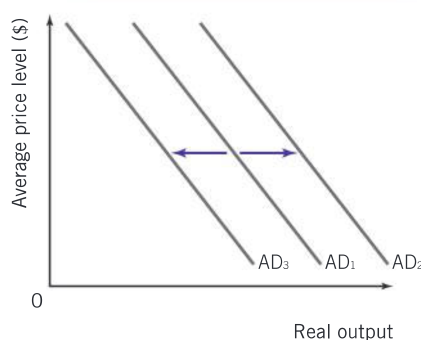


Figure 14.3 Shifts in aggregate demand

So what causes changes in AD?

A change in the price level will result in a movement along the AD curve, from one level of real output to another. A change in any of the components of aggregate demand will cause a shift in the demand curve as shown in Figure 14.3.

An increase in any of the components of aggregate demand will result in an increase in aggregate demand and a shift of the AD curve to the right from AD_1 to AD_2. A decrease in any of the components of aggregate demand will result in a fall in aggregate demand and a shift of the AD curve to the left from AD_1 to AD_3.

What causes changes in consumption?

1. **Changes in income taxes**

   The most significant determinant of consumption is income. As incomes rise people have more money to spend on goods and services, so consumption increases. If there is an increase in direct income taxes (the taxes paid on income by individuals), then people will have less *disposable income*. Disposable income is the income that people have remaining for spending and saving after income taxes have been paid. With less disposable income, consumption will decrease and there will be a fall in AD. A reduction of income tax levels will lead to an increase in disposable incomes and thus an increase in consumption and AD. Government manipulation of income taxes is an element of fiscal policy, which we will look at in more detail in Chapter 17.

2. **Changes in interest rates**

   Spending on non-durable goods is carried out with the day-to-day money that people earn (their income). But some of the money that is used to buy durable goods comes from money which people borrow from the bank. When people borrow money they must pay for the borrowed money by paying interest to the bank. If there is an increase in interest rates, which is essentially the price of borrowed money, then there is likely to be less borrowing (because it is more expensive to borrow). Therefore consumption will fall, resulting in a fall in AD.

   For example, borrowed money is usually used to buy houses. To buy a house, most consumers get a loan for housing called a mortgage. If interest rates increase then this loan may become more expensive on a month-to-month basis. This means that people will have less money to spend on other goods and services, so consumption will fall. Also, a rise in the interest rate makes saving more attractive; people would prefer to put their extra income in the bank to earn money rather than spend it on goods and services. This is another reason why changes in interest rates affect consumption.

Overall, an increase in interest rates leads to a fall in consumption. On the other hand, a fall in interest rates will lead to an increase in consumption, *ceteris paribus*, as it becomes more attractive to borrow money to spend on durable goods and services. In addition, if interest rates fall then mortgage repayments may fall, leaving more money to spend on goods and services, and it becomes less appealing to save money in the bank when the return on the savings (the interest earned) is relatively low.

Exercise 14.2

ATL Thinking and Communication

Identify five goods or services that people might need a bank loan to purchase.

3. **Changes in wealth**

The amount of consumption depends on the amount of wealth that consumers have. It is very important not to confuse the concepts of "income" and "wealth". Income is the money that people earn. Wealth is made up of the assets that people own. This includes physical assets, such as houses, art, antiques or jewellery, and monetary/financial assets, such as shares in companies, government bonds or bank savings. There are two main factors that can change the level of wealth in the economy.

- *A change in house prices*: When house prices increase across the economy, consumers feel more wealthy and are likely to feel confident enough to increase their consumption by saving less or borrowing more.
- *A change in the value of stocks and shares*: Many consumers hold shares in companies. If the value of those shares increases then people feel wealthier. This might encourage them to spend more. Alternatively, they might sell those shares and then use the earnings to increase consumption.

4. **Changes in consumer confidence/expectations**

If people are optimistic about their economic future then they are likely to spend more now. For example, if they think that they are likely to get a promotion in the future due to a booming economy and strong sales then they will feel more confident about taking a loan or using up savings. Thus, high consumer confidence is likely to lead to increased consumption. However, if people expect economic conditions to worsen then they are likely to reduce their consumption today in order to save for the future. Economists regularly measure consumer confidence and put the information together in the form of a "consumer confidence index" or "consumer sentiment index". An increase in the index indicates that confidence is rising; if this is the case, then consumer spending is likely to rise as well.

Political uncertainty weighs on Thailand's consumer confidence

https://www.thailand-business-news.com/business/72338-political-uncertainty-weighs-on-thailands-consumer-confidence.html

Consumer expectations regarding the future price level will also affect consumption. If consumers expect the price level to increase in the future, ie *inflation*, then they will increase consumption now, especially on durable consumer goods. In the same way, if they expect the price level to fall, ie *deflation*, they will put off consuming now in the belief that products will be less expensive in the future. Again, this especially relates to durable consumer goods.

Exercise 14.3

ATL Thinking and Communication

Read the short text below and answer the questions that follow.

Use the data from the text to support your answers.

Consumer confidence slumps amid Brexit uncertainty

KBC Bank/ESRI consumer sentiment index falls to 86.5 in February from 98.8 in January

Shoppers could cut spending if fears of a hard Brexit and a weaker Irish economy persist, experts warn in a report today.

Consumer confidence tumbled in February following a nurses' strike and the British parliament's rejection of prime minister Theresa May's Brexit deal, according to figures released by KBC Bank and the Economic and Social Research Institute (ESRI).

"Irish consumer sentiment fell sharply in February on a notably poorer outlook for the Irish economy and jobs that translated into poorer household income prospects," the KBC Bank/ESRI index states.

KBC Bank Ireland chief economist Austin Hughes says there is no immediate threat to spending, but suggests that consumers could tighten purse strings if their concerns continue.

While the bank and economic researchers expected the uncertainty to dent consumer confidence, they say that the depth of the fall was surprising. The KBC Bank/ESRI consumer sentiment index fell to 86.5 in February from 98.8 in January, and was down sharply on the 105.2 recorded during the same month last year.

Nevertheless, Mr Hughes says he does not believe the economy's outlook or consumers' prospects deteriorated sharply last month. "Consequently, we don't envisage any sharp pullback in spending," he says. "However, the February survey period did see a number of developments that may have unnerved many consumers and prompted an outsize drop in confidence.

"If this persists we would expect consumer spending to move on to a weaker path."

Industrial unrest

Mr Hughes blames politics and industrial unrest on both sides of the Irish Sea for the fall in confidence. He believes one factor was Mrs May's failure to get her Brexit deal through parliament, increasing the risk that the UK could crash out of the European Union without an agreement. During the period, a number of reports, including documents from the Central Bank and KBC, highlighted the damage that a disorderly or "hard" Brexit could do to the Irish economy.

At home, he says that the nurses' strike and the debate over the national children's hospital cost could have reminded consumers of previous industrial relations turbulence and issues with managing public finances.

While all elements of the index fell, consumers' concerns were strongest about macroeconomic questions. The number of consumers who expected unemployment to rise jumped to almost four out of 10 from 22 per cent the previous month. However, they only modestly changed their assessments of their household finances over the previous 12 months.

1. Using numbers from the text, explain the difference in consumer confidence in Ireland from:
   a. January 2019 to February 2019
   b. February 2018 to February 2019.
2. Using a diagram, explain how the change in consumer confidence from 2018 to 2019 might be expected to affect Irish AD.
3. Identify and explain the reasons for the fall in consumer confidence.

5. Levels of household indebtedness

The extent to which households are willing and able to borrow money affects consumption. If it is easy to borrow money (easy credit) and interest rates are low then it is likely that households will take on more debt by getting loans or using their credit cards. Thus spending on goods and services will rise. However, if interest rates rise, then households will have to spend more to repay their loans and mortgages (the original amount borrowed plus the interest). In the short run they might simply continue to borrow but ultimately the debt will have to be paid and this may well leave consumers with less money to spend on goods and services. This would lead to falling AD.

Did you know?

One-in-five Canadians with debt will need to liquidate assets to pay it down in 2019

One-in-five Canadians with debt say they will need to liquidate assets (eg cash in their pension plans, get a second mortgage, sell a vehicle, etc) to help pay off (or pay down) their debt in 2019. The need to liquidate is reported as significantly higher among males (24%) versus females (14%) and those with children under 18 (23%) versus without children (16%).

The 2019 Household Debt Survey, a poll of 1,515 Canadians, was conducted to uncover financial concerns that confront Canadians on a daily basis, such as budgeting, bill payments, debt, cost of living and job security.

The survey also found that almost two-thirds of Canadians with debt (62%) anticipate taking on new forms of debt in 2019. Within this group, those under 55 years of age are significantly more likely to anticipate new forms of debt this year (67%) compared to those who are 55 and older (50%). Below are the anticipated new forms of debt:

- New/increased credit card balance (23%)
- New/increased line of credit (15%)
- New/increased vehicle loan or lease (13%)
- New/increased mortgage (12%)

With federal Finance Minister, Bill Morneau set to release the federal budget on March 19, Canada's national debt hovers above $691 billion – that's nearly $18,700 per Canadian. Much like all levels of government, Canadian households are also awash in debt. In fact, almost half of Canadians are within $200 of not being able to pay their bills.

Source: Adapted from *Financial Planning Standards Council*, March 13, 2019

Economics in action

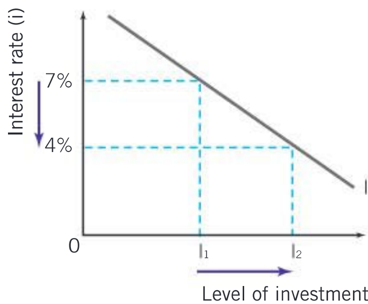
ATL Thinking, Communication and Research

Consumption makes up most of the aggregate demand in most countries. Consider the national income data in exercise 13.1 and note the percentage of GDP that comes from consumption in Canada. You will find that this is rather typical of the developed countries.

Investigate the components of GDP (AD) for the country that you chose in exercise 13.2.

What causes changes in investment?

1. **Changes in interest rates**



▲ **Figure 14.4** The relationship between investment and the interest rate

In order to invest, firms need money. The money that firms use for investment comes from several sources. For example, they can use their "retained profits" or they can borrow the money. Both of these are affected by the interest rate. If the money is to be borrowed, then an increase in the cost of borrowing may lead to a fall in investment. If interest rates are high, then firms may prefer to put their retained profits in the bank to earn higher returns as savings, rather than use them to invest. Therefore, there is an inverse relationship between interest rates and the level of investment, as shown in Figure 14.4.

A decrease in the interest rate, from 7% to 4%, will decrease the incentive to save and decrease the cost of borrowing, so is likely to lead to an increase in borrowing that is likely to result in an increase in the level of investment from I_1 to I_2. An increase in the interest rate will have the opposite effect.

2. **Changes in business taxes**

If the government increases taxes on business profits, then it will reduce *post-tax profits*, which will mean that firms have less money to invest and so we would expect to see a fall in AD. In the same way, if the government was to lower taxes on business profits, then more investment could take place and there would be an increase in AD, ie a shift of the AD curve to the right. Government manipulation of *corporate taxes* (taxes on the profits of firms) is an element of fiscal policy, which we will look at in more detail in Chapter 17.

3. **Technological change**

In any dynamic economy there is likely to be a quick pace of technological change. In order to keep up with advances in technology and to remain competitive firms will need to invest. This will increase AD.

4. **Changes in business confidence/expectations**

Businesses make decisions about the amount of investment they should make based to a large extent on their expectations for the future and their confidence in the economic climate. There would be little point in investing to increase the potential output of a firm if consumer demand is likely to fall in the future. If businesses are very confident about the future of the economy and expect consumer demand to rise then they will want to be ready to meet the increases in consumer demand by investing to increase potential output and productivity. Economists regularly measure the confidence of businesses and publish data in the form of a business confidence index.

Brexit uncertainty 'hitting UK business investment'

https://www.bbc.com/news/business-48653510

Exercise 14.4

ATL Thinking and Communication

Read the following article and answer the questions that follow:

SA business confidence falls to almost two-year low

South African business confidence fell to the lowest level in almost two years in the first quarter of 2019, with more than two thirds of respondents dissatisfied with current conditions.

A gauge measuring sentiment declined to 28 in the first quarter from 31 in the final three months of 2018. The median estimate of four economists in a Bloomberg survey was 32.

Key Insights

Confidence in the retail industry is at the lowest since the end of 2013. Sentiment among retailers and builders fell the most, with the latter reflecting a dearth of new work, the survey showed. Confidence levels in four of the five sectors covered in the index fell.

President Cyril Ramaphosa's rise to power boosted business confidence in early 2018 but sentiment has slumped as trading conditions remain depressed. While his efforts to expose corruption, rebuild institutions and bolster investment will bear fruit in the longer term, "forceful, and in some instances, unpopular structural reforms must also form part of the mix," said Ettienne le Roux, the chief economist at RMB.

"South Africa will not be able to shift to a lasting, higher growth and prosperity path without more short-term pain", said Le Roux. "This time around, the country cannot rely on the global economy to counterbalance such internal adjustment costs, as global growth itself is now shifting to a lower gear." Africa's most-industrialised economy expanded 0.8% in 2018 and is struggling to gain momentum as rolling blackouts threaten to damp prospects of a recovery.

The index reflects the results of a survey of 1,700 businesspeople, with most responses received from February 13 to March 4.

Source: Adapted from *Bloomberg NEWS*, March 13 2019

1. With reference to the data, state the extent of the decrease in business confidence between the last quarter of 2018 and the first quarter of 2019.
2. Outline the reasons for the decline.
3. Use a diagram to show how the change in business expectations might influence aggregate demand.

5. **Levels of corporate indebtedness**

   The extent to which businesses are willing and able to borrow money affects investment. If it is easy to borrow money (easy credit) and interest rates are low then it is likely that businesses will take on more debt and investment will rise. However, if interest rates rise, then businesses will have to spend more to repay their loans (the original amount borrowed plus the interest). In the short run they might simply continue to borrow but ultimately the debt will have to be paid and this may well leave businesses with less money to spend on investment. This would lead to falling AD.

What causes changes in government spending?

The amount and nature of government spending depends on the political and economic priorities of the government. For example, we looked at government subsidies in Chapter 8. If the government has made a commitment to financially support a given industry, then government spending will rise. If governments are obliged to spend to correct market failure, then government spending will rise. A new education or health policy might require increased public spending on schools or hospitals. Put quite simply, if government spending increases, then AD will shift to the right; if government spending falls, then the opposite will happen.

What causes changes in net exports?

Net exports are the difference between export revenues and import expenditure over a given period of time. As we know, they are expressed as (X – M) in the aggregate demand function. A positive (X – M), a *trade surplus*, will lead to a shift of AD to the right and a negative (X – M), a *trade deficit*, will shift AD to the left.

1. **Changes in the level of exports**

   Exports are goods or services that are bought by foreigners. If foreign incomes rise then their consumption of imported goods and services will rise. For example, as the Chinese national income rises, Chinese people are more willing and able to buy imported goods and services from Europe. Thus, European exports rise as the Chinese economy grows. Similarly, as China grows, investment in China expands. This is likely to involve some measure of imported capital. Thus, as China grows, German exports of capital equipment may also rise.

   Other than changes in the national income of trading partners, changes in the value of a country's currency (its exchange rate) can also affect a country's exports. If a country's exchange rate becomes stronger, then this makes the country's exports relatively more expensive to foreigners. According to the Law of Demand, this will cause the quantity of exports to fall. This will have an effect on the country's export revenues (the way in which it affects the export revenues depends on the elasticity of demand for exports; this will be addressed in a later chapter). Conversely, if the exchange rate falls in value then exports will become more competitive and may result in an increase in export revenues.

   Changes in countries' trade policies may also affect the value of a country's exports. If a country decides to adopt a policy of more liberalized (free) trade then it may reduce the tariffs that it charges on imports and effectively allows countries to export more to that country. On the other hand, if a country adopts more protectionist policies to reduce the level of imports then it will reduce the exports of other countries.

   The last broad factor to affect export revenues is the relative inflation rates among trading partners. For example, if inflation in the US were relatively higher than in Canada then US goods would be less competitive in Canada and may reduce the export revenues which the US earns from its exports to Canada. On the other hand, if the inflation rate in the US were relatively lower than the Canadian rate then American goods would be more competitive in Canadian markets, and so American export revenues might be expected to rise, *ceteris paribus*.

2. **Changes in the level of imports**

   It has already been established that when a country's national income is growing there is likely to be an increase in consumption.

As people consume more goods and services, it will necessarily be the case that some of these goods and services will be imported. Similarly, as national income rises, there is likely to be greater investment. Part of the capital goods that are purchased will be imported capital goods and/or components. Thus, as national income rises so does spending on imports. If national income falls there will be reduced spending on imports.

Using the same analysis as we used above, you should be able to see how changes in a country's exchange rate would be expected to change the level of spending on imports. An increase in the exchange rate would make imported goods less expensive and, depending on the elasticity of demand for imports, could reduce import expenditure. A decrease in the exchange rate would make imported goods more expensive and thus affect the level of import expenditure.

The type of trade policies that a country adopts will affect its level of import spending. If a country decides to adopt a more liberalized trade policy by, say, reducing tariffs (taxes) on imports, then import expenditure would be expected to rise. However, if a more protectionist set of policies were to be adopted then import expenditure would fall, *ceteris paribus*.

If the inflation rates of trade partners were to vary notably then this might also affect the level of import spending as noted above.

Thus, net exports (the difference between export revenues and import expenditure) depends on domestic national income (affecting the demand for imports), foreign national incomes (affecting the demand for exports), changes in exchange rates, changes in trade policies and relative inflation rates. We spend much more time discussing changes in trade policies and exchange rates in later chapters.

Exercise 14.5

ATL Thinking and Communication

Draw an aggregate demand diagram to illustrate an increase in AD, and one that shows a decrease in AD. Be sure to label the axes accurately. Decide whether each of the following factors would lead to an increase or a decrease in AD and write out the point beneath the appropriate diagram. In each explanation, explain which component(s) of AD is likely to be affected and why.

Example: A fall in income tax is likely to lead to an increase in AD because consumers' disposable incomes will rise, leading to an increase in consumption, *ceteris paribus*.

1. a fall in house prices
2. a rise in consumer confidence
3. an increase in foreign incomes
4. a fall in the consumer confidence index
5. a decrease in interest rates.

EXAMINATION QUESTIONS

Paper 1, part (a) questions – HL & SL

1. Explain the differences between an increase in demand and an increase in aggregate demand. [10 marks]
2. Explain the difference between the components of aggregate demand and the determinants of aggregate demand. [10 marks]
3. Explain **three** factors that could cause an increase in the level of consumption in an economy. [10 marks]
4. Explain how a change in interest rates is likely to affect the level of investment in an economy. [10 marks]