23 The characteristics of aggregate demand

2.2.1 Theme 2

Key points

- **1.** The aggregate demand curve is downward sloping. It shows the relationship between the price level and equilibrium output in the economy.
- **2.** A movement along the aggregate demand curve shows how real output will change if there is a change in the price level.
- **3.** A shift in the aggregate demand curve is caused by a change in variables such as consumption and exports at any given price level.

Starter activity

How would you calculate total spending in the UK economy? What is household spending called? What do firms spend? What does government spend? What do foreigners spend on UK goods and services?

Aggregate demand

Demand for an individual good is defined as the quantity that is bought at any given price. In this unit, we will consider what determines **aggregate** demand. 'Aggregate' in economics means a 'total' or 'added up' amount. **Aggregate demand** is the total of all demands or expenditures in the economy at any given price. National expenditure is one of the three ways of calculating national income, usually measured as GDP. National expenditure is made up of four components.

- Consumption (C). This is spending by households on goods and services.
- Investment (I). This is spending by firms on investment goods.

Figure 1

The aggregate demand curve

A rise in the price level will lead, to a fall in the equilibrium level of national income and therefore of national output. Hence the aggregate demand curve is downward sloping.



- Government spending (G). This includes current spending, for instance on wages and salaries. It also includes spending by government on investment goods like new roads or new schools.
- **Exports minus imports (X M).** Foreigners spend money on goods produced in the **domestic economy**. Hence it is part of national expenditure. However, households, firms and governments also spend money on goods produced abroad. For instance, a UK household might buy a car produced in France, or a British firm might use components imported from the Far East in a computer which is sold to Germany. These imported goods do not form part of national output and do not contribute to national income. So, because C, I, G and X all include spending on imported goods, imports (M) must be taken away from C + I + G + X to arrive at a figure for national expenditure.

National expenditure or aggregate demand (AD) can therefore be calculated using the formula:

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

The aggregate demand curve

The **aggregate demand curve** shows the relationship between the price level and the level of real expenditure in the economy. Figure 1 shows an aggregate demand (AD) curve. The price level is put on the vertical axis whilst real output is put on the horizontal axis.

The **price level** is the average level of prices in the economy. Governments calculate a number of different measures of the price level. In the UK, for instance, the most widely quoted measure is the **Consumer Prices Index**, figures for which are published every month and are widely reported in the news. A change in the price level is **inflation**.

Real output on the horizontal axis must equal real expenditure and real income. This is because, in the circular flow model of the economy, these are three different ways of measuring the same flow. The aggregate demand curve plots the level of expenditure where the economy would be in an equilibrium position at each price level, all other things being equal.

Demand curves are nearly always downward sloping. Why is the aggregate demand curve the same shape? One simple answer is to consider what happens to a household budget if

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prices rise. If a household is on a fixed income, then a rise in average prices will mean that they can buy fewer goods and services than before. The higher the price level in the economy, the less they can afford to buy. So it is with the national economy. The higher the price, the fewer goods and services will be demanded in the whole economy.

A more sophisticated explanation considers what happens to the different components of expenditure when prices rise. **Consumption** Consumption expenditure is influenced by the **rate of interest** in the economy. When prices increase, consumers (and firms) need more money to buy the same number of goods and services as before. One way of getting more money is to borrow it and so the demand for borrowed funds will rise. However, if there is a fixed supply of money available for borrowing from banks and building societies, the price of borrowed funds will rise. This price is the rate of interest. A rise in interest rates leads to a fall in consumption, particularly of durable goods such as cars which are commonly bought on credit.

Another way a rise in the price level affects consumption is through the **wealth effect**. A rise in the price level leads to the real value of an individual consumer's wealth being lower. For instance, $\pounds100\ 000$ at today's prices will be worth less in real terms in a year's time if average prices have increased 20 per cent over the 12 months. A fall in real wealth will result in a fall in consumer spending.

Investment As has just been explained, a rise in prices, all other things being equal, leads to a rise in interest rates in the economy. Investment is affected by changes in the rate of interest. The higher the rate of interest, the less profitable new investment projects become and therefore the fewer projects will be undertaken by firms. So, the higher the rate of interest, the lower will be the level of investment.

Government spending Government spending in this model of the economy is assumed to be independent of economic variables. It is exogenously determined, fixed by variables outside the model. In this case, it is assumed to be determined by the political decisions of the government of the day. Note that government spending (G) here does not include transfer payments. These are payments by the government for which there is no corresponding output in the economy, like welfare benefits or student grants.

Exports and imports A higher price level in the UK means that foreign firms will be able to compete more successfully in the UK economy. For instance, if British shoe manufacturers put up their prices by 20 per cent, whilst foreign shoe manufacturers keep their prices the same, then British shoe manufacturers will become less competitive and more foreign shoes will be imported. Equally, British shoe manufacturers will find it more difficult to export charging higher prices. So a higher UK price level, with price levels in other economies staying the same, will lead to a fall in UK exports.

Hence, aggregate demand falls as prices rise, first, because increases in interest rates reduce consumption and investment and, second, because a loss of international competitiveness at the new higher prices will reduce exports and increase imports.

Question 1

In 1975, inflation rose to a peak of 24.1 per cent. Real GDP fell in both 1974 and 1975. In 1980, inflation rose to a peak of 18.0 per cent and real GDP fell in 1980 and 1981. In 1990, inflation rose to a peak of 9.5 per cent. GDP fell in 1991 and 1992. In 2008, inflation rose to a peak of 3.6 per cent when GDP fell by 4.3 per cent in 2009.

How might economic theory account for this?

Shifts in the AD curve

The aggregate demand (AD) curve shows the relationship between the price level and the equilibrium level of real income and output. A change in the price level results in a **movement along** the AD curve. Higher prices lead to falls in aggregate demand.

Shifts in the aggregate demand curve will occur if there is a change in any other relevant variable apart from the price level. When the AD curve shifts, it shows that there is a change in real output at any given price level. In Figure 2, the shift in the AD curve from AD₁ to AD₂ shows that at a price level of P, real output increases from Y_1 to Y_2 . There is a number of variables which can lead to a shift of the AD curve. Some of these variables are real variables, such as changes in the willingness of consumers to spend. Others are changes in monetary variables such as the rate of interest.

Consumption A number of factors might increase consumption spending at any given level of prices, shifting the AD curve from AD_1 to AD_2 in Figure 2. For instance, unemployment may fall, making consumers less afraid that they will lose their jobs and more willing to borrow money to spend on consumer durables. The government might reduce interest rates, again encouraging borrowing for durables. A substantial rise in stock market prices will increase consumer wealth which in turn may lead to an increase in spending.

Figure 2

A shift in the aggregate demand curve

An increase in consumption, investment, government spending or net exports, given a constant price level, will lead to a shift in the aggregate demand curve from AD_1 to AD_2 .



A reduction in the relative numbers of high saving 45-60year olds in the population will increase the average propensity to consume of the whole economy. New technology which creates new consumer products can lead to an increase in consumer spending as households want to buy these new products. A fall in income tax would increase consumers' disposable income, leading to a rise in consumption. **Investment** One factor which would increase investment spending at any given level of prices, pushing the AD curve from AD_1 to AD_2 in Figure 2, would be an increase in business confidence - an increase in 'animal spirits', as John Maynard Keynes put it. This increase in business confidence could have come about, for instance, because the economy was going into boom. A fall in interest rates ordered by the government would lead to a rise in investment. An increase in company profitability would give firms more retained profit to use for investment. А fall in taxes on profits (corporation tax in the UK) would lead to the rate of return on investment projects rising, leading to a rise in investment.

Government spending Government spending can change automatically because of previous government spending commitments, or the government can announce changes to its spending. A rise in government spending with no change in taxation will lead to a fall in its budget surplus or a rise in its deficit. This will increase aggregate demand, pushing the AD curve to the right from AD_1 to AD_2 in Figure 2. A fall in government spending with no change in taxation will lead to a shift to the left in the aggregate demand curve.

Exports and imports A number of factors can affect the balance between exports and imports. For example, a rise in the exchange rate is likely to lead to lower exports but higher imports. Exports minus imports will therefore fall, reducing aggregate demand. This is shown by a shift in the aggregate demand curve to the left. In contrast, an improvement in innovation and quality of UK manufactured goods is likely to lead to a rise in exports. This will increase aggregate demand and shift the aggregate demand curve to the right from AD_1 to AD_2 in Figure 2.

Important notes

Changes and shifts in AD Aggregate demand and aggregate supply analysis is more complex than demand and supply analysis in an individual market. You may already have noticed, for instance, that a change in interest rates could lead to a movement along the aggregate demand curve or lead to a shift in the curve. Similarly, an increase in consumption could lead to a movement along or a shift in the curve. To distinguish between movements along and shifts in the curve it is important to consider what has caused the change in aggregate demand.

If the change has come about because the price level has changed, then there is a movement along the AD curve. For instance, a rise in the price level causes a rise in interest rates. This leads to a fall in consumption. This is shown by a movement up the curve.

If, however, interest rates or consumer spending have changed for a different reason than because prices have changed, then there will be a shift in the AD curve. A government putting up interest rates at a given price level would lead to a shift in the curve.

Levels and changes As with any economic analysis, it is important to distinguish between absolute changes and rates of change. For example, a fall in the level of investment will lead to a fall in aggregate demand, all other things being equal. However, a fall in the rate of change of investment, when this rate of change is positive, means that investment is still rising. If growth in investment has fallen from 5 per cent to 3 per cent, investment is still increasing. So a fall in the rate of growth of investment will lead to an increase in aggregate demand and a shift of the AD curve to the right.

Question 2

Explain, using a diagram, the likely effect of the following on the aggregate demand curve for the UK.

- (a) The 3.5 per cent fall in real household consumption expenditure between 2007 and 2011.
- (b) The fall in bank base interest rates from 5.5 per cent in 2007 to 0.5 per cent in 2010.
- (c) Rises in taxes in the 2011 and 2012 budgets.
- (d) The 40 per cent fall in London Stock Exchange prices between October 2007 and February 2009.
- (e) The rise in the household saving ratio from 5.6 per cent in 2008 to 11.0 per cent in 2010.
- (f) The fall in real government spending between 2011 and 2014 and forecast to continue to 2018.
- (g) The 23 per cent fall in the average value of the pound against other currencies between 2007 and 2011.

Key Terms

Aggregate - the sum or total. Aggregate demand - the total of all demands or expenditures in the economy at any given price. Aggregate demand curve - shows the relationship between the price level and equilibrium national income. As the price level rises the equilibrium level of national income falls. Domestic economy - the economy of a single country. **Figure 3**

Thinking like an economist



Aggregate demand

Aggregate demand (AD) is made up of private sector consumption (C), private sector investment (I), government spending (G) and exports (X) minus imports (I). Figure 3 shows the composition of UK aggregate demand in 2013. In that year, 65 per cent of GDP was made up of private consumption expenditure, the largest single component of aggregate demand. Private sector investment was the smallest component at 15 per cent of GDP. 23 per cent was government spending on current spending such as teachers' salaries and investment such as new road building. Exports were 30 per cent of GDP but the overall balance of X - M was negative because imports were even



higher at 32 per cent of GDP. The contribution of net exports (exports minus imports) to aggregate demand is extremely small. Between 1997 and 2013, net exports varied from + 0.7 per cent to -4.2 per cent of aggregated demand.

Figure 4 shows how aggregate demand and its components have changed over time at constant prices. The period 1997 to 2007 saw a significant rise in aggregate demand. However, the financial crisis of 2008 brought growth to a halt. Between 2008 and 2013 the UK suffered the longest period of stagnation since the 19th century, greater even than the Great Depression of the 1930s.

Figure 4



Data Response Question

Optimism rises for the Spanish economy

Spain has been through difficult times since the world financial crisis of 2008. Aggregate demand in 2014 has still not reached its 2007 level. However, it has been suggested that recently there have been encouraging signs. 2013 saw a significant rise in exports, partly due to the falling prices of Spanish goods. The following year, consumption and investment began to increase after several years of negative growth. Although government spending continued to fall in 2014, this should be more than outweighed by growth in private sector domestic spending.

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- Explain, using Table 1 for examples, what is meant by 'aggregate demand'.
- 2. Analyse the contribution of net exports to Spain's aggregate demand between 2010 and 2015.
- 3. Discuss whether Spain can recover from its recession without a large increase in domestic consumption.

Table 1 Spain: aggregate demand and its components¹

	Euros bns			Annual %		
	2010	2011	2012	2013	2014	2015
Aggregate demand (GDP)	1 046	0.1	-1.6	-1.2	1.2	1.6
Private consumption	605	-1.2	-2.8	-2.1	1.2	1.6
Government consumption	225	-0.5	-4.8	-2.3	-0.3	-1.5
Investment by private sector and government	239	-5.4	-7	-5.1	0.6	2.9
Exports	286	7.6	2.1	4.9	3.7	5.9
Imports	309	-0.1	-5.7	0.4	4.3	5.2

1. 2014 and 2015 are forecast data.

Source: adapted from OECD Economic Outlook (2014), No.95, Vol. 2014/1, updated and INE (2014), Contabilidad Nacional de España, INEbase, Insituto Nacional de Estadistica.

Evaluation

Start by defining recession and aggregate demand. Analyse how increases in the different components of aggregate demand can help Spain recover, using examples from the data. Use this analysis to argue whether or not a rise in the other components of AD apart from consumption (or fall in the case of imports) can lift AD without a large increase in C. You will need to work out the approximate relative sizes of the annual increases in I, G and X-M from the annual increases in Table 1 to support your evaluation.