

# *Edexcel*

## *AS Level*

### *Econ*

*(Code: WEC13 01)*

*Unit 02*

*Section 04 – National income*

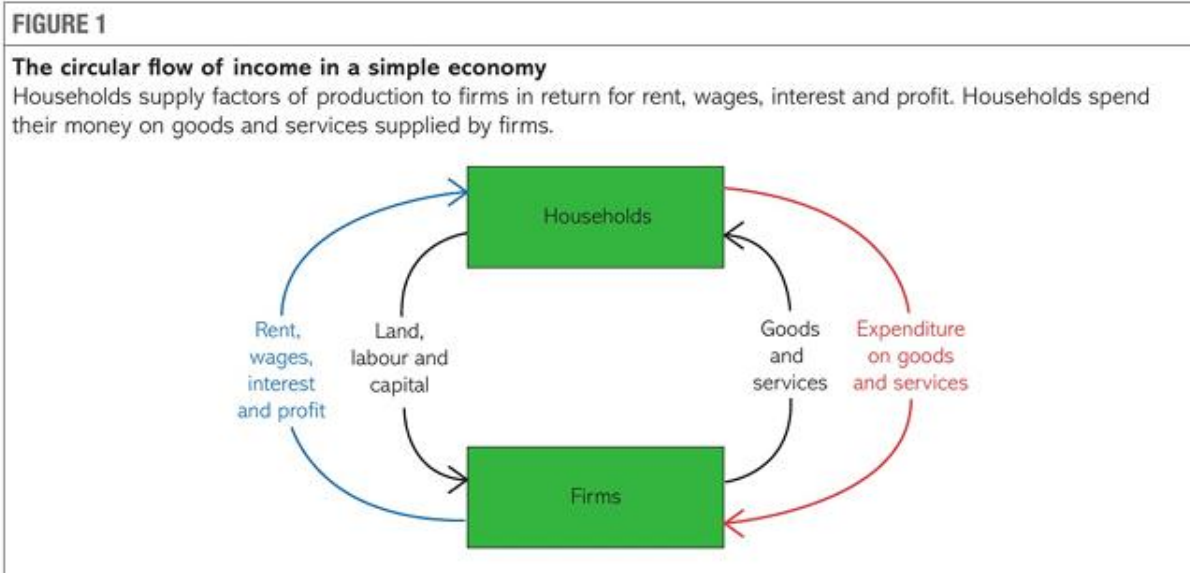


## Chapter 32 – Circular flow of income

### INCOME, OUTPUT AND EXPENDITURE

Macroeconomics is concerned with the economy as a whole. A key macroeconomic variable is the level of total output in an economy, often called **national income**. There are three ways in which national income can be calculated. To understand why, consider a very simple model of the economy where there is no foreign trade (a **closed economy** as opposed to an **open economy** where there is foreign trade) and no government. In this economy, there are only households and firms, which spend all their income and revenues.

Households own the **wealth** of the nation. They own the stock of land, labour and capital used to produce goods and services. They supply these factors to firms in return for **income**.



The **circular flow of income model** can be used to show that there are three ways of measuring the level of economic activity.

**National output (O)** This is the value of the flow of goods and services from firms to households. It is the black line on the right of Figure 1.

**National expenditure (E)** This is the value of spending by households on goods and services. It is the red line on the right of the diagram.

**National income (Y)** This is the value of income paid by firms to households in return for land, labour and capital. It is the blue line on the left of the diagram.

So income, expenditure and output are three ways of measuring the same flow. To show that they must be identical and not just equal, we use the '≡' sign.

$$O \equiv E \equiv Y$$

## INJECTIONS AND WITHDRAWALS

The simple circular flow of income model in Figure 1 can be made more realistic by adding injections and **withdrawals or leakages**. An injection into the circular flow is spending that does not come from households. There are three injections.

- Investment is spending by firms on new capital equipment like factories, offices and machinery. It is also spending on stocks (or inventories) of goods that are used in the production process.
- Government spending is spending by central and local government as well as other government agencies.
- Exports is spending by foreigners on goods and services made in the economy.

Withdrawals or leakages from the circular flow are spending that does not flow back from households to firms. There are three withdrawals that correspond to the three injections.

- Saving by households is money that is not spent by households. Equally, firms do not spend all of their money on wages and profits but may save some of it.
- Taxes paid to the government take money from both households and firms.
- Imports from abroad are bought by both households and firms. The money paid in taxes then does not flow back round the circular flow.

A circular flow diagram that includes injections and withdrawals is shown in Figure 2.

### SUBJECT VOCABULARY

**circular flow of income** a model of the economy that shows the flow of goods, services and factors and their payments around the economy.

**closed economy** an economy in which there is no foreign trade.

**income** rent, interest, wages and profits earned from wealth owned by economic actors.

**injections** in the circular flow of income, spending that is not generated by households including investment, government spending and exports.

**national income** the value of the output, expenditure or income of an economy over a period of time.

**open economy** an economy in which there is trade with other countries.

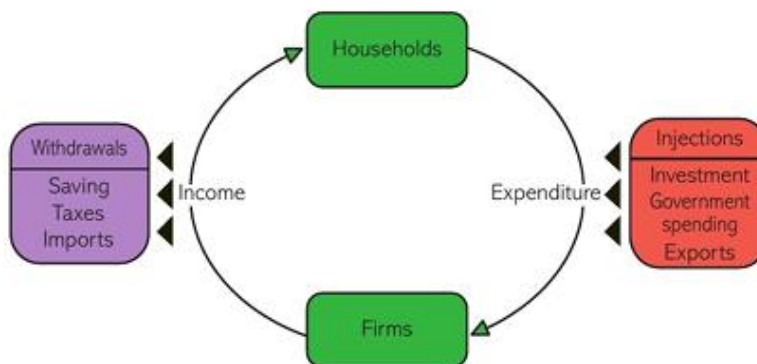
**wealth** a stock of assets that can be used to generate a flow of production or income. For example, physical wealth such as factories and machines is used to make goods and services.

**withdrawals or leakages** in the circular flow of income, spending by households that does not flow back to domestic firms. It includes savings, taxes and imports.

**FIGURE 2**

### Injections and withdrawals and the circular flow

Investment, government spending and exports are injections into the circular flow. They raise spending. Saving, taxes and imports are withdrawals and reduce spending.



## Chapter 33 – equilibrium levels of real national output

### EQUILIBRIUM OUTPUT IN THE SHORT RUN

Chapters 27 and 31 outlined theories of aggregate demand and aggregate supply. Both **Keynesian economists** and **classical economists** agree that in the short run the aggregate demand curve is downward sloping while the aggregate supply curve is upward sloping. The **equilibrium level of output** in the short run occurs at the intersection (crossing) of the aggregate demand and aggregate supply curves. In Figure 1, the equilibrium level of income and output is OY. The equilibrium price level is OP.

Increased aggregate demand shifts the aggregate demand curve to the right, impacting equilibrium output and price level. A rise in aggregate demand increases real output and price level in the short run. Conversely, a fall in aggregate demand leads to a decrease in real output and price level. Short-run aggregate supply (SRAS) also shifts upwards and left.

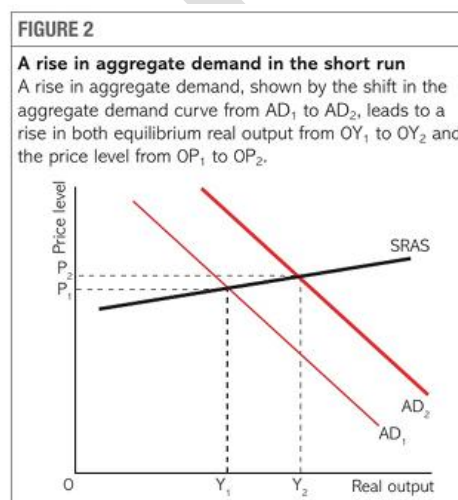
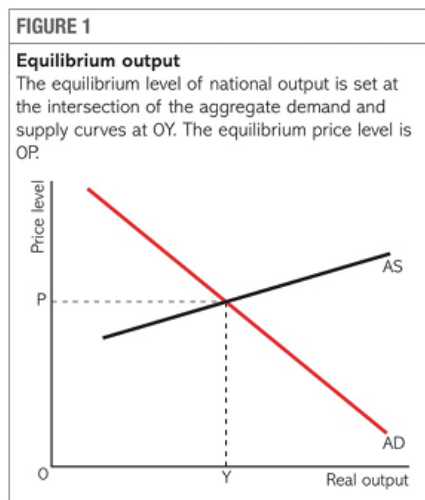
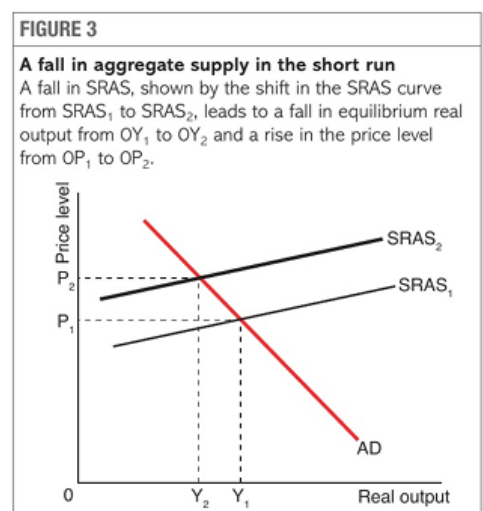


Figure 3 shows the impact of a fall in aggregate supply on equilibrium output and the price level. The SRAS curve shifts from  $SRAS_1$  to  $SRAS_2$ . Equilibrium output then falls from  $OY_1$  to  $OY_2$ . At the same time, the price level rises from  $OP_1$  to  $OP_2$ . A fall in SRAS therefore leads to a fall in output but a rise in the price level in the short run. The opposite is also true. A rise in aggregate supply, shown by a downward shift to the right of the SRAS curve, will lead to a rise in equilibrium output and a fall in the price level.

### EQUILIBRIUM OUTPUT IN THE LONG RUN

Classical economists argue that in the long run the aggregate supply curve is vertical, as shown in Figure 4. **Long-run equilibrium** occurs where the LRAS curve intersects with the aggregate demand curve. Hence equilibrium output is OY and the equilibrium price level is OP. Associated with the long-run equilibrium price level is a SRAS curve that passes through the point where  $LRAS = AD$ . The LRAS curve shows the supply curve for the economy at **full employment**.



Keynesian economists argue that the LRAS curve is as shown in Figure 5. The economy is at full employment where the LRAS curve is vertical at output  $OY_2$ —a point of agreement with classical economists. However, the economy can be in equilibrium at less than full employment.

In Figure 5 the equilibrium level of output is  $OY_1$ , where the AD curve cuts the LRAS curve. The key point of disagreement between classical and Keynesian economists is the extent to which workers react to unemployment by accepting real wage cuts.

labour and reduce the quantity supplied, returning the economy to full employment quickly and automatically.

### A RISE IN AGGREGATE DEMAND

The classical model A rise in aggregate demand, in the classical model, will lead to a rise in the price level but no change in real output in the long run. In Figure 6, the aggregate demand curve shifts to the right from  $AD_1$ , to  $AD_2$ . This could have been caused by a fall in interest rates, for example. The equilibrium price level rises from  $OP_1$ , to  $OP_2$  but equilibrium real output remains the same at  $OY$ . In the classical model, no amount of extra demand will raise long-run equilibrium output. This is because the LRAS curve shows the maximum productive capacity of the economy at that point in time.

FIGURE 5

#### Long-run equilibrium in the Keynesian model

Long-run equilibrium output  $OY_1$  may be below the full employment level of output  $OY_2$  because real wages may not fall when there is unemployment.

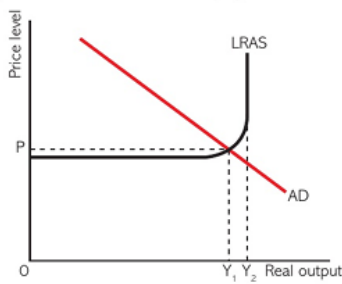


FIGURE 6

#### A rise in aggregate demand in the classical model

A rise in aggregate demand in the long run will shift the aggregate demand curve from  $AD_1$  to  $AD_2$ . The equilibrium price level will rise from  $OP_1$  to  $OP_2$  but there will be no change in equilibrium real output,  $Y$ .

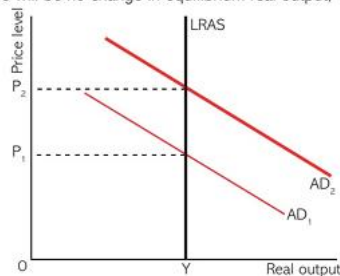
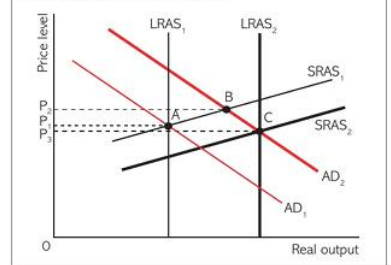


FIGURE 11

#### An increase in investment expenditure

An increase in investment will increase aggregate demand from  $AD_1$  to  $AD_2$ , and is likely to shift the LRAS curve from  $LRAS_1$  to  $LRAS_2$ . The result is an increase in output and a small fall in prices.



### INCREASING AGGREGATE DEMAND AND SUPPLY

In microeconomics, factors that shift the demand and supply curves do not necessarily affect the supply and vice versa. However, in macroeconomic aggregate demand and supply analysis, factors that shift one curve may also shift the other. For example, an increase in investment can increase aggregate demand but also increase aggregate supply. This can be shown through aggregate demand and supply analysis. An increase in investment initially shifts the aggregate demand curve, leading to long-run disequilibrium and a new SRAS curve. Not all investments result in increased production.

### SUBJECT VOCABULARY

**classical economists** economists who hold the view that the long-run aggregate supply curve (LRAS) is vertical. So an increase in aggregate demand, in the long run, will be purely inflationary unless the LRAS curve shifts to the right.

**equilibrium level of output** the level of real national output (real GDP) when aggregate demand equals aggregate supply.

**full employment** the level of real national output (real GDP) where the LRAS curve is vertical.

**Keynesian economists** economists who hold the view that an increase in aggregate demand may or may not cause real national output to rise. It depends on whether the economy is below full employment or at full employment.

**long-run disequilibrium** a term used by classical economists when the short-run equilibrium level of real GDP is either below or above the level of real national output (real GDP) where the LRAS curve is vertical.

**long-run equilibrium** when aggregate demand equals long-run aggregate supply.



## Chapter 34 – Multiplier

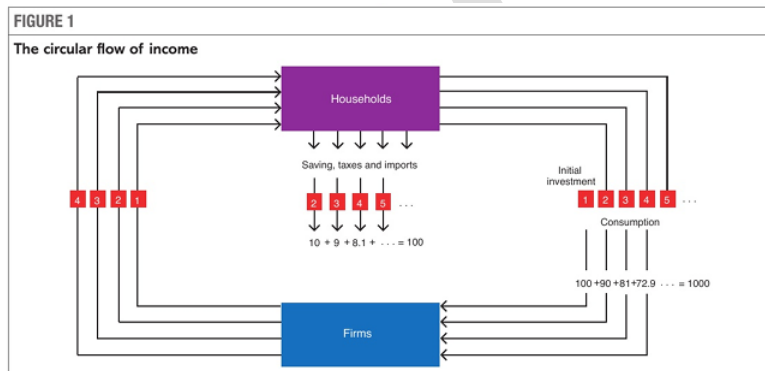
### THE MULTIPLIER

If there is an increase in, say, investment of MYR 1, what will be the final increase in national income? John Maynard Keynes, a UK economist, argued in his most famous book, *The General Theory of Employment, Interest and Money*, published in 1936, that national income would increase by more than MYR 1 because of the **multiplier effect**.

Malaysian firms' increased spending on new factories could lead to a multiplier effect, increasing aggregate demand and national income. Workers would spend the money on various products, including food, which would contribute to national income. This multiplier effect indirectly creates jobs in the economy. The circular flow of income model illustrates this process. Households spend 90% of their gross income, with the remaining 10% saved or paid to the government. Firms increase spending by MYR 100 million, which then flows back to households in wages and profits. This process continues, with smaller amounts added to national income, eventually leading to a final increase of MYR 1 billion.

In this case, the value of the multiplier (**or national income multiplier or Keynesian multiplier or real multiplier**) is **10**.

The circular flow model suggests that larger leakages from the circular flow would have reduced the flow of investment around the economy. If leakages were 0.8 of income, only MYR 20 million would have flowed around the economy in the second and third stages. The multiplier model suggests that higher leakages lead to smaller income increases at each stage, and the multiplier effect also applies to falling investment, government spending, or exports.



### CALCULATING THE MULTIPLIER

The value of the multiplier can be calculated by using a formula involving a number of variables (C or consumption; S or saving; T or taxation, M or imports, W or total withdrawals) and their marginal propensities.

- The **marginal propensity to consume (MPC)**, which is the increase in consumption ( $\Delta C$ ) divided by the increase in income ( $\Delta Y$ ) that caused it (i.e.  $\Delta C \div \Delta Y$ ).
- The **marginal propensity to save (MPS)**, which is the increase in saving divided by the increase in income that caused it (i.e.  $\Delta S \div \Delta Y$ ).
- The **marginal propensity to tax (MPT)**, which is the increase in tax revenues divided by the increase in income that caused them (i.e.  $\Delta T \div \Delta Y$ ).

- The **marginal propensity to import (MPM)**, which is the increase in imports divided by the increase in income that caused them (i.e.  $\Delta M \div \Delta Y$ ).
- The **marginal propensity to withdraw (MPW)**, which is the increase in withdrawals from the circular flow ( $S + T + M$ ) divided by the increase in income that caused them (i.e.  $\Delta W \div \Delta Y$ ); this is the same as the sum of the marginal propensity to save, tax and import ( $MPS + MPT + MPM$ ).

The formula for the multiplier is:

$$1 / 1 - MPC$$

which is equal to

$$\frac{1}{(MPS + MPT + MPM)} \text{ or } \frac{1}{MPW}$$

## THE MULTIPLIER EFFECT AND INJECTIONS

Investment is an injection into the circular flow. The multiplier effect shows the impact on aggregate demand and income of a change in an injection. So, if the multiplier were 2, then a MYR 100 million increase in investment would lead to an increase in national income of MYR 200 million.

## THE MULTIPLIER EFFECT AND WITHDRAWALS

Changes in the marginal propensities to consume, save, tax and import will change the value of the multiplier. An increase in the marginal propensity to consume, which must occur because one or more of the marginal propensities to save, tax or import have fallen, will lead to a rise in the value of the multiplier. This is because a rise in the MPC, which means a fall in the MPW, reduces the number on the bottom of the fraction:

$$1/1 - MPC \text{ or } \frac{1}{MPW}$$

## THE MULTIPLIER AND THE AGGREGATE DEMAND CURVE

An increase in investment, exports or government spending of, for example, MYR 1 billion will increase aggregate demand by MYR 1 billion. The multiplier effect, assuming the multiplier is greater than 1, will lead to a further increase in aggregate demand.

Figure 2 (on page 249) shows an initial aggregate demand curve of  $AD_1$ , with a Keynesian aggregate supply curve. An increase in exports of  $Y_1, Y_2$  initially shifts the aggregate demand curve to  $AD_x$ .

A fall in investment exports or government spending will lead to a shift to the left of the AD curve. The size of the fall in equilibrium national income will be the value of the fall in injections times the multiplier.

## EFFECTS OF THE ECONOMY ON THE MULTIPLIER

The multiplier's value is determined by the marginal propensities to consume, save, tax, and import. These propensities can change if other economic variables change. Government tax changes can also affect the multiplier, as a rise in taxes increases the marginal tax rate, while a decrease in tax rates can increase the multiplier's value.

## GOVERNMENTS AND THE MULTIPLIER

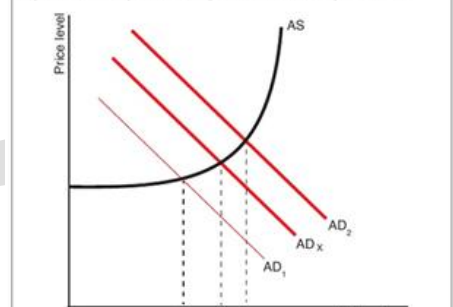
Governments in the past have used changes in government spending to influence national income and macroeconomic variables such as unemployment and inflation. It would be very helpful if governments, for example the Malaysian government, knew that an extra MYR 1 in government spending would produce an extra, say, MYR 2 in national income. However, in practice, it is not so simple.

- It is difficult to measure the exact size of the multiplier. Sophisticated statistical models have to be used that describe the workings of the economy. They are not completely accurate. Equally, changes can happen in an economy that can alter the size of the multiplier from one period to the next.
- The multiplier effect is not immediate. A MYR 100 increase in government spending today does not increase national income by MYR 200 today. It takes time for the money to flow round the circular flow. So there are time delays between the increase in the government spending and the final increase in national income.
- Economists disagree about the exact size of the multiplier. However, in general it is considered to be relatively low in high income countries, such as the UK and the USA.

FIGURE 2

### The multiplier effect on aggregate demand

An increase in exports of  $Y_1, Y_2$  leads to a final increase in equilibrium output of  $Y_1, Y_3$  due to the multiplier effect.



### SUBJECT VOCABULARY

**marginal propensity to import (MPM)** the increase in imports divided by the increase in income that caused them (i.e.  $\Delta M \div \Delta Y$ ).

**marginal propensity to save (MPS)** the increase in saving divided by the increase in income that caused it (i.e.  $\Delta S \div \Delta Y$ ).

**marginal propensity to tax (MPT)** the increase in tax revenues divided by the increase in income that caused them (i.e.  $\Delta T \div \Delta Y$ ).

**marginal propensity to withdraw (MPW)** the increase in withdrawals from the circular flow ( $S + T + M$ ) divided by the increase in income that caused them (i.e.  $\Delta W \div \Delta Y$ ); this the same as the sum of the marginal propensity to save, tax and import ( $MPS + MPT + MPM$ ).

**multiplier (or national income multiplier or Keynesian multiplier or real multiplier)** the figure used to multiply a change in an injection into the circular flow, such as investment, to find the final change in income (assuming the injection is not determined by income). It is the ratio of the final change in income to the initial change in an injection. It can be calculated as

$$1/1 - MPC \text{ or } \frac{1}{(MPS + MPT + MPM)} \text{ or } \frac{1}{MPW}$$

**multiplier effect (or process)** an increase in investment or other injection will lead to an even greater increase in income (assuming the injection is not determined by income).

## Revision questions

FOCUS