Macroeconomics

1. Introduction

1.1. Chapter overviews

Macro means large and macroeconomics is the study of the big economic picture. This chapter introduces you to technical terms that are used by economists when describing the economy, such as RPI, CPI and PSNCR.

Economists use models as a way of predicting what may happen and of helping them to make economic decisions about how to manage the economy. This chapter considers a model that seeks to explain the way the economy works called the **circular flow**. It shows how people give time and assets to firms in return for money, and the firms produce goods to sell back to the people. But this simple circle becomes complicated by drains of money out of the flow (**leakages**) and extra money coming in (**injections**). You will consider the impact of Government **fiscal** policy (its taxation and spending) on this simple model.

1.2. Learning outcomes

On completion of this module, you will:

UK socio-economic trends

- 9.1.1 Identify the main long-term UK and global socio-economic trends
- 9.1.3 Describe the relationship between and importance of the main World economies
- 9.1.4 Describe economic and financial cycles including their predictability and regional differences
- 9.1.5 Identify international differences in consumption, credit and savings

Economic indicators

- 9.1.2 Identify key economic indicators and their trends
- 9.3.12 Explain how inflation targeting operates in the UK
- 9.4.2 Identify the key components of the balance of payments
- 9.4.1 Explain how changes in supply and demand for a currency will affect its value on the foreign exchange markets
- 9.4.3 Explain the relationship between the supply and demand for a currency and the underlying transactions represented in the balance of payments

The economy: a simple model

- 9.2.3 Identify the components of the circular flow of income
- 9.2.4 Distinguish between injections into, and withdrawals from ('leakages') the circular flow
- 9.2.10 Explain the paradox of thrift

National income accounting

- 9.2.1 Distinguish between Gross Domestic Product (GDP) and Gross National Product (GNP)

- 9.2.5 Distinguish between national income and GNP
- 9.2.2 Identify the difference between real and nominal GDP

Aggregate demand (AD)

- 9.2.8 Describe Keynesian equilibrium
- 9.3.8 Explain the transmission mechanism whereby monetary policy influences economic aggregates
- 9.3.1 Describe fiscal policy and its influence on aggregate demand
- 9.2.6 Distinguish between classical economics and the Keynesian and Monetarist schools of thought
- 9.2.7 Identify the major components of the Keynesian model
- 9.2.9 Calculate the Keynesian multiplier given the marginal propensity to consume (mpc) or propensities to withdraw (tax, import and save)
- 9.3.3. Explain the problems associated with fiscal policy
- 9.3.2 Explain the role of debt in the business cycle

Central banks

- 9.3.13 Distinguish between the different approaches to the control of inflation taken by the major central banks
- 9.3.14 Explain the other tools (including Quantitative Easing (QE)) used by central banks to manage the economy and in particular inflation

Money supply, inflation and unemployment

- 9.3.4 Identify money supply (from ‘narrow’ through to ‘wide’)
- 9.3.6 Define the money multiplier and identify its determinants
- 9.3.7 Calculate the potential money multiplier given a cash reserve ratio
- 9.3.5 Describe the fractional reserve banking system
- 9.3.15 Explain the impact of bank capital and liquidity requirements and the move towards macro-prudential regulation of the macro-economy
- 9.3.16 Explain the role of securitisation on credit growth and the wider macro-economy
- 9.3.9 Define inflation and explain how it is measured in the UK
- 9.3.10 Define unemployment and explain how it is measured in the UK
- 9.3.11 Explain the relationship between inflation and unemployment

2. UK socio-economic trends

2.1. What is socio-economics?

Socio-economics is the statistical study of social events and their impact on the economy of a country. The major contributors to socio-economics as identified by Her Majesty's Treasury (HMT) are demography, environmental change and the global economy.

2.2. Demography

Demography aims to identify trends in populations over time.

UK demographic trends

The key UK demographic trends are as follows:

- Ageing population, though not as fast as some of its competitors
- Fewer younger people

Ageing population

The population living longer has a direct impact on health provision and provision for those in retirement. This has significant investment implications for the government and is a major factor in the review of the state pension.

Fewer younger people

This is caused in the UK by dropping fertility levels. Fertility levels represent the number of children born to each female. In the UK the fertility rate is below the level to sustain the population on its own.

This together with the ageing population has the added impact of increasing the old age dependency ratio. The old-age dependency ratio looks at the number of people of retirement age as a percentage of those of an employable age.

The European Union sets the maximum debt-to-GDP ratio at 40% and upper limit of the deficit to GDP ratio is 3%. The above trends have created a growth in public spending as a share of GDP, which combined with financial crisis has led to issues with compliance to these limits.

2.3. Environmental change

Pressures on natural resources and climate are becoming an increasingly important factor affecting socio-economic trends. Climate change particularly poses a significant threat to the world economy. In the UK we have seen government intervention in these areas; particularly in the attempt to reduce carbon emissions. The UK Government has attempted to create a market-led approach to this reduction through putting a price on carbon, supporting low-carbon technology and education towards changing behaviours.

2.4. Global economy

As the world becomes increasingly interconnected, technological changes and globalisation become key factors in the economy. There has been a significant increase in international trade, global capital flows and global sourcing of goods.

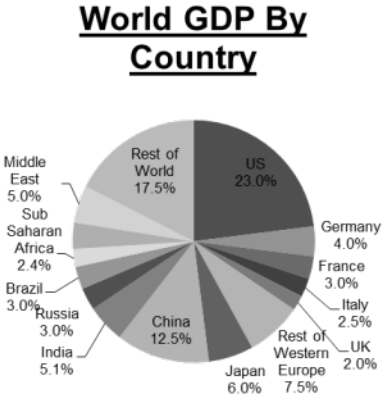
The major trends in this global economy are:

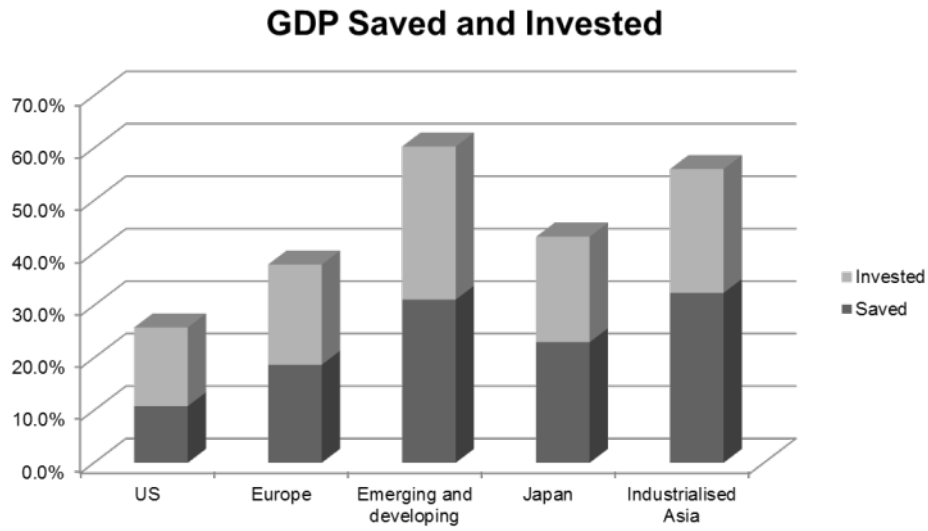
- Growth in emerging markets
- International trade
- Financial globalisation
- Technology change
- Increased demand for commodities

In 2009, the US contributed the largest single proportion towards GDP. Among the advanced economies, Japan was the second largest. Within the Euro area, Germany, France and Italy were the largest countries and Germany's share of world exports was not far off that of the US.

In contrast, the 149 countries described as 'emerging and developing' by the IMF accounted for just over 46% of world output, with China and India the largest.

In terms of savings and investment the emerging economies clearly save and invest more proportionately than developed ones.





3. Economic indicators

3.1. Introduction

A nation's economy is a many layered and complex entity. It can be very difficult to recognise what is happening in the economy today and even more difficult to predict where the economy is heading in the short- and medium-term. To help assess the state of the economy, forecasters rely on economic indicators.

Economic indicators are statistics collected by the government and published on a regular basis, either monthly, quarterly or annually. They enable the economy to be monitored and measured by economists in an effort to predict its behaviour and thereby apply some sort of control.

Many of the indicators followed by analysts around the world refer to US data releases, such as non-farm employment changes, and variables which have an impact on the US dollar, such as the current account balance. Very often, the economic data is considered in relation to its impact on interest rate changes by central banks, since this is assumed to influence real output, and hence profitability, albeit with a one to two year time-lag. Hence inflation measures such as the producers' price index or the cost of inputs are considered to affect future inflation, and inflation expectations – and therefore interest rates – under the control of policy-makers.

Leading indicators

Some of these indicators are considered **leaders**, that is they give us a possible insight into how the economy will progress. Examples would be:

- Stock market movements
- Consumer or business surveys
- Money supply and credit growth

In the US, the Conference Board publishes a composite leading indicator based on ten indicators with a view to predicting economic activity six to nine months ahead.

Lagging indicators

Others are considered **laggers**, that is they move after the economy has changed. An example would be unemployment levels, which is known to move some three or four quarters after output itself changes.

Coincident indicators

Finally, **coincident** indicators such as industrial production and notional output (or GDP) move in step with the economy. In the US, there is an official business cycle dating committee at the National Bureau of Economic Research considering this data.

3.2. Government borrowing – the Public Sector Net Cash Requirement

We have looked at government borrowing and spending as one of the components of GDP and as an injection to boost UK economic activity.

We can measure the level of borrowing by monitoring the Public Sector Net Cash Requirement (PSNCR) which is another name for the budget deficit.

PSNCR is the difference between what the Government receives (such as taxes and customs duties) and what it spends in a given year.

In the long-term, a high PSNCR may give rise to concerns about inflation as the Government is spending large sums of money and injecting potentially excessive amounts of cash into the economy.

3.3. Inflation indices

Inflation is a general increase in prices and fall in the purchasing value of money. There is no single cause of inflation, but the problems it causes include:

- A loss in the attractiveness of exported goods, which may become relatively expensive
- Uncertainty over the future value of savings and investments

On the plus side, the value of debt is reduced by inflation, and sellers of goods find it easier to justify price increases during periods of inflation.

The Retail Prices Index (RPI)

The best known measure of inflation in the UK is the Retail Price Index (RPI). It represents the average price of a basket of goods purchased by a typical household. It includes items as diverse as foodstuffs, DVDs and mortgage interest payments. If the price of the goods in the basket all go up, so will the index's value.

From time to time, the government rebases the index to 100.

Index-linked gilts are linked to the RPI (three months prior).

The Consumer Prices Index (CPI)

The Consumer Prices Index (CPI) is another key measure of inflation used in the UK. The Monetary Policy Committee (MPC) of the Bank of England is responsible for keeping UK inflation within +/- 1% of the 2% target. The CPI took over from the RPI as the official measure of UK inflation in 2003.

3.4. The Base Rate

The Bank of England base rate is the monetary tool used by the Monetary Policy Committee (MPC) to set interest rates in the UK.

3.5. Consumer confidence and the volume of consumer spending

Consumer confidence and the level of consumer spending are important barometers of the economy. During upturns in the economy consumer confidence and consumer spending start to rise. This increased consumer spending helps firms by boosting profits and creates more jobs. Consumer spending can fall off quickly if interest rates rise, as consumers have to cope with higher mortgage payments.

3.6. Level of unemployment

Monthly unemployment figures are considered a key indicator of the health of an economy. If unemployment is too high it may indicate a fall in production and a fall in tax receipts (with a corresponding rise in social security payments). If unemployment is too low then there may be a skills shortage which may result in increased wages and possible increased inflation.

3.7. Stock market indices

Whether we work in the financial industry or not we are all reminded of a variety of stock market indicators very regularly on the news and in the wider media. The FTSE 100 in the UK and the S&P 500 in the US are reported daily on most news channels and in most newspapers.

Stock market indices measure the share prices of public companies in differing markets around the world. The theory is that the current share prices of these companies reflect the market's future expectations for each company. So the price of an index signals future economic expectations.

3.8. Stock market movements

As we all know, the prices of individual shares and of stock markets have a habit of changing very frequently.

It is useful to be aware of the following terminology:

- Bull market – rising price trend
- Bear market – falling price trend
- Contrarian approach – doing the opposite of the trend e.g. buying when the trend is selling
- Cyclical firms – firms that do well when the economy is doing well, but do badly during downturns e.g. luxury goods and house builders
- Counter cyclical firms – firms that do well when the economy is in a downturn and not so well in an upturn e.g. cheap alternatives

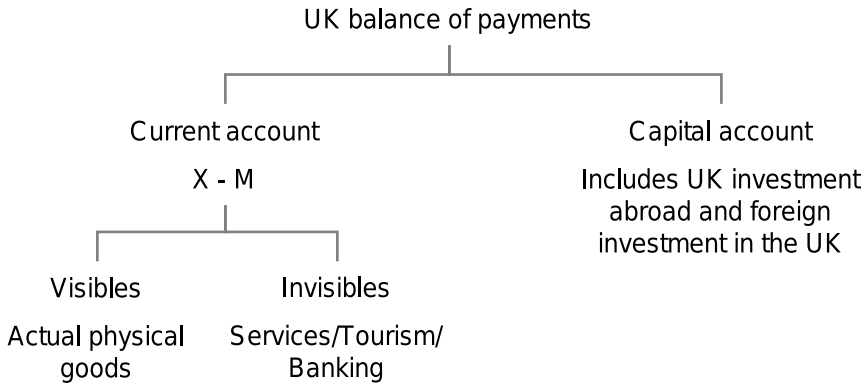
3.9. Trade figures

Introduction

Trade figures represent the inflows and outflows to the UK economy, i.e. the UK's **balance of payments** with the rest of the world. They comprise the current and capital accounts.

They tell us if there has been a net flow of funds into the UK or out of it.

The UK has a relatively open economy, in which there are few barriers to trade. Some countries have closed economies, imposing tight restrictions on international trade.



UK current account

This indicates the **trade** position that the UK has with the rest of the world.

It is calculated by subtracting imports (M) from exports (X).

The UK current account is split into **visibles** and **invisibles**:

- Visibles are tangibles, i.e. goods, such as coal and steel. The balance on the visible and invisible account is referred to as the **balance of trade**.

Invisibles are services, such as insurance, shipping and tourism.

If the UK imports more goods than it exports, this is called a **deficit**.

If a country has a long-term overall deficit then a fall in the value of its currency may correct this, as imports will become more expensive for domestic consumers and exports will become cheaper for foreign consumers.

UK capital account

This account measures the **investment** relationship the UK has with the rest of the world and is a longer term aspect of the balance of payments. In other words it shows the net effect of UK citizens investing in foreign investment instruments, and non-UK investors investing here.

3.10. The balance of payments and exchange rates

Introduction

The balance of payments has a link to exchange rates. Think of it this way, when we buy imports from abroad we need foreign currency to pay for them. When foreign countries buy our exports they need our currency to pay for them.

When a country's goods are in demand, a demand is also created for their currency to buy these goods. For example, if there is a strong demand for European food produce, the euro will be in demand as well. When there is a strong demand for a currency it tends to appreciate in value. Unfortunately this makes the goods in this country now more expensive.

A balance of payments deficit (X<M)

A balance of payments deficit is created when our imports are greater than our exports. As a country this means we are spending more (on imports) than we are receiving (from exports).

One solution to correct a balance of payments deficit is to allow sterling to depreciate. As exports are less than imports with a deficit, sterling may be depreciating in value. Once this happens, our exports look relatively cheap to our foreign trading partners and demand may increase again, causing our balance of payments to be back in line once more.

A small balance of payments deficit is not too serious, but what does a country do to finance a larger deficit? The answer often is that the country needs to borrow overseas. This can cause concerns about the financial stability of the country and lead to an outflow of capital.

A balance of payments surplus (X>M)

A balance of payments surplus is created when our exports are greater than our imports. As a country this means we are receiving more (from exports) than we are spending (on imports).

Because of the high demand for our exports, our currency begins to appreciate in value. If sterling appreciates, our exports begin to look expensive and the demand for our exports begins to reduce. Once the demand for UK exports falls, sterling begins to depreciate once more.

We can conclude that our home currency is influenced by our balance of payments. Of course there are other influences on our currency as well, such as the relative level of our interest rates and inflation to those of our trading partners.

3.11. Sterilisation

Introduction

The UK has a floating rate of foreign exchange. That is the rate of exchange will fluctuate given the demand for the currency, and that the demand for the currency can be linked to the balance of payments. In this way, the rate of exchange can be seen, in the long-term at least, to correct the imbalance in these payments.

Some countries have a fixed rate of foreign exchange. That is the country will fix (or peg) their exchange rate to another country's (generally stronger) currency. This gives the ‘pegged’ country a certain amount of security in the value of their currency. For some time China had pegged their currency to the US dollar. This means that no matter how much demand was placed on Chinese goods for exports, the Chinese currency, the yuan, never appreciated in value. This, some economists argue, has kept Chinese goods and services artificially cheap and internationally attractive.

Application

Given fixed exchange rates, there is a close relationship between the money supply and the balance of payments.

Thus, if there is a balance of payments deficit (more imports than exports), there will be a drain on the currency. As the currency is pegged to another, there will be no devaluing of the currency to encourage a rebalance of imports and exports. If this were allowed to continue, soon the money supply would run out. The central bank or government can compensate for this and increase the money supply by buying back government securities in its open market operations.

When a central bank adjusts the money supply in order to compensate for the balance of payments surpluses/deficits, this is known as 'sterilisation'.

4. The economy: a simple model

4.1. Circular flow of money

Introduction

We will begin by assuming only two sectors to the economy – households and firms.

We will ignore the government sector (taxes and government spending) and the foreign sector (imports and exports).

We will also assume that individuals do not save any of their income, i.e. what they earn, they spend.

Households and firms

Think of a simple economy made up of households and firms. Firms employ individuals to provide labour to help them supply goods and services in the economy. In return, the firms pay salaries and provide benefits to these individuals.

With their salaries, individuals then spend money on goods and services supplied by firms. As individuals we are often termed consumers as we consume goods and services produced by firms in the economy.

The economy should be pictured as a circular flow between households and firms:

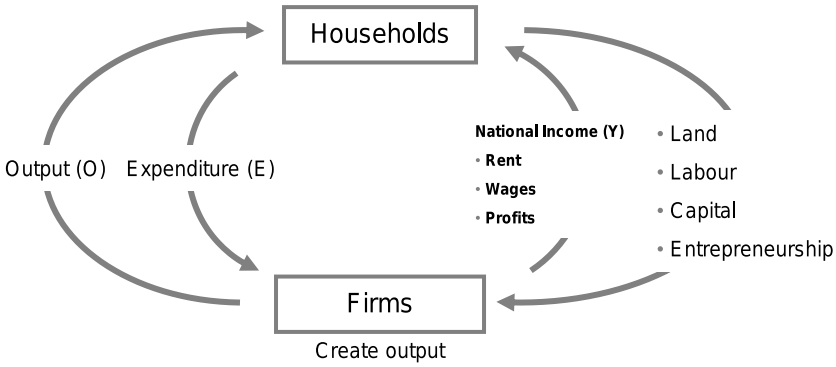
Households (i.e. individuals) provide the **factors of production** - land, labour, capital and entrepreneurship.

Firms (i.e. companies) reward households for supplying the factors of production with rent, wages and profits. This is known as **national income** (Y).

Firms use the factors of production to create goods and/or services. This is known as **national output** (O).

In turn, households purchase national output with **national expenditure** (E).

Circular flow in a simple economy



Assuming the economy is in equilibrium (i.e. it is not expanding or contracting), then over time national income is the same as national expenditure, which, in turn, is the same as national output.

$$O = E = Y$$

4.2. Leakages and injections

Introduction

The next step is to consider **leakages** and **injections**.

Leakages are items that are subtracted from the circular flow of the economy, i.e. their effect is to contract the economy.

Injections are items that are added to the circular flow of the economy, i.e. their effect is to expand the economy.

The government

The government is responsible for raising taxes.

Taxation is a leakage as it takes money out of the economy.

The government is also responsible for certain elements of spending, i.e. civil service, roads, defence etc.

Government spending is an injection into the economy.

The government is also responsible for the payments of unemployment benefits, known as transfer payments.

The foreign sector

Exports (goods sold to other countries) and imports (goods purchased from other countries) constitute the foreign sector.

Exports are an injection. They bring money into the economy.

Imports are a leakage because money leaves the domestic economy to pay for them.

Savings and investment

In the simple model of the economy, it was assumed that households spend all their income.

The reality is that households **save** some of it.

Household savings, of course, constitute an economic leakage.

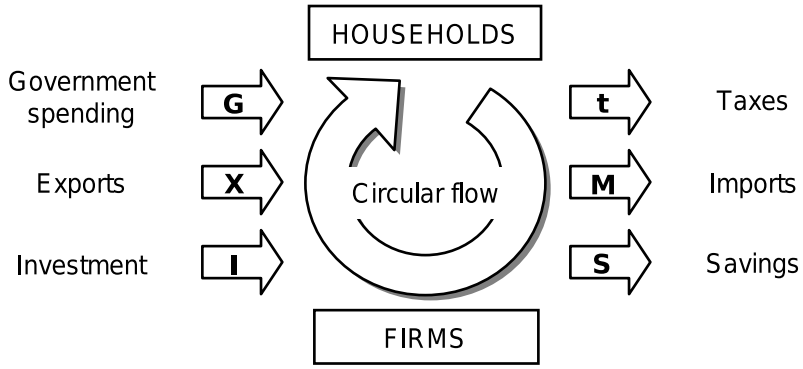
Finally, it should be noted that what is saved is invested – usually in the corporate sector. Companies therefore have extra cash to invest in other projects and expand as a result. Corporate investment is therefore an injection into the circular flow of the economy.

When the economy is in equilibrium, savings equals investment.

Savings can be counterproductive. If everyone decides to save more then it can result in transaction which in turn reduces economic growth. The aggregate effect is that individuals receive lower wages and therefore have less money to save. Since this is the exact opposite of the participants' goals the scenario is known as the **paradox of thrift.**

Circular flow including leakages and injections

If an economy is in equilibrium (i.e. neither expanding or contracting), as illustrated below, the sum of leakages must equal the sum of injections.



If the economy is in equilibrium:

$$G + X + I = t + M + S$$

5. National income accounting

5.1. Definition

National income accounting refers to the measurement of economic activity within a circular flow.

The circular flow model of the economy shows there are three ways of measuring national income; by expenditure, income or output. Whatever method is used, the resulting figure is expressed as Gross Domestic Product (GDP) or Gross National Product (GNP).

5.2. Gross Domestic Product (GDP)

Introduction

GDP is the value of economic activity generated by factors of production from within the country's domain. It does include activity generated by foreign owned factors of production in the UK, but does not include activity generated by UK owned factors of production held overseas.

The growth of an economy's GDP is used as a measure of its economic growth. GDP growth is not constant; rather it oscillates around a trend growth rate.

GDP represents the total **market value** of all **final** goods and services.

Market value is calculated using market prices and is explained in a separate section below. Final goods and services, however, are those consumed by an end user. The manufacturing process that makes a completed car from the basic raw materials involves many stages. Each stage produces an **intermediate good** which is used by another producer as its own raw material (e.g. the end product of a steel factory is the raw material for the car manufacturer). Each intermediate producer is **adding value** to the previous stage's final product.

Real vs. nominal GDP

GDP can be categorised as real or nominal. The difference between real and nominal measure is whether the effect of inflation is included or excluded. Real GDP includes inflation whereas nominal strips out the affect.

GDP at factor cost and market prices

GDP may be measured either at factor cost or at market prices – both measures are explained below.

GDP at **factor cost** refers to the value of firms' output prior to any government interference.

The government may subsidise some goods. This means that the price from the 'factory gate' is higher than what the consumer pays. What is more likely is that the government will add tax to the goods (e.g. VAT).

Whatever the case, GDP at factor cost ignores subsidies and taxes.

If GDP is calculated taking into account subsidies and taxes, it is known as GDP at **market prices**, as can be seen in the example below:

Price leaving factory	£10.00	⇨ GDP at factor costs
VAT @ 17.5%	£ 1.75	
Market price	£11.75	⇨ GDP at Market prices

The factory gate price of the CD (£10.00) would be used to calculate GDP at factor costs. However, its retail price of £11.75 (cost + VAT) would be used to calculate GDP at market prices.

Intermediate and final goods

It is important to distinguish between final goods and intermediate goods when calculating GDP. Final goods are those that are purchased by the end user of the product whereas intermediate goods are part of the production process.

For example, if a farmer grows trees and the farmer sells the trees to a paper mill for £10 then the trees would be classed as an intermediate good. The paper mill now uses the trees to make paper, which is a second intermediate good, and sells the paper to a publisher for £40. This means that the paper mill created £30 in value (£40 sale - £10 purchase). Finally, the publisher uses the paper to print a magazine, which is sold to the consumer and is a final good. The publisher sells the magazine for £100, and adds £60 of value (£100 - £40). Note the £100 final price is equal to the value added for each step in the process (£10 + £30 + £60).

It is important that either the final good **or** the sum of the intermediates is used as a mixture would lead to counting the added value twice (double counting).

Calculating GDP

The two most common ways of measuring GDP are adding up all the income in an economy, or adding up all of the expenditure.

The expenditure method

There are four components to calculating GDP using the expenditure method.

- Personal consumption. Spending in shops and on services makes up the largest section of GDP using the expenditure method
- Investment by firms in capital goods. Capital goods (as opposed to consumption goods) include factory machinery and IT servers. When firms invest in capital goods they are improving their ability to produce in the future
- Government spending. It is important to remember that not all government spending is included when calculating GDP; **transfer payments**, for instance, are omitted. Transfer payments are payments that generate no output, such as unemployment benefit or student grants
- Net exports of goods and services. This is calculated by subtracting total imports from total exports

$GDP_{MARKET\ PRICES} = C + I + G + (X – M)$

Where:

- C is private consumption
- I is investment by firms
- G is government expenditure
- X and M are exports and imports respectively and (X – M) is net exports

The equation above summarises calculating GDP using the expenditure method.

The income method

The income method of calculating GDP involves adding up the following: employee compensation (wages); proprietors' income; rents; corporate profits; interest income; indirect business taxes; depreciation; and net income of foreigners (income earned by foreign nationals in the UK minus income earned by UK citizens abroad).

5.3. Gross National Product (GNP)

GNP is GDP plus net property income from abroad.

Therefore if UK people invest abroad, the goods and services produced there do not increase GDP, but do increase GNP.

For example, the output of a US owned car plant in Oxfordshire would not be part of UK GNP, but the output of a UK owned car plant in Thailand **would**.

In summary, to calculate GNP we need to make some adjustments to GDP:

- Add in the output of UK firms based overseas
- Deduct the output of foreign firms based in the UK

Netting these two together is known as the Net Property Income from Abroad. This will leave the output of British firms. GNP = GDP + Net property income from abroad.

GDP only concerns itself with domestic income. The reality is that in any country there will be factories and plants owned by foreign investors, as well as investments by that country's citizens abroad. GNP takes these considerations into account.

5.4. National Income

National Income is the sum of all incomes of residents in the UK which arise as a result of economic activity from the production of goods and services.

National Income is also known as Net National Product (NNP). It takes our Gross National Product (GNP) and deducts Capital Consumption to give Net National Product (National Income).

5.5. GDP, GNP and National Income summary

- GDP is the output of the UK of those firms (British and Foreign) based in the UK
- GNP is the output of British firms only (based in the UK and based abroad)

- GDP + net property income from abroad = GNP
- NNP (NI) is GNP minus capital consumption

Note: capital consumption is an adjustment to compensate for the depreciation of the capital stock, possibly due to wear and tear, breakdown or obsolescence.

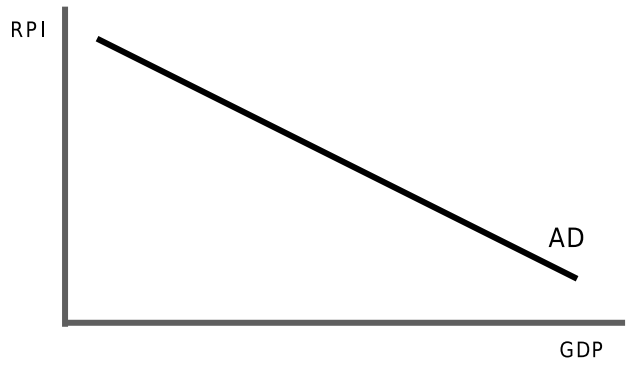
6. Aggregate demand (AD)

6.1. Definition

Aggregate demand is the total desired purchases of all the nation's buyers of final output.

If the economy were a factory generating output, this output would be measured using GDP. The demand curve for this output would be GDP measured against the prices of all goods and services; for the entire economy, this would be represented by the retail price index (RPI). The resulting graph is known as the **aggregate demand curve** (see diagram below).

Aggregate demand curve (AD)



What the demand curve is saying is that for a given level of output (GDP) people and firms (economic units) are willing to pay a certain level of prices.

Aggregate demand at a given price level is the corresponding GDP figure (defined as GDP = C + I + G + (X - M)) this is known as the **Keynesian Equilibrium**. In a simple, closed economy (i.e. no government sector or foreign sector) this reduces to AD = C + I.

The next four sections look at the components of aggregate demand, namely consumption, savings and investment, government spending and net exports.

6.2. Consumption (C)

Introduction

There is a certain level of consumption that most households must spend in order to survive. This is known as **autonomous expenditure**.

Additional consumption by households is directly related to their disposable income.

How much additional consumption depends on households' save/spend ratio. This ratio is known as the **marginal propensity to consume** (MPC).

The marginal propensity to consume is the proportion of additional income that a household intends to spend rather than save.

An MPC of 0.7, for example, means that for each extra £1.00 a household earns, it intends to spend 70p and save 30p.

The **marginal propensity to save** (MPS) refers to the amount of additional income the household will save; in this case 0.3 (because MPC + MPS = 1).

Consumption function

The MPC, autonomous expenditure and disposable income (Yd) are all related via the **consumption function** - shown below:

The consumption function

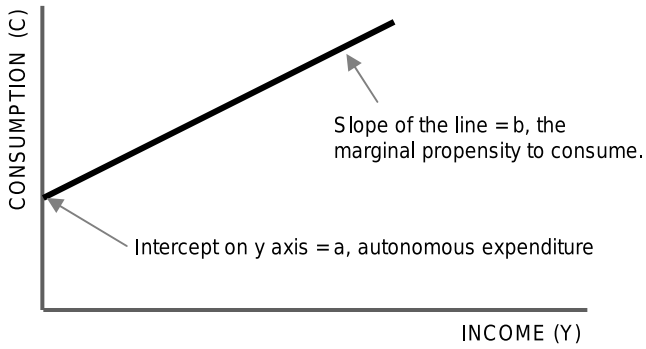
$$C = a + bY_d$$

Where

a = autonomous consumption
b = marginal propensity to consume
Y_d = Disposable income (Y – t)

Graphically, the consumption function is a straight line.

Graph of the consumption function.



The consumption function graph shows that as more income is paid to households, the more those households intend to spend on consumption. This would result in a movement **along** the consumption function line.

An increase in MPC

An increase in the marginal propensity to consume will mean that households increase their consumption **at a faster rate**. This results in the **slope** of the consumption function steepening.

It is worth pointing out at this stage that it is possible to have an MPC above 1, where the propensity to consume exceeds the disposable income. The excess spending would be funded by borrowing, creating a marginal propensity to borrow. However, this would be living beyond your means and could not be sustained for very long.

We can see from this that the factors affecting the marginal propensity to consume are our marginal propensity to save and marginal propensity to borrow. For this reason, monetary policy has a direct impact on the consumption function.

Interest rates

The Bank of England set interest rates in the UK as part of its monetary policy. This has already been mentioned previously. The purpose of monetary policy is to help adjust the money supply in the economy to control inflation and either stimulate or suppress growth.

If the bank believes inflation caused by too much money in the economy will be a problem, it is likely to increase interest rates. The effect of this will be to encourage people to save due to the higher rates of return achievable on savings and discourage them from borrowing because financing costs have also increased. This increase in MPS and decrease in MPB (marginal propensity to buy) will reduce the overall MPC.

If the bank believes that there is too little money in the economy, it is likely to decrease interest rates. This decreases the urge to save and increases the urge to borrow: MPS falls and MPB increases creating an overall increase in MPC.

The effect of a movement in interest rates on the consumption function is referred to as the transmission mechanism.

Summary

Table 25. Effect of interest rates summary

Interest rates	MPS	MPB	MPC	AD
Up	Up	Down	Down	Down
Down	Down	Up	Up	Up

6.3. Investment (I)

Investment is the amount spent on investment goods. The best way of seeing this in the economy is as the willingness for financial institutions to lend money to companies and individuals. Any change in investment by financial institutions is analogous to consumption. That is, if the consumption increases, we tend to see investment increase.

6.4. Government spending (G)

Fiscal policy

The government, through its fiscal policy, has a large influence on aggregate demand. The government's fiscal policy is based on government spending and taxation and can run in deficit, surplus or as a balanced account.

Budget deficit

If the government spends more than it receives in taxes (G > T) it is said to be running a budget deficit.

The effect of a budget deficit is to increase the money supply within the economy. Government spending is an injection into the economy and taxation is a leakage, so where the injection is greater than the leakage there is an overall increase in money supply. This adds to the national income and will help drive aggregate demand.

As a budget deficit helps to drive aggregate demand, it is referred to as an expansionary policy.

Budget surplus

If the government receives more in taxes than it spends (G < T), it is said to be running a budget surplus.

The effect of a budget surplus is to decrease the money supply within the economy. The injection is now less than the leakage, so there is an overall decrease in money supply. This reduces the national income and will in turn reduce aggregate demand.

As a budget surplus tends to reduce aggregate demand, it is referred to as a contractionary or restrictive policy.

Balanced budget

If government spending and taxes are equal, it is known as a balanced budget. A balanced budget would seem to be a policy that would help keep aggregate demand at equilibrium, but it can still be used to increase or decrease the national income, and therefore aggregate demand, through a process called the balanced budget multiplier.

Crowding out

The monetarist school of economics believed that inflation is solely due to the variations in the money supply, rather than as being a consequence of aggregate demand. They argued that government attempting to raise aggregate demand by running a budget deficit could trigger a phenomenon known as **crowding out.**

This arises when the large borrowing requirements of the government lead to the private sector (private companies) finding it difficult to raise funds for their own expansion.

The rationale is as follows:

- If the government runs a large expansionary policy, this creates a large PSNCR (Public Sector Net Cash Requirement). To cover this deficit in the public sector account, the government will issue a large number of gilt-edged securities. An increase in the number of gilts on the market leads to a fall in their price and subsequently an increase in the yields on these bonds.

As a consequence of this high yielding government debt, small companies trying to raise funds for expansion must also offer higher yields on their own bonds. For many of these companies this will prove too expensive and they will have to turn to other sources of finance. They have been **crowded out** of the debt market by the government's funding of the expansionary policy.

The effectiveness of intervention

In **classical economics** prices and wages are believed to be fully flexible, whereas in **Keynesian economics** they are deemed to be fixed. As a result there tends to be disagreement on the best course of action to rectify a situation. For example:

- Both Keynesian theorists and Classical economists believe future economic expectations affect the economy. But while Keynesians argue for corrective government intervention, Classical theorists believe the market can rectify the problem

- Classical economists believe any imperfections in the economy get corrected automatically through supply and demanded facilitated by flexible pricing. Keynesian theorists do not believe in self-correcting market mechanisms

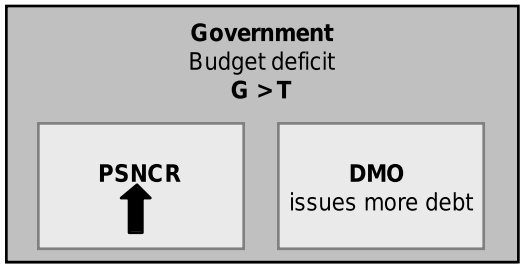
- Classical theorists believe that the best monetary policy during a crisis is no monetary policy. Keynesians believe that monetary and fiscal policies are required to keep the economy running smoothly

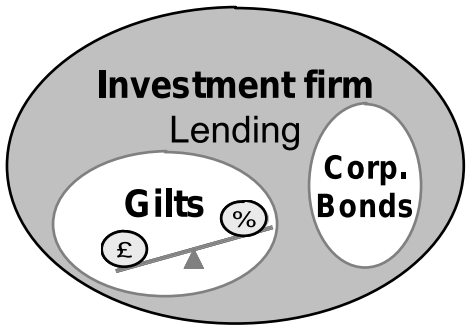
- Classical economists believe in long run solutions even if this results in short run costs. Keynesians believe that the short run should be targeted first

- Keynesians think of savings beyond planned investments as a problem, but Classicists believe that interest rate changes sort this surplus of loanable funds and bring the economy back to equilibrium

Summary

Expansionary policy





The irony of this is that the policy of running a budget deficit is intended to encourage the economy to grow, but, if not managed carefully, can lead to companies from that country being unable to supply this growth.

6.5. Net exports (exports - imports, X - M)

Exports lead to money entering the economy; they are an injection. Exports will therefore increase aggregate demand.

Imports are goods purchased from abroad; the money spent on imports does not stay in the economy and therefore does not add to aggregate demand.

It is therefore the net export figure only that adds to aggregate demand.

6.6. Multipliers

Definitions

The **keynesian multiplier** is the phenomenon where an increase in income leads to a larger proportional increase in consumption.

This 'gearing up' effect is rooted in the marginal propensity to consume (MPC) and is defined as:

The simple multiplier:

$$\text{Multiplier} = \frac{1}{1 - \text{MPC}}$$

The above ignores taxes. Introducing taxes would lead to a smaller marginal propensity to consume and hence a smaller multiplier. This is because taxes reduce disposable income. Where taxes are cut, people in the economy have more money to spend, consumption increases by the Marginal Propensity to Consume and a multiplier effect kicks in.

The multiplier including the effect of taxes:

$$\text{Multiplier} = \frac{1}{1 - \text{MPC}_t}$$

Where MPC_t = MPC x (1 – t).

Even if disposable income rises, it is not safe to assume that all of it will be spent on domestically produced goods; some of it will be spent on imports. To take this into account we need to introduce the **marginal propensity to import** (MPM)

This is the proportion of extra income that will be spent on imports.

This would mean that in an open economy the multiplier is defined as:

The multiplier in an open economy including the effect of taxes (the full multiplier):

$$\text{Multiplier} = \frac{1}{1 - \text{MPC}_t - \text{MPM}}$$

Where MPC_t = MPC x (1 – t), and MPM = Marginal Propensity to Import

Changes in equilibrium to an economy is therefore not simply a case of saying that national income (GDP) will expand by the amount of new money injected into the system. The overall effect will be many times greater due to the multiplier effect.

The balanced budget multiplier

If the government wishes to expand government spending, but does not want to expand the economy, it will raise taxes by the same amount and run a balanced budget.

However, due to changes in the marginal propensity to consume, and therefore the multiplier, an increase in government spending may in actual fact lead to an increase in national income.

When the government increases spending by £1, it adds to aggregate demand. The equal £1 levied in taxes, however, does not come directly from consumption, but will be funded, in part, by a reduction in savings.

The £1 addition to aggregate demand is therefore not fully compensated by the extra taxes and an overall increase in national income results. This phenomenon is called the **balanced budget multiplier.**

6.7. Stages of the Economic Cycle

Economic Boom

A boom occurs when national output is rising strongly, i.e. faster than the long-term growth rate. In boom conditions, output and employment are both expanding and the level of aggregate demand for goods and services is very high. Typically, businesses use the opportunity of a boom to raise output and also widen their profit margins. The bear market takes hold just before the economy tops, and basic industries and later consumer staples and utilities perform relatively well

Economic Slowdown

A slowdown occurs when the rate of growth decelerates - but national output is still rising. If the economy continues to grow (albeit at a slower rate) without falling into outright recession, this is known as a soft-landing.

Economic Recession

A recession means a fall in the level of real national output when the rate of economic growth is negative; national output declines, leading to a contraction in employment, incomes and profits.

The last recession in Britain lasted from the spring of 2008 through to the autumn of 2009. When real GDP reaches a low point, the economy has reached the trough and economic recovery is imminent. Although once the economy is in recovery, we have learnt this is not the end of the story. A double dip recession can be a very real fear.

Economic recovery

A recovery occurs when real national output picks up from the trough reached at the low point of the recession and is often led by a bull market. Transportation and energy lead the market upwards, followed by credit cyclicals and technology, then consumer growth and cyclicals, before capital goods, and finally, financials are relatively strong just before the market peaks. The pace of recovery depends in part on how quickly aggregate demand starts to rise after the economic downturn, and the extent to which producers raise output and rebuild their stock levels in anticipation of a rise in demand.

There are strong argument to suggest that the recovery is stimulated, possibly overstimulated, by debt. In order to stimulate a speedy increase in demand, credit becomes freely available to both companies and consumers. Banks are willing to lend as one the recovery takes hold, money will be easier to recover. The danger is that the freely available credit leads to over valuation of assets and price bubbles, as well as unmanageable endebtedness and bankruptcies.

7. Central banks

7.1. Role of central banks

Inflation targets

The Bank of England was makes interest rate decisions.

The Treasury gives the Bank an inflation target. The Bank then makes decisions on interest rate levels to keep inflation at the target level.

A panel of experts called the **Monetary Policy Committee** (MPC) decides the **level** of interest rates.

Interest rates are the price of money and therefore influence its demand.

Open market operations

The supply of money can also be influenced by the Bank selling or buying government securities on the open debt market. This is known as **open market operations** (OMO).

If the Bank prints money and buys securities, money supply will go up.

If, on the other hand, the Bank sells securities and receives cash, the money supply will fall.

The functions of the major international central banks are summarised below:

Table 26. International central banks' roles summary

	European Central Bank	Federal Reserve (US)	Bank of Japan	Bank of England
Interest rate autonomy	Yes	Yes	Yes	Yes
Retail bank supervision	No	Yes	Partial	Yes
Management of government debt	No	No	No	No

7.2. Quantitative easing (QE)

When the Bank of England reduces interest rates, it increases the urge to borrow and reduces the urge to save, thus increasing consumption and, therefore, investment.

However, during the recent financial crisis, the bank had reduced interest rates to record levels, and could not, with any expectation of a significant result, reduce them further. Despite this, the increase in consumption and particularly investment had not occurred as expected.

As a supplement to dropping interest rates, the bank also set out on a large programme of quantitative easing (QE) to directly increase the amount of money in the economy through the purchase of mainly government but also corporate bonds from the financial institutions.

With the increase in disposable income for the investment firms, even if there is no increase in the marginal propensity to invest, the amount of investment was expected to increase.

8. Money supply, inflation and unemployment

8.1. Money supply figures

Background

If the amount of money in an economy grows faster than the amount of goods on which it can be spent, then the price of those goods will increase. This is called **inflation**. Inflation causes problems due to:

- Uncertainty - particularly of the worth of savings
- Inequalities - inflation will not be equal across the economy
- International considerations - high inflation economies can be unattractive for overseas investors

Some people can benefit from high inflation, particularly borrowers and sellers.

It is therefore necessary to keep a measure of the money in the economy.

Measures of money supply

The monetary base

The quantity of notes and coins in private hands and held by the banking system is called the monetary base.

Monetary base, however, is not the same as money supply. Money supply (or money stock) can be increased through banks' lending and other credit creation factors such as securitisation.

The relationship between the different definitions of money and the monetary base is described by the money multiplier, i.e. the money multiplier for M2 is the change in M2 following a £1 change in the quantity of the monetary base.

$$\text{Money stock} = \text{monetary base} \times \text{money multiplier}$$

The money multiplier depends on both the proportion of bank cash reserves to total bank deposits, and the private sector's desired ratio of cash in circulation to total bank deposits. The lower these ratios, the larger will be any money supply changes for any given monetary base.

$$Money\ multiplier = \frac{1}{reserve\ requirement}$$

For example, if the capital reserve ratio for banks was 0.2 (i.e. banks hold 20% of all deposits and lend out 80%), the money multiplier would be:

$$Money\ multiplier = \frac{1}{0.2} = 5 \times$$

This links with fractional reserve banking discussed below.

M0: the wide monetary base

This includes:

- Notes and coins in circulation
- Banks' till money
- Deposits at the Bank of England
- The clearing banks' operational balances at the Bank of England to cover daily settlement between the banks

M1

This includes:

- Currency in circulation
- Private sector sight deposits

M3

This includes

- Certificates of deposit
- Private sector time deposits
- + M1

M4

This includes:

- Private sector building society deposits
- Private sector shares
- +M3 – building society cash deposits – certificates of deposits

M0 and M4 are now the only measure of money supply published by the Bank of England.

8.2. Fractional reserve banking

Introduction

Another way for the money supply and the aggregate demand to be increased is through banks creating credit. Banks can do this by lending out the cash that has been deposited with them.

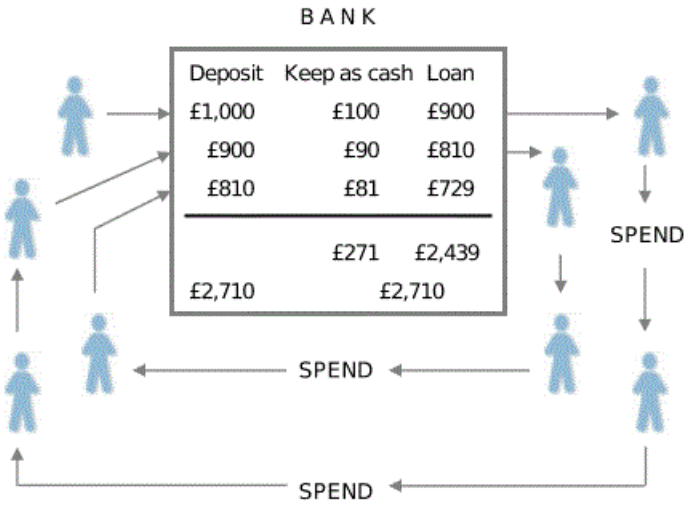
Example

Consider a bank that has £1,000 deposited with it. From this deposit it decides to lend a customer £900, and only keep £100 as cash. This is not illegal and is what we would expect to happen. The bank will be charging interest to the borrower of the £900, and in return the depositor will receive some of that interest from the bank. This is why a depositor will receive interest on his savings, because he is effectively lending the bank money.

The customer that borrows the money spends the £900 in the high street and the retailer banks the £900 in their account with the bank. The bank decides to lend out 90% of this deposit of £900 (£810).

Total loans outstanding are now £1,710 (the original loan of £900 plus the new loan of £810). Furthermore there is also £1,900 in deposits with the bank. This is all financed from an initial deposit of £1,000, and clearly shows how the money supply can expand through this process.

Summary



Considerations

If governments take no action to intervene, the ability to create credit is limitless. In the above example, with the bank lending out 90% of the deposits taken, eventually it would reach a stage where it could no longer lend. However, a bank could choose to lend out 100% of any deposits it takes. In this case money can continue to expand infinitely and inflation would increase.

Inflation as we have seen is important as it erodes the **real** value of money.

8.3. Rules on capital requirements

Overview

Financial regulations provide investor protection by ensuring that a firm always has enough capital to operate. The rules ensure that what a firm has (its financial resources) exceeds what it needs (the financial resources requirement imposed by its regulator).

As a result of these financial regulations, should a firm become insolvent and go into liquidation, there should be enough money to close down the business and transfer positions in an orderly manner.

Basel

The Basel Committee on Banking Supervision is a committee of banking supervisory authorities that was established by the central bank governor countries under the guidance of the Bank for International Settlements (BIS). It provides a forum for regular cooperation on banking supervisory matters. Its objective is to enhance understanding of key supervisory issues and improve the quality of banking supervision worldwide. The Committee also frames guidelines and standards in different areas such as: capital adequacy, the Core Principles for Effective Banking Supervision and the Concordat on cross-border banking supervision.

In 1988, the Basel Committee on Banking Supervision (BCBS) in Basel, Switzerland, published a set of minimum capital requirements for banks. Banks were required to hold capital to an amount of 8% of a risk-adjusted value of their assets; this approach was criticised for not discriminating enough between risky and less risky activities. Basel I is now widely viewed as outmoded and an improved version, known as Basel 2, was agreed for full implementation in 2010.

Basel 2 aimed to accomplish this by setting up risk and capital management requirements designed to ensure that a bank had adequate capital in to cover the risks inherent to its lending and investments. The objective of the rules was to ensure that banks with risky would be required to hold a greater amount of liquid capital in order to safeguard its solvency and overall economic stability.

UK

The Financial Services Act 2012 created a variety of new organisations in relation to regulation of the financial services industry. The Financial Policy Committee (FPC) sits within the Bank of England and supports the BOE's role in maintaining stability in the financial system. This is primarily achieved through identifying, monitoring and taking action to remove or reduce systemic risks. The FPC has a secondary objective to support the economic policy of the Government. One particular area of interest for the Committee is the use of counter-cyclical capital buffers for banks.

8.4. The role of securitisation on credit growth

Introduction

One of the main criticisms of Basel 1 was that the rules encouraged the process of securitisation in order to circumvent or minimise capital requirement.

The process of securitisation allows debt products to be turned such as property, loans or credit-card receivables to be turned into asset backed security (ABS).

ABSs in creating credit

An asset backed security can also be seen as a form of credit creation. The bank lends out the money to the mortgagee. Under normal circumstances the bank would not expect the money back until the term of the loan was up; let's say 25 years.

However, by securitising the cash flows and selling the ABS, the bank is able to receive most of the money due on this mortgage today. This, in theory, leaves them free to lend out this money again, securitise the cash flows, sell the ABS and receive most of the money due today. They are then free to lend.

This is another form of credit creation, which, if unchecked, could have disastrous effects on the economy. It is this type of instrument that has largely been the focus of blame for the recent financial crisis.

8.5. The quantity theory of money

Overview

The amount of money in an economy has an effect on prices; the more money in circulation, the higher inflation.

A link between the change in inflation and the change in the money supply was suggested by an economist called Irving Fisher.

The Fisher Equation

The Fisher Equation is written as follows:

$$MV = PT$$

Where:

- M is the total amount of money in the economy
- V is the velocity of circulation of money
- P is the average price of each transaction made in the economy
- T is the total number of transactions made over a period of time

Example

Suppose there is £100 (M) in an economy and that, on average, each £1 changes hands four times (V) during the year. This means that £400 has been spent during the year (M x V). If the average price of each transaction was £2 then there must have been 200 individual transactions.

The real money supply

The real money supply (amount of money adjusted for inflation can be expressed as:

$$\frac{M}{P} = \frac{T}{V}$$

8.6. Inflation

Inflation is the tendency for the price of goods to rise over time.

If inflation rises beyond a sensible level (this level depends on many things, but is usually around 2%-4% pa) it becomes costly for the economy.

There are two costs of inflation:

- **Menu costs** are the cost to industry of constantly having to re-price goods. For example, in an environment of steeply rising prices, restaurants will need to pay for their menus to be re-printed
- **Shoe leather costs**. In an environment of high inflation people tend to leave their money on deposit until it is needed. A firm as a result will not keep cash floats overnight and has to use more resources, retrieving cash from the bank each day
- Inflation caused by excess aggregate demand is called **demand pull**
- Inflation caused by increase in prices of raw materials or wages is called **cost push**

8.7. Unemployment

Introduction

The unemployment rate in the UK is defined as the number of people registered as available for work divided by the total UK labour force. The number of people claiming unemployment benefits and the figure for unemployment are not necessarily the same thing. The UK classifies people as unemployed using the **International Labour Organisation** (ILO) definition. This states that unemployed workers are those currently not working but willing and able to work, currently available for work and actively searching for work. The UK government uses the **Labour Force Survey** to gather the required statistical data.

Types of unemployment

People are unemployed for many reasons:

- **Frictional unemployment** – these are people who are unemployed because they are between jobs, or who cannot be employed because of disabilities
- **Structural unemployment** is due to a reduction in demand within a particular industry or localised area
- **Keynesian unemployment** is similar to structural unemployment, but on a national scale. It is due to a drop in aggregate demand brought about by a lack of flexibility of wages and prices outside the control of workers or trade unions (i.e. wages not rising fast enough). This results in a lack of demand in the high street and thus causes unemployment in manufacturers and service providers
- **Classical unemployment** is when wages are priced too high resulting in fewer people being hired to complete the required tasks

Finally, an important concept is the **natural** rate of unemployment. This is the rate of unemployment in the economy when the labour market is in equilibrium. If it is assumed that, in equilibrium, all those who want a job can get one, then the natural rate of unemployment is completely **voluntary**.

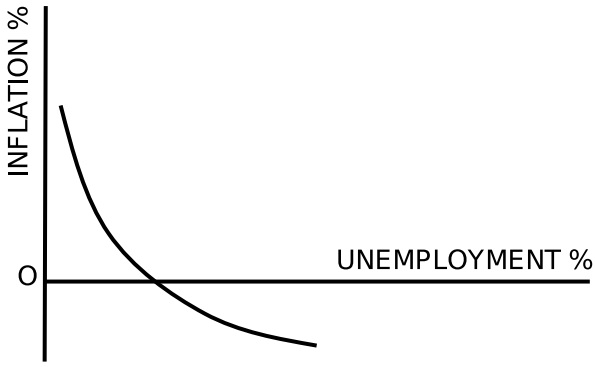
The natural/voluntary rate of unemployment would therefore include frictional, structural and classical.

Keynesian unemployment is involuntary.

8.8. The Phillips Curve

The Phillips Curve illustrates the relationship between unemployment and inflation.

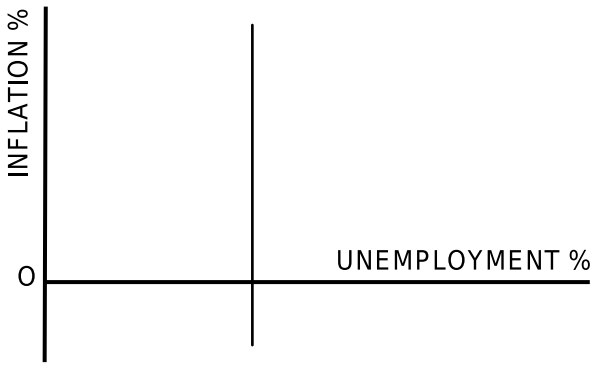
The Phillips curve



The above graph illustrates the original (or short-run) Phillips Curve. Data was compiled over the first half of the 20th century and it was observed that there was an inverse relationship between inflation and unemployment, i.e. higher levels of inflation are associated with lower levels of unemployment (and vice versa). It was consequently suggested that governments could trade off lower inflation with higher unemployment (and vice versa).

However, it was found in the 1970s that, in fact, the trade off was temporary rather than permanent and that there is no long-term trade off between inflation and unemployment. The long-term Phillips Curve was subsequently developed into a vertical line, as shown below:

The Phillips curve (long-term)



9. Macroeconomics: summary

9.1. Key concepts

UK socio-economic trends

- 9.1.1 Identify the main long-term UK and global socio-economic trends

Economic indicators

- 9.1.2 Identify key economic indicators and their trends
- 9.3.12 Explain how inflation targeting operates in the UK
- 9.4.2 Identify the key components of the balance of payments
- 9.4.1 Explain how changes in supply and demand for a currency will affect its value on the foreign exchange markets
- 9.4.3 Explain the relationship between the supply and demand for a currency and the underlying transactions represented in the balance of payments

The economy: a simple model

- 9.2.3 Identify the components of the circular flow of income
- 9.2.4 Distinguish between injections into, and withdrawals from ('leakages') the circular flow
- 9.2.10 Explain the paradox of thrift

National income accounting

- 9.2.1 Distinguish between Gross Domestic Product (GDP) and Gross National Product (GNP)
- 9.2.5 Distinguish between national income and GNP
- 9.2.2 Identify the difference between real and nominal GDP

Aggregate demand (AD)

- 9.2.8 Describe Keynesian equilibrium
- 9.3.8 Explain the transmission mechanism whereby monetary policy influences economic aggregates
- 9.3.1 Describe fiscal policy and its influence on aggregate demand
- 9.2.6 Distinguish between classical economics and the Keynesian and Monetarist schools of thought
- 9.2.7 Identify the major components of the Keynesian model
- 9.2.9 Calculate the Keynesian multiplier given the marginal propensity to consume (mpc) or propensities to withdraw (tax, import and save)
- 9.3.2 Explain the role of debt in the business cycle

Central banks

- 9.3.13 Distinguish between the different approaches to the control of inflation taken by the major central banks
- 9.3.14 Explain the other tools (including Quantitative Easing (QE)) used by central banks to manage the economy and in particular inflation

Money supply, inflation and unemployment

- 9.3.4 Identify money supply (from 'narrow' through to 'wide')
- 9.3.6 Define the money multiplier and identify its determinants
- 9.3.7 Calculate the potential money multiplier given a cash reserve ratio
- 9.3.5 Describe the fractional reserve banking system
- 9.3.15 Explain the impact of bank capital and liquidity requirements and the move towards macro-prudential regulation of the macro-economy
- 9.3.9 Define inflation and explain how it is measured in the UK
- 9.3.10 Define unemployment and explain how it is measured in the UK
- 9.3.11 Explain the relationship between inflation and unemployment

Now you have finished this chapter you should attempt the chapter questions.