Section 3

Macroeconomics

Macroeconomics examines issues relating to an economy as a whole, such as unemployment, inflation, growth and the balance of payments. The focus of macroeconomics is thus on *aggregate* economic variables.

Macroeconomic goals

Generally, governments and policymakers aim at achieving the following:

- satisfactory and *sustainable* real (non-inflationary) growth;
- price stability (which implies low or no inflation);
- high levels of employment (and low unemployment);
- long-run equilibrium in the balance of payments and the exchange rate (or, that the foreign sector should not impose a constraint on achieving domestic policy objectives);
- equitable (fair) distribution of income.

Measuring overall economic activity

Gross domestic product

Gross domestic product (GDP) is perhaps the single most important macroeconomic variable and it is defined as the value of all *final* goods and services produced *within* an economy over a certain period of time, usually a year or a quarter (by factors of production residing in the country).

Bear in mind that:

- Only final goods and services are included. Intermediate goods (goods used in the production of other goods) are not included. Only the 'value-added' (defined as the difference between the total revenues a firm collects from the sale of a good and the cost of raw materials, services and components the firm purchased to produce the good) contributed by each firm is included. If *all* produced goods and services were included, double counting would result and thus overestimation of the true value of output.
- Used goods transactions (e.g. the sale of a used car) are not included since GDP measures current production.
- Financial transactions (such as the buying and selling of shares, etc.) are not included since they represent only transfer of ownership (of the financial asset) and they do not reflect a contribution to current production.
- Transfer payments (such as pensions and unemployment benefits) are not included since they do not reflect a contribution to current output.

Nominal GDP vs. real GDP

- Note that even though we are truly interested in an *output* measure, we are forced to sum *values* (prices times quantities) which makes our GDP measure dependent not only on output changes (in which we are interested) but also on price changes (which typically do not interest us).
- Thus comparison of GDP figures in successive years becomes a problem since, assuming that an increase in GDP is recorded, we cannot know whether the bigger figure is due to an increase in output of goods and services produced or whether it is due to an increase in prices (an increase in the general or average price level, i.e. due to inflation). In other words, we cannot know to what extent the increase in the nominal (money) GDP figure recorded is 'real' and to what extent it is 'inflationary'.
- For example, if GDP measured at current prices increased from one year to the next by 5.5%, it cannot be known what proportion of this increase is due to an output increase and what proportion is due to inflation. It could be, for example, that output increased by, say, 4% (i.e. real GDP increased by 4%) and that the remaining 1.5% was due to price level increases, i.e. inflation, or that output increased only by 0.5% and prices by 5.0%.

Thus:

- **Nominal GDP** (or money GDP, or GDP at current prices) is a measure of output of a certain period *valued at the prices prevailing in that same period*.
- **Real GDP** (or GDP at constant prices) is a measure of output of a certain period valued at the prices prevailing at some 'reference' period (known as the 'base' period or, base year). It is a measure of output *after having isolated (or adjusted for) the effect of inflation*. It is thus measured in terms of goods. *Real* GDP figures reflect the *volume* of production, not the *value*.
- To arrive at the real GDP figure for a certain year we divide nominal GDP of that year by a price index for that year (usually the retail or consumer price index) and multiply the result by 100:

  Real GDP = (nominal GDP/price index) * 100
- Many other economic variables are also often adjusted for inflation. One of the most important for our purposes is the money (or nominal) wage rate, the payment to workers. The **real wage** is the wage rate adjusted for inflation and it is found by dividing it by the average level of prices. It thus measures what workers can actually buy with the money they earn. If a worker gets a 5% increase

A timeline of macroeconomics

- The distinction between macroeconomics and microeconomics did not always exist. As a matter of fact, it is relatively new and started to be widely known only after World War II as a result of the publication in 1936 of the *General Theory of Employment, Interest and Money* written by John Maynard Keynes who transformed the theoretical landscape of economics.
- Figure 3.1 serves as a very broad guide to the evolution of ideas in macroeconomics and policymaking.

Figure 3.1 Timeline

Pre-1929: The Classical School of thought: 'laissez-faire, laissez-passer'. Market forces guarantee that an economy will rest at, or close to full employment. There is thus no need for the government to intervene. **(non-activists)**

Keynes's 'General Theory' is published in 1936. There is no guarantee that a market economy will rest at 'full employment'. Thus, there is an active role for the government. Through fiscal policy the government can stabilize the economy and achieve full employment. **Keynesian interventionist** ideas reign after WWII until the mid 1970s. **(activists)**

In the 1970s, **Monetarism** emerges at the **University of Chicago** with Nobel Prize laureate **Milton Friedman** being the most widely-known advocate of monetarist ideas. Monetarists slowly deconstructed the Keynesian edifice, initially doubting the effectiveness of fiscal policy and later suggesting that even monetary policy should be avoided. Markets 'rule'.

In the 1980s the **Rational Expectations School (New Classical)** of thought through the work of **Lucas, Sargent** and others emerges; the **Supply Side** is emphasized. The role of the government is further questioned and reliance on market forces is further emphasized.

The **General Theory** was written in response to the **Great Depression** which started in 1929 and marked the greatest and longest contraction of output and employment in the 20th century.

The **East Asian crisis** in 1997-8 cast doubts on extreme pro-market policies and on the **'Washington Consensus'**. Many speak of the necessity to *manage* globalization. Inequalities within and between countries are rising.

The concept of equilibrium in economics

- Essentially, the concept means the same as in the sciences: a system is considered to be in equilibrium if there are no inherent (endogenous) forces inducing change.
- In our case, an economy (or economic activity, i.e. national income, GDP) is considered to be in equilibrium if there is no tendency for it to change (i.e. for the level of total output to rise or fall).
- In equilibrium, aggregate demand (AD; see below) is equal to aggregate supply (AS; see page 67) or, as explained on page 69, injections (J) must equal withdrawals (W).

Introducing aggregate demand and aggregate supply

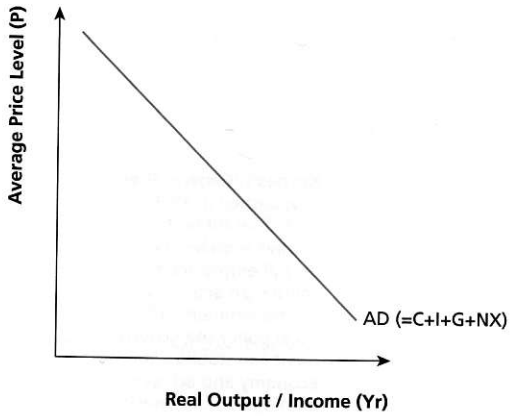
Aggregate demand

- The term **aggregate demand** (AD) refers to total spending on domestic goods and services.
- Spending can originate either from the **private sector** (households and firms) or from the **public sector**.
- Private sector spending includes consumption expenditures (C) that households make and investment expenditures (I) that firms make.
- The public sector expenditures are usually termed government expenditures (G) in which both consumption and capital public spending are included.
- Spending on domestic goods can also originate from abroad. These are the exports (X) of an economy. Since some of domestic spending is on foreign goods, imports (M) are subtracted to arrive at aggregate demand.

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

- The aggregate demand curve (Fig. 3.2) is downward sloping but not for the same reasons that the demand for a single good is downward sloping, as on the vertical axis we have the average price of all goods and not of one good. In macroeconomics aggregate demand is negatively sloped because, as the average price level increases, planned spending decreases because people feel poorer and domestic products become less competitive abroad.

Figure 3.2 The aggregate demand curve



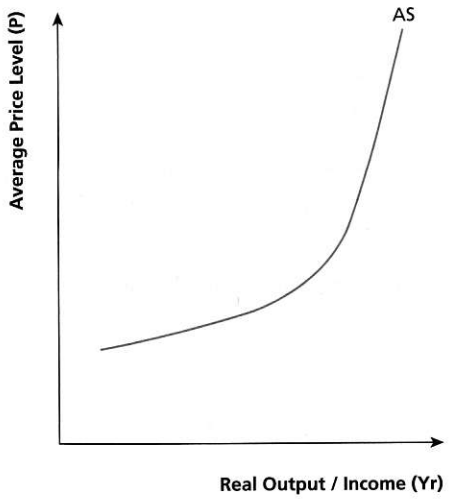
Tips

Draw the AD either as a straight line or slightly curved. It is easier though to draw it with a ruler. Make sure you fully label the axes. The vertical is not 'price' but the 'average price level' as it is aggregate demand and not demand for one good or a service. The horizontal is often denoted as 'Q'. This should be avoided as it again may lead to confusion. 'GDP' should also be avoided as GDP refers to the actual output produced and not to planned output. 'Real output/income' and Yr are often considered an appropriate choice. Remember that output and income are conceptually identical terms.

Aggregate supply

- **Aggregate supply** is defined as the planned level of output per period at different price levels.
- The shape of aggregate supply is controversial in macroeconomics.
- It is instructive to initially distinguish between the long run (when all adjustments have been made) and the short run (when only some adjustments are possible).
- In the long run, aggregate supply of an economy is constrained by the amount of its resources and by its technology. As a result, long-run aggregate supply (LRAS) is considered fixed (vertical) at the 'full employment' level of output where all resources are employed.
- Typically, in the short run though, AS can rise since firms will be willing to offer more if prices rise but money wages increase at a slower rate.
- The slope of the AS determines to what extent a rise (i.e. a shift to the right) of AD will be expressed as a rise in real output and thus employment and to what extent it will be expressed as a rise in prices (i.e. inflation). See Fig. 3.3.

Figure 3.3 The short-run aggregate supply: the typical case

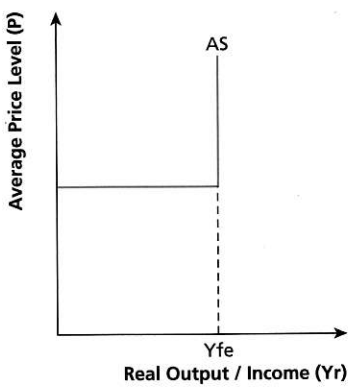


Variations in aggregate supply

The extreme Keynesian aggregate supply curve

- For an economy that is operating significantly below the full employment level of output, the extreme Keynesian aggregate supply is assumed perfectly elastic at the prevailing average price level.
- 'Operating significantly below full employment' means that there are very many workers eager to work but unable to find a job as well as many machines and factories available that are not being used.
- Thus, any increase in aggregate demand will be expressed as a rise in real output without any increase in the average price level. The expansion of output can take place without firms having to offer higher wage rates to attract more workers and face higher costs.
- Once the economy reached the full employment level of output Yfe as in Fig. 3.4 then AS would become vertical.
- Any further increase in aggregate demand cannot lead to an expansion of output as there are no more factors available to employ. The increase in aggregate demand will only lead to a higher price level.

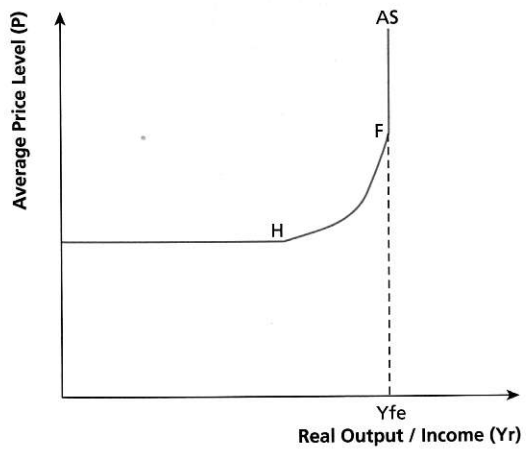
Figure 3.4 The aggregate supply curve: extreme Keynesian case



The intermediate Keynesian aggregate supply curve

- It is more plausible to consider that, as aggregate demand increases, some industries will reach capacity levels of output before others. An economy after all consists of many different industries each employing many different types of factors of production. Engineers, for example, may be in shorter supply than bricklayers.
- This implies that, following an increase in AD, output in the economy can continue to increase but prices will also be increasing giving rise to an 'intermediate' upward sloping section HF on the aggregate supply curve as in Fig. 3.5.
- As the economy is getting closer and closer to the full employment level of output Yfe the aggregate supply curve becomes steeper and steeper. At the full employment level of output it becomes vertical.

Figure 3.5 The intermediate Keynesian aggregate supply curve

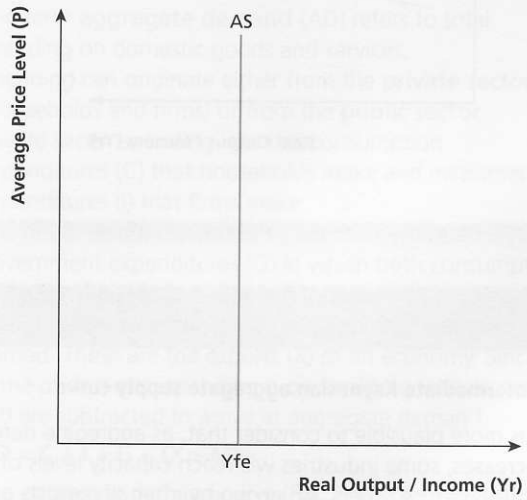


Variations in aggregate supply continued

The classical (and extreme monetarist) aggregate supply curve

- The Classical School as well as the extreme Monetarists viewed the economy as producing whatever its resources and technology would permit.
- Aggregate supply would thus be vertical, as in Fig. 3.6, at the full employment level of output and any change in aggregate demand would only affect the price level and no real variable.

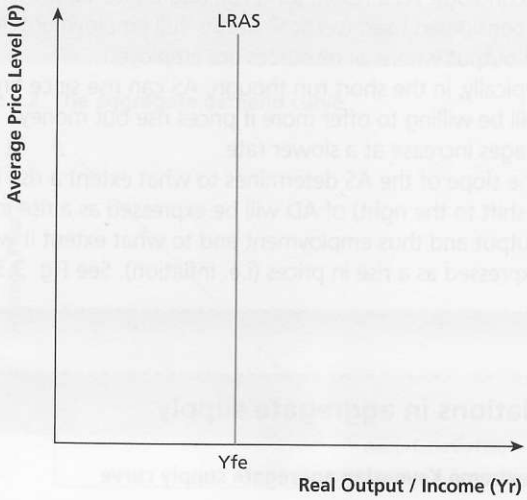
Figure 3.6 The aggregate supply curve: the classical and extreme monetarist case



The long-run aggregate supply curve

- In the long run, defined as the period when all adjustments are possible and money wages are flexible, the aggregate supply curve is vertical at the full employment (capacity) level of output as shown in Fig. 3.7. It can be thought of as roughly the equivalent of the production possibilities frontier.

Figure 3.7 The long-run aggregate supply curve



Which AS do I use?

- The answer is 'it depends'! Typically one should employ an upward sloping AS as in Fig. 3.3 or in section HF of Fig. 3.5. It shows that an increase in aggregate demand will lead to an increase in the average price level (inflation) as well as to an increase in real output and thus employment. It also shows that the effect on the average price level of a rise in AD is more pronounced the steeper the AS becomes or, in other words, the closer to capacity (to full employment) an economy is operating.
- On the other hand, if one wishes to illustrate an economy in long-run equilibrium when all adjustments are made, then a vertical AS at the full employment level of output is in order (Fig. 3.7).
- Lastly, the extreme Keynesian (Fig. 3.4; horizontal up until Yfe) and the extreme Monetarist (Fig. 3.6; as well as Classical and New Classical) cases could be employed only if one wishes to show the differences in these schools of economic thought.

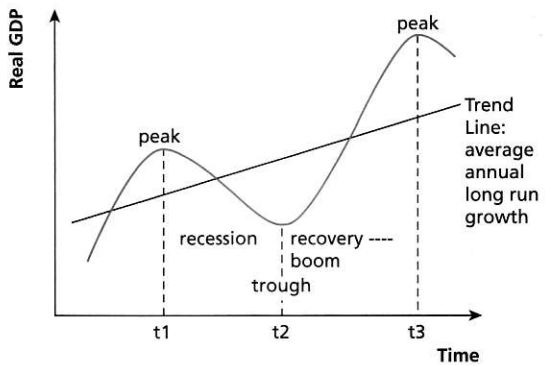
Injections and withdrawals in the circular flow model

- The **circular flow model** is a simplified representation of how the basic decision-making units of an economy (households, firms, the government and, in an 'open' economy, the foreign sector) interact. It describes the flows between these units.
- At the most basic version, where there are only households and firms, it is understood that households own the factors of production which they offer to firms. In exchange, firms offer payments for these factors in the form of wages, rents, interest and profits, the sum of which is defined as income. Firms combine these factors to produce goods and services which they offer to households in return for payments that constitute consumption expenditures on domestically produced goods.
- Also, part of income may be saved (a 'withdrawal' from this system) while firms will also spend on capital goods (= investment spending). This latter expenditure is an 'injection' to the system.
- For equilibrium to exist, injections (investment spending) must equal withdrawals (savings).
- If the government and a foreign sector are added then injections also include government spending on domestically produced goods and services as well as expenditures that foreigners make on our goods (= exports), while withdrawals also include expenditures that domestic entities make on foreign goods (= imports) as well as taxes the government collects.

The trade or business cycle

- The ups and downs (phases) through time of the level of overall economic activity (in other words of real GDP) are referred to as the **trade cycle** (or **business cycle**). More formally, the business cycle is defined as the short-run fluctuations of real GDP around its long-run trend.
- Periods of expansion ('booms') are followed by periods of contraction (**recession**, busts). The downturn's major characteristic is increasing levels of unemployment. If on the other hand expansion is 'too rapid' it *may* give rise to inflationary pressures. Ideally, steady, sustainable, non-inflationary long-term growth would be desirable.
- The economy depicted in Fig. 3.8 is a growing economy. Growth exists when total output rises through time; a sustained increase in real GDP. It follows that this economy is growing between time period t2 and t3 but also over the long run as the 'trend line' is upward sloping. The trend line reflects the average annual long-run growth of the economy.
- Between time t1 and t2 the economy is in recession. Real GDP is decreasing (technically, for at least two consecutive quarters) and thus the economy is registering negative growth rates. At t1 it was at a peak (as well as at t3). At t2 it is at a trough and it is about to enter recovery.
- Note that if the growth rate is decreasing (from, say, 2.1% to 0.8%) real GDP continues to increase but at a slower and slower rate. Various expressions are used to describe this phase, e.g. 'the economy is losing steam' or 'it is peaking out' 'approaching recession'. An economy about to enter recession is, in Fig. 3.8, somewhere just to the right of a peak.
- Lastly, the idea of potential GDP (when all resources are fully employed) can be illustrated either as a peak-to-peak line or as a separate line located slightly above all peaks in the trade (business) cycle diagram.

Figure 3.8 The trade (or business) cycle



Tip

Make sure that after you finish drawing the trade cycle there is only *one* level of real GDP corresponding to *each* time period t. A common error is to draw it in such a way that at each point 't' on the horizontal axis there are more than one corresponding levels of real GDP.

The components of aggregate demand

Consumption expenditures

- **Consumption expenditures** (**C**) are made by households on goods and services. In many advanced economies consumption expenditures are the largest component (about 60% or more) of aggregate demand. In other economies this proportion is significantly lower.

Several factors may affect spending by households and lead to a shift in AD. The most important factors include:

- **Consumer confidence**
  Households feeling secure and confident about their future will tend to spend more. A stable and growing economy with low inflation and unemployment will boost consumer confidence and thus favorably affect household spending, shifting AD to the right. On the other hand, uncertainty over future job prospects and insecurity about one's future income adversely affect present consumption. Spending on durable goods, such as cars and appliances, as well as on housing, are greatly affected by consumer moods.
- **Interest rates** (the price of borrowing money over a period of time)
  Lower interest rates (i.e. easy **monetary policy**) will tend to increase consumption expenditures, and consequently the overall level of aggregate demand, shifting the AD curve to the right. This may happen because:
  - Consumer durable goods (cars, appliances, furniture, etc.) are usually purchased on credit. Lower interest rates mean that borrowing to finance these purchases is now cheaper for households.
  - The single largest expenditure of a typical household is the purchase of its house. Households borrow from banks to finance this purchase and these specialized very long-term loans are known as mortgage loans. The interest rate charged on such loans is often 'adjustable', meaning that if market interest rates decrease, mortgage rates will also decrease and so will the monthly payments. Households with such housing loans will thus have more money available every month to spend on goods and services.
  - A drop in interest rates will make saving (defined as income not spent on goods and services) less attractive so households will tend to save less and spend more.
- **The level of consumer indebtedness**
  If private (household) debt (from taking out loans, mortgages for house purchase, and/or credit card spending) has accumulated, household spending is bound to decline as they will need to pay more and more to service their debt.
- **Wealth**
  The total value of a household's assets may affect the level of its spending. If, for example, wealth increases then consumption will be positively affected. A stock market boom or rising property values tends to increase spending and lower savings.

Investment spending

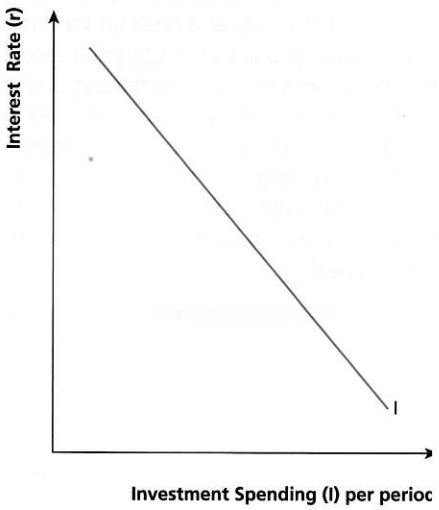
- **Investment spending** (**I**) is defined as spending by firms on capital goods and is thus equal to the change in the stock of capital of an economy over a period. When firms spend to acquire **capital** (**K**) we say that they invest. Investment is important both because of its short-run influence on aggregate demand and because in the long run it affects aggregate supply and thus the rate of (actual and potential) growth of an economy. Investment spending is the most volatile component of aggregate demand.

Factors affecting investment spending

- **Interest rates**
  Investment spending requires funds, which are either borrowed from the banks or are part of past-retained firm profits. If firms borrow, they will be charged interest on the loan, while if they use their own funds, they will sacrifice the return (interest) that they would have earned from investing the funds. Consequently, a fall in the market interest rate will tend to increase investment spending in the economy as at lower interest rates more investment projects will be considered profitable.

If one plots investment spending against the market interest rate as in Fig. 3.9, the function will be negatively sloped. How responsive investment spending of firms is to a change in interest rates (i.e. how elastic) is an empirical issue.

Figure 3.9 Investment spending and interest rates



Investment spending continued

- **Business confidence**
  The greater the degree of business confidence in an economy, the more willing firms will be to invest and expand. Economic and political stability are necessary for investments to take place. J. M. Keynes considered the behaviour of entrepreneurs with respect to private investment decisions similar to that of a herd ('imitation') and, in his opinion, the observed instability of investments was due to these 'animal spirits'. Expectations can be changed radically by a host of unpredictable factors leading to wild swings in the prevailing business climate and thus to changes in the level of investment spending.
- **Public policy toward investment**
  Governments often attempt to influence investment by offering tax incentives to firms, subsidies, preferential loan terms, protection from foreign competition, etc. Note that the size itself of the public sector in an economy may influence the growth of private investment. Also bear in mind that 'institutions' affect private investments. A large bureaucracy (of 'red tape') and complicated regulations burden the operation of firms in a country and negatively affect the rate of investment. Investment levels are, ceteris paribus, higher in countries with low levels of bureaucracy and with transparent economic and business environments. Lastly, corruption adversely affects investment, especially foreign direct investment (investments by multinational corporations in foreign countries).
- **The overall macroeconomic environment**
  A 'sound' macroeconomic environment where policymakers ensure low inflation, low budget deficits, sustainable public debt and flexible labour markets usually leads to higher rates of investment spending.
- **Income and its growth**
  Rising income leads to rising consumption and thus may induce more investments as firms may be forced to increase their capacity to meet this increased demand for goods and services. This is the idea of the 'accelerator' principle discussed below.

The accelerator principle HL

- The accelerator is a theory aiming at explaining the level of investment in an economy.
- This theory claims that the level of investment depends on *changes* in national income (more generally, changes in output, in demand, or in sales).
- It provides an additional reason for the observed instability of investment spending and, together with the multiplier (explained later), it is a theory explaining the existence of the business (trade) cycle.
- It is considered part of Keynesian theory even though Keynes himself considered expectations (animal spirits) much more important.
- The accelerator rests on the assumption that firms wish to maintain a fixed capital to output ratio.

For example, a shoemaker needs one new machine for every 10,000 extra pairs produced. If sales rise by 20,000 then he will need to change his stock of capital by two extra machines to maintain the fixed capital to output ratio. Investment in that period would thus equal two machines.

- Generalizing for an economy, it follows that for annual investment to remain stable total sales (total output or national income) have to be rising at a constant rate. If output (or income; remember they mean the same thing as the one is the flip side of the other) continues to rise but at a slower rate (thus, if growth just slows down) investment will decrease.
- Investment is thus a very volatile component of AD.

Government spending

- **Government spending (G)** is in many economies a large part of total spending on goods and services.
- Government spending is distinguished into **current** spending on goods and services, **capital** (public investment) spending which refers to spending on roads, ports, telecommunications, schools and other infrastructure and also on **transfer payments** which basically refer to pensions and unemployment benefits.
- Note that transfer payments are not included in national income since they do not represent rewards for current productive effort.
- Governments spend to ensure that adequate amounts of public and merit goods and services are consumed such as national defence, educational services and health services. They spend to regulate markets in their attempt to guarantee product safety, environmental standards, competitive conditions, etc. They may also spend to redistribute income so that a socially acceptable minimum is guaranteed. Such spending includes state pensions, unemployment benefits, subsidies, disability benefits, etc.
- Lastly, they spend to affect aggregate demand. By increasing or decreasing government spending, aggregate demand will increase or decrease, shifting to the right or to the left. This is part of what is known as **fiscal policy**.

Government spending continued

(Net) export demand (NX, or X–M)

- Foreigners spend to buy domestically produced goods and services but since part of domestic spending is on imports it follows that aggregate demand is affected and shifts when net exports change, the difference between export revenues and import spending.
- Many factors can change the level of net exports and thus shift AD, such as the exchange rate and the extent of protectionism.

A closer examination of aggregate supply

Adverse supply shocks

- These are changes that negatively affect a country's productive capacity. They result in a shift to the left of the aggregate supply curve. A sharp and sustained increase in the price of oil is a typical such example. Oil is the principal form of energy and is used as an input by virtually all firms. Its significance though has decreased in advanced economies in recent years as a bigger proportion of GDP originates from the tertiary sector (services). A bank needs less oil to operate than a car manufacturer. Another example of an adverse supply shock is general increase in wage costs for firms as a result of powerful labour (trade) unions. A broad increase in indirect taxation or higher commodity (raw material) prices are also possible sources of such adverse supply shocks. Lastly, natural catastrophes (such as those resulting from the tsunami a few years ago or from an earthquake or a hurricane), wars, major terrorist attacks and institutional setbacks may shrink the productive capacity of an economy and shift AS to the left.
- An adverse supply shock can be illustrated either by leftward shift of an upward sloping short-run aggregate supply curve or by leftward shift of a vertical long-run aggregate supply curve as it does not make much of a difference. As a broad rule, input or factor price-related supply shocks should be preferably illustrated with a short-run upward sloping aggregate supply curve shifting left. Thus, the effect on an economy of a sharp and sustained increase of the price of oil can be better shown through Fig. 3.10.
- On the other hand, if the adverse shock is because of a natural catastrophe or an institutional setback (e.g. a new government nationalizes most industries or proves prone to corruption) this is perhaps best illustrated by shifting leftward a vertical at the full employment level of output long-run aggregate supply curve, as in Fig. 3.11.

Figure 3.10 An adverse supply shock as a result of higher oil prices

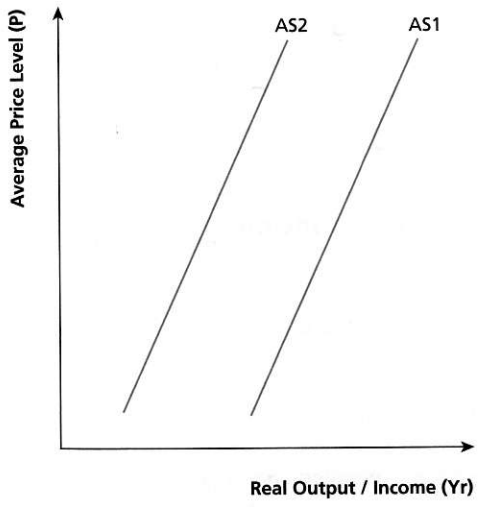
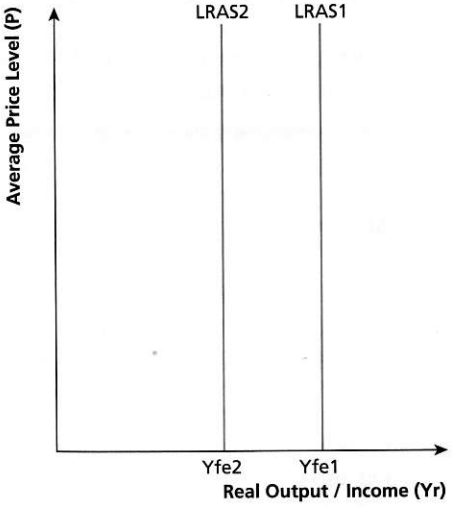


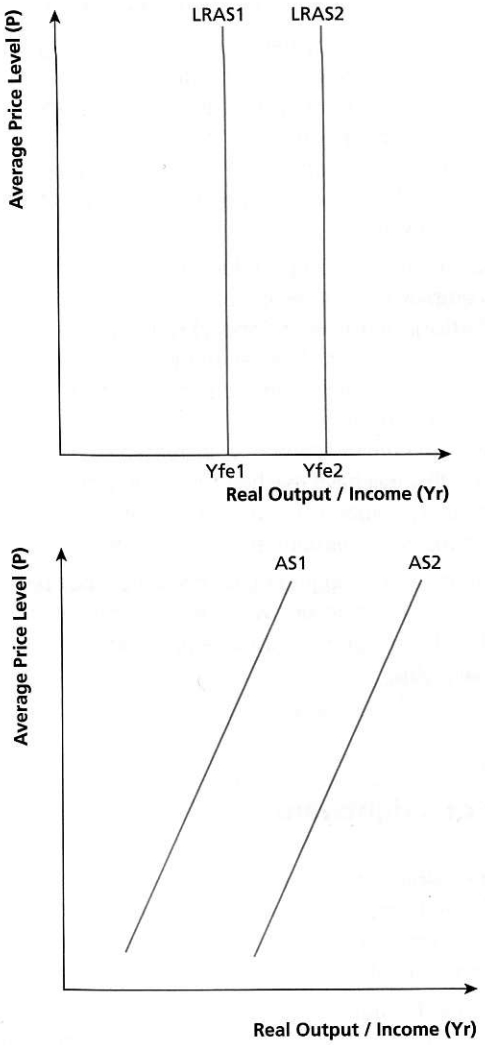
Figure 3.11 An adverse supply shock as a result of a corrupt government taking power



How could aggregate supply shift to the right?

- A rightward shift in aggregate supply is a positive development for an economy as it implies an increase in its productive capacity. Since it is conceptually equivalent to an outward shift of the production possibilities frontier of an economy, any factor responsible for shifting outward the production possibilities frontier of an economy will also shift its AS curve to the right.
- First of all, the productive capacity of an economy may increase and its aggregate supply shift to the right if human and physical capital increase. Investment as well as more and better education and health services increases labour productivity (output per worker) and thus aggregate supply. Technological advancements (e.g. the assembly line or the internet) and an improved institutional framework (including a better legal system, simplified business rules and regulations, better banking practices, credible policymaking and more generally 'good governance') both lead to a rightward shift of the aggregate supply. Lastly, more 'land' (through discovery, as in the case of oil reserves or annexation) would also do the job.
- A rightward shift of a vertical long-run AS curve should be employed but it is acceptable to use an upward sloping aggregate supply curve as well.
- Obviously governments attempt to and can influence the supply side of an economy. Few would disagree that a government can increase aggregate supply by improving health care services and education. Or, for that matter, that public investment in infrastructure would have the same effect as it creates significant external benefits to firms in the form of lower production costs. But beyond these obvious choices there is considerable disagreement, which will be discussed later in the section on supply-side policies.
- Note that rarely a shift to the right of AS can be a source of significant problems if this increase in the productive capacity of an economy is not matched by increases in spending on domestic output i.e. on AD as it may lead to deflation (examined later). Also, the discovery of a natural resource such as oil can be a mixed blessing as many countries have found out.

Figure 3.12 A rightward shift in aggregate supply



The effects of AD/AS shifts

The AD–AS framework

- The aggregate demand–aggregate supply framework is very simple but also very useful. Movements of the average price level and of real output provide information on three major policy goals. **Inflation** (and **deflation**) as well as growth can be directly illustrated on the diagram while changes in employment and unemployment can be indirectly inferred.
- It follows that *if government is in a position to affect aggregate demand* then it may be in a position to achieve the macroeconomic goals mentioned in the very beginning.

Effects of a rightward shift in aggregate demand in the extreme Keynesian case

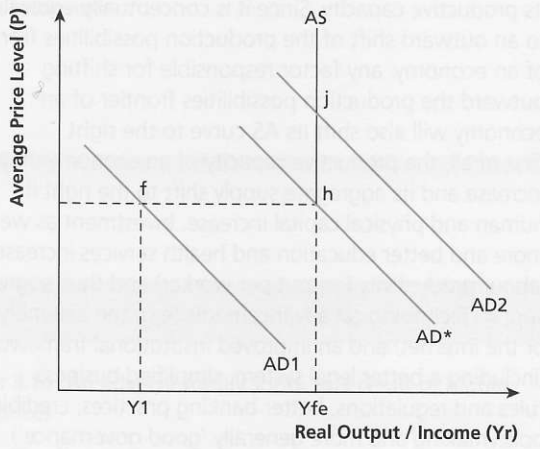
Aggregate supply in this case is horizontal up until the full employment level of output Yfe where it becomes vertical.

Let Yfe be the full employment level of output. If aggregate demand is at AD1 then equilibrium output is at Y1 which is way below the full employment level. In the Keynesian framework, equilibrium output is 'demand-driven', meaning that it is aggregate demand which determines how much the economy will be producing and thus the level of national income. As a result:

- Equilibrium income (output) does not need to correspond to full employment of resources (see Fig. 3.13).
- A **deflationary (or recessionary) gap** equal to distance fh in Fig. 3.13 results. A deflationary (or recessionary) gap exists when equilibrium output is less than full employment output.
- If aggregate demand somehow increased to AD* then the economy will have reached full employment.
- Expansionary demand-side policies can lift an economy out of a recession without any inflation resulting.

On the other hand, if aggregate demand increases past AD* to AD2, then inflation results without any further increase in output and employment. Distance hj is known as an **inflationary gap**.

Figure 3.13 The extreme Keynesian case: perfectly elastic aggregate supply

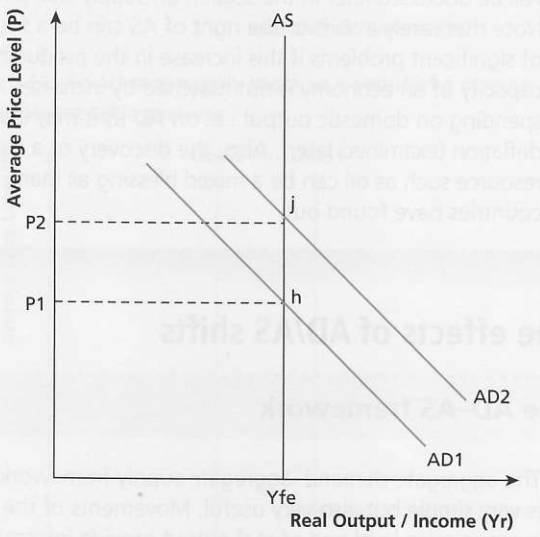


Effects of a rightward shift in aggregate demand in the extreme Monetarist case

Aggregate supply in this case is perfectly inelastic (vertical) at the full employment level of output, reflecting the belief that an economy will always be in equilibrium at the full employment level of output.

- Aggregate demand in this case does not determine 'real' variables, such as how much output the economy will produce, or what the level of employment will be. Real output is determined by the quantity and quality of available resources and by technology.
- Aggregate demand only determines the average price level. In Fig. 3.14, if aggregate demand increases from AD1 to AD2, then real output will remain at Yfe and only inflation will result as the average price level will rise from P1 to P2.
- It follows that expansionary demand-side policies are totally ineffective in increasing real output and employment and can only prove inflationary. In the long run, the equilibrium level of real output can be increased only through policies aiming at the supply side of the economy.

Figure 3.14 The extreme monetarist case: vertical AS curve at Yfe

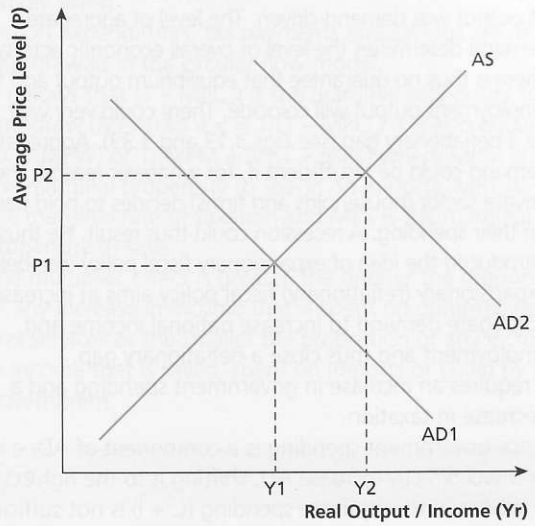


Effects of a rightward shift in aggregate demand in the intermediate case

Aggregate supply in Fig. 3.15 is drawn upward sloping, reflecting the typical case. Originally, equilibrium is assumed at the intersection of AD1 and AS with Y1 being the equilibrium level or real output and P1 the average price level.

- An increase in aggregate demand from AD1 to AD2 can succeed in increasing real output from Y1 to Y2 and thus employment, but at a cost. The average price level is higher at P2 so inflation is the price paid.
- The extent to which an increase in aggregate demand will be expressed as growth of output or inflation depends on how close to capacity the economy is operating, in other words on how steep it is.
- This diagram thus reveals that demand-side policies can be used to raise output and employment but at the cost of higher inflation, or to lower inflation but at the cost of slower growth or recession.

Figure 3.15 The intermediate case: upward-sloping aggregate supply curve



Effects of a rightward shift in aggregate supply

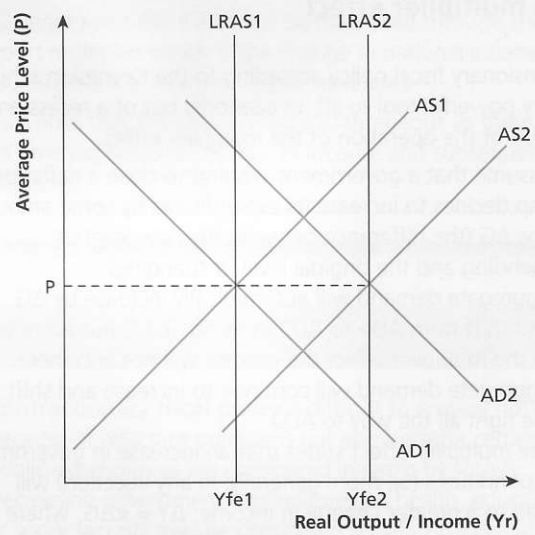
The possible effect of policy attempts to increase aggregate supply are illustrated in Fig. 3.16.

- It is assumed that aggregate demand is rising through time from AD1 to AD2. If somehow policymakers are successful in increasing aggregate supply of the economy then they will have achieved a rise in output without a rise in the average price level, i.e. non-inflationary growth.

Tip

One can employ typical upward-sloping AS curves (AS1 to AS2) to arrive at this result but it is preferable to use long-run vertical aggregate supply curves (LRAS1 to LRAS2) as this shows that the **full employment level of output** will have increased.

Figure 3.16 The possible role of supply-side policies



Demand-side policies

- Demand-side policies attempt to increase or decrease (or, more precisely, to slow down the increase) in aggregate demand in order to affect output (growth), employment and the average price level (later it will be shown that these same policies are also used to correct a trade imbalance and are referred to as expenditure-changing policies).
- They are distinguished into **fiscal policy** and **monetary policy**. Fiscal policy refers to the manipulation of the level of government expenditures and/or of taxes while monetary policy refers to changes in interest rates.

Fiscal policy

Expansionary (reflationary) fiscal policy

- Keynes introduced the idea that the (equilibrium) level of output was demand-driven. The level of aggregate demand determines the level of overall economic activity. There is thus no guarantee that equilibrium output and full employment output will coincide. There could very well be a deflationary gap (see Figs 3.13 and 3.33). Aggregate demand could be insufficient if, for whatever reason, the private sector (households and firms) decides to hold back on their spending. A recession could thus result. He thus introduced the idea of expansionary fiscal policy (see below).
- Expansionary (reflationary) fiscal policy aims at increasing aggregate demand to increase national income and employment and thus close a deflationary gap.
- It requires an increase in government spending and a decrease in taxation.
- Since government spending is a component of AD, a rise in G will directly increase AD, shifting it to the right.
- In other words, if private spending (C + I) is not sufficient to generate full employment then the government should increase its spending (G) by borrowing from the private sector (deficit spending, G > T).
- A decrease in **taxation** (T) will indirectly also increase AD as it will increase disposable income (defined as income minus direct taxes) that people have and induce more spending.

Contractionary (deflationary) fiscal policy

- On the other hand, an overheating economy, defined as an economy where aggregate demand is rapidly increasing creating inflationary pressures, requires contractionary fiscal policy.
- The government must decrease government expenditures and increase taxes so that AD decreases.

In summary

- **Expansionary fiscal policy**: raise G and lower T (deficit spending) to increase AD and thus income and employment.
- **Contractionary fiscal policy**: lower G and increase T to decrease AD and thus inflationary pressures.

The multiplier effect HL

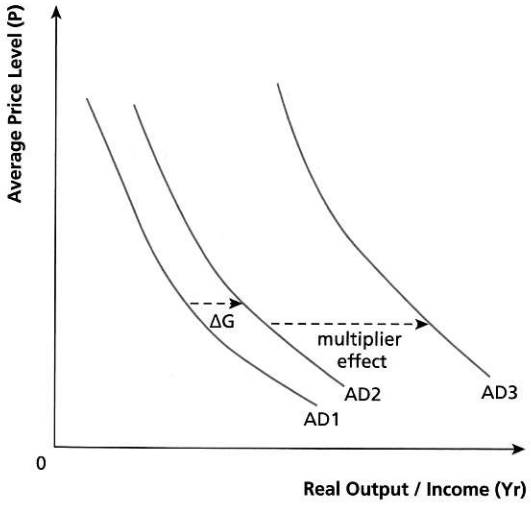
Expansionary fiscal policy according to the Keynesian school is very powerful tool to lift an economy out of a recession as a result of the operation of the multiplier effect.

- Assume that a government wishing to close a deflationary gap decides to increase its expenditures by some amount, say, ΔG (the difference between the new level of spending and the original level of spending).
- Aggregate demand will automatically increase by ΔG and shift from AD1 to AD2 as in Fig. 3.17. But according to the multiplier effect the process will not end there. Aggregate demand will continue to increase and shift to the right all the way to AD3.
- The multiplier effect states that an increase in government expenditures (or, more generally, in any injection) will lead to a greater change in income: $\Delta Y = \kappa \Delta G$, where ΔY is the resulting change in income, ΔG is the change in government spending and κ is the multiplier.

Why will national income increase by more than the increase in government expenditures? The explanation rests on two ideas:

- One person's spending is automatically someone else's income.
- Economic activity takes place in successive rounds.

Figure 3.17 The multiplier effect



The multiplier effect continued HL

Example

- Assume that the government decides to increase expenditures by 10,000,000 pounds and hires some unemployed workers to dig holes and bury bottles and other unemployed workers to dig them up. National income has increased by 10,000,000 pounds, the income that these workers earned for the 'service' they produced. Spending by the government is income for the workers.
- But, economic activity will not stop there. There is a second and a third and an nth round that follow. Why? Because these workers will spend *part* of this extra income on domestic goods and services that others produce and the process will continue.
- If extra spending on domestic goods and services is constant and equal to 0.8 (80%) of any extra income then national income will rise by 50,000,000 pounds.

How does one arrive at this figure?

- Define the extra spending on domestic goods induced by extra income earned as the marginal propensity to consume (MPC_d) domestic goods. The multiplier κ is equal to:

  $1/(1 - MPC_d)$
- In the example the MPCd is assumed to be 0.8 (as 8 million pounds are spent out of 10 million pounds of extra income) it follows that the multiplier κ is equal to 5. Given that the initial increase in government spending is 10,000,000 and that $\Delta Y = \kappa \Delta G$, the increase in income is equal to 5 times 10 million pounds, i.e. 50 million pounds.
- Since only 8 out of the 10 million were spent on domestic goods it follows that 2 million were not spent. This income not spent on domestic goods must have been spent on foreign goods (imports) or paid in taxes or simply saved.
- Import expenditures, tax payments and savings are all withdrawals in the circular flow model.
- It follows that $(1 - MPC_d)$ is the marginal propensity to withdraw (MPW) so if $\kappa = 1/(1 - MPC_d)$ it is also equal to 1/(MPW) or 1/(MPM + MRT + MPS) where MPM is the marginal propensity to spend on imports, MRT is the marginal rate of taxation and MPS is the marginal propensity to save.
- The multiplier effect is greater, the greater the proportion of any increase in income that is spent on domestic goods and services or the smaller the proportion of any increase in income that is saved, spent on imports or taxed by the government.

Tips

Note that one mechanism through which trade cycles are transmitted internationally is the export multiplier. A recession in the US economy will lead to lower US imports and thus lower European and, say, Japanese exports. Depending on the size of this decrease as well as on the openness of these economies, economic activity in Europe and Japan will be adversely affected (their AD will shrink) and this effect will be magnified through the export multiplier which is the change in national income resulting from a change in export revenues.

Also, note that the effect is not instantaneous as there is a time lag between receipt of income and subsequent spending.

Evaluating fiscal policy

Fiscal policy can be useful and has been used successfully in the past and even recently in the US. It suffers though from several disadvantages that were exposed mostly by the monetarists and which weaken its effectiveness or may even transform it to a source of macroeconomic instability. More specifically:

- Fiscal policy is characterized by long and potentially destabilizing **time lags**. These refer to the time between when an economy 'gets sick' (enters a recession) and the time the 'medicine' (the expansionary fiscal policy administered) has an impact (full employment is restored). It may thus be the case that by the time the impact of a policy switch is felt, the economy has already moved on to a new cycle phase destabilizing rather than stabilizing economic activity.
- Fiscal policy has an **expansionary bias**. The cyclical nature of economic activity would require that governments alternate between contractionary and expansionary fiscal policy. But politicians in power who are responsible for economic policy may in general be reluctant to cut government expenditures and raise taxes as this choice could drastically decrease their popularity.
- **Contractionary fiscal policy** is difficult to employ not only because of reluctant politicians but also because certain public expenditures are considered inelastic by society. Decreasing government expenditures on health, education or social security may be considered socially unacceptable; defence expenditures are also often difficult to cut. On the other hand, increasing taxation beyond a point will adversely affect incentives (see Laffer curve, page 92).
- Expansionary fiscal policy may lead to a **widening trade deficit**; if a higher level of income results then more imports will be absorbed, while if the average price level increases then exports will shrink as they become less competitive and imports will rise as they become relatively more attractive.
- *(HL Only)*: Expansionary fiscal policy and deficit spending may end up *crowding out* private investment and thus be less effective. The resulting **budget deficit** must somehow be financed. Government borrowing from financial markets may drive interest rates up and as a result private investment will decrease (and so will consumption expenditures). If this decrease in private spending matches the increased government spending, the crowding-out is said to be complete and fiscal policy is totally ineffective.

The crowding-out effect HL

- Crowding-out is a monetarist criticism of Keynesian inspired expansionary fiscal policy.
- If the government increases government spending by ΔG then, as a result of the multiplier effect, AD will rise from AD1 all the way to AD2. Fiscal policy thus seems, according the Keynesian School, like a very powerful tool to reflate an economy in recession. Not so, claim the monetarists. The increased government spending and resulting greater budget deficit *needs to be financed* (e.g. how can a government spend €850m when it earns from taxes only €700m? It must somehow borrow the missing €150m). If the government borrows (by selling bonds to the non-bank private sector) then interest rates may rise (as there is going to be greater demand for loanable funds) as shown in Fig. 3.19.
- If interest rates increase from r1 to r2 then private sector investment spending may decrease (see Fig. 3.9). Consumption expenditures may also decrease. Since AD includes not only G but also C and I it may not after all increase to AD2 but only (if, at all) to AD3 as shown in Fig. 3.18. Expansionary fiscal policy is thus not as powerful as was thought.

Tip

The effects of **crowding out** also depend on the type of government expenditures financed. If capital (investment) expenditures are financed then, given that infrastructure investments may create substantial positive externalities to private firms, economic growth may even accelerate. This is an especially valid argument for developing countries where improved infrastructure is much needed and is considered complementary to market forces. Also, if the budget deficit is financed by foreigners then domestic interest rates may not increase (but other problems may result).

Figure 3.18 The crowding-out effect

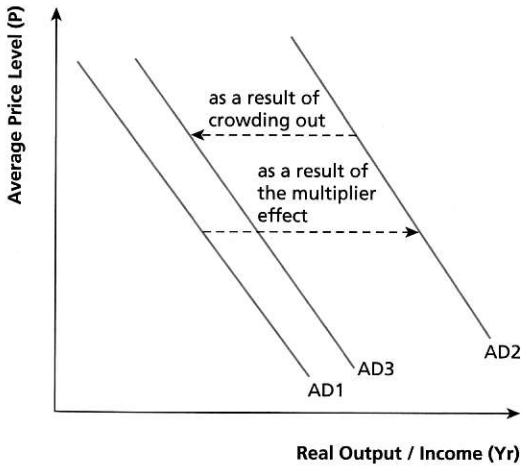
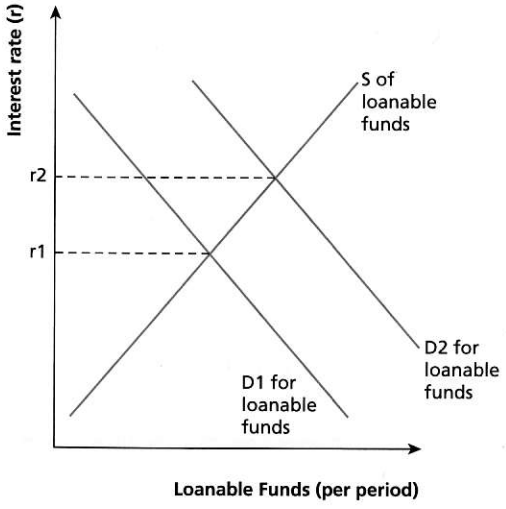


Figure 3.19 The loanable funds market and the effect of government borrowing on interest rates



Monetary policy

Expansionary (easy or loose) monetary policy

- If an economy is about to enter recession or if it already is suffering negative growth rates then policymakers (the central bank or the government) may decrease interest rates (r) in an attempt to increase aggregate demand and thus output and employment. How does it work? How are lower interest rates expected to reflate a failing economy? It is hoped that aggregate demand will increase as consumption expenditures, investment expenditures as well as net exports will tend to rise.
- Consumption expenditures of households will tend to increase, as
  - borrowing to finance the purchase of durables (cars, appliances, etc.) becomes cheaper so spending on such goods may increase;
  - reduced interest rates mean lower monthly payments on variable rate mortgage loans so households will have more available to spend in general;
  - the lower rate of return will make saving less attractive so households will tend to spend more.
- Investment spending by firms will tend to increase as borrowing costs to finance purchases of capital goods (equipment) and expansions (new factories) are lower. Also, lower interest rates imply that the opportunity cost to firms of using their own past retained profits to finance investments is also lower.
- Lastly, as a result of lower interest rates the exchange rate will tend to depreciate so exports will become more competitive abroad and imports less attractive domestically, increasing AD.

Monetary policy continued

Contractionary (tight) monetary policy

- Assume an overheating economy in which inflation is becoming a problem. Policymakers (the central bank or the government) may increase interest rates in an attempt to decrease AD. Aggregate demand is expected to decrease as higher interest rates will work in the opposite direction as the one described above. Saving will become more attractive, borrowing costs will rise for households and firms and the exchange rate will tend to appreciate, rendering exports pricier and thus less attractive to foreigners.

Evaluation of monetary policy

- Central banking is both an art and a science: the timing of an interest rate change, the statements issued by the central bank, the size of the interest rate change are all crucial for the success of any policy change. There are very many factors that determine the extent to which a policy response will or will not be successful. In general, monetary policy is extensively used throughout the world to regulate the strength of total spending on domestic goods and services. It is considered rather flexible as central banks can alter interest rates often, they can alter them gradually and they can also reverse any decision.

On the other hand, it is also characterized by several problems.

- Most importantly, spending by both households and firms does not depend only on interest rates. Consumption and investment expenditures depend on a host of other factors. The degree of consumer and business confidence is extremely important in determining the response of spending to a change in interest rates as well as is the degree of household and firm indebtedness. For example, let the central bank lower interest rates in an attempt to prevent a recession. If businesses are pessimistic and/or if households are already burdened by heavy debts there is no guarantee that they will be tempted by lower interest rates to borrow and spend more, and so the policy may fail.
- Also, if the borrowing rate is already too low (close to zero) then it cannot be lowered any further as negative interest rates do not make any sense.
- Monetary policy is also characterized by potentially destabilizing time lags, just like fiscal policy. These time lags may be shorter but they are variable, creating uncertainty as to the success of any policy change.
- Under a fixed exchange rate system monetary policy is ineffective. Interest rate changes have to be used only to ensure that the exchange rate remains fixed at the chosen level.
- Today, financial markets are largely global so most firms and even households can and do borrow from anywhere in the world. These developments weaken the effectiveness of monetary policy.

Supply-side policies

- Supply-side policies are policies that aim at increasing the aggregate supply of an economy, shifting the AS curve to the right as illustrated in Fig. 3.16, page 75.
- One may group supply-side policies into a set which includes measures that all will agree are crucial in enhancing the productive capacity of an economy and into another set that includes more controversial measures.

Commonly accepted supply-side policies

- Improving education (especially primary and secondary where the rate of return is the highest) or making education universal will improve labour productivity and increase AS.
- Better health services made available to the general population would also have the same effect.
- A government providing better infrastructure will also boost the supply side. 'Build yourself a road to get rich' is an old saying and it expresses a universal truth. Roads, harbours, airports, telecommunications, all serve to lower production costs of all firms in a country.
- Lastly, improving the institutional framework would also serve to improve productivity and the supply side of an economy. Unfortunately, there is no unique set of laws, rules and regulations that can be transplanted to any economy and prove optimal. Russia's lost decade following the attempt in the early 1990s to create a market economy contrasted with the recent Chinese experience illustrate the point.

More controversial supply-side policies

Pro-market supply-side policies

The second and more controversial set includes the measures that the so-called 'supply-siders' espouse. Supply-siders are a group of economists who are known for their extreme pro-market ideas. These measures include:

- Labour market-related policies: these include policies that try to make the labour market more flexible. They include lowering or even abolishing the minimum wage; decreasing the power of labour unions and reducing non-wage labour costs to employers (such as national insurance contributions) so that labour becomes cheaper to firms and more labour is hired; making hiring and firing of workers easier so that managers do not hesitate to hire more labour when demand rises; making pension plans transferable across occupations (so that labour mobility increases); reducing unemployment benefits so that those out of work are more motivated to find jobs, etc.
- Product market-related policies: these include policies that aim to increase the extent of competition in markets so that the economy reaps the resulting efficiency benefits. Deregulation (reducing the amount of rules and 'red tape' for firms) and privatization as well as trade liberalization are typical candidates.
- Decreasing tax rates to improve the incentive to work, to save and to invest (see Laffer curve, page 92).

Overall, the benefits expected by implementing supply-side policies are a result of increased levels of competition and the expected enhanced efficiency, fewer distortions to the price mechanism, fewer built-in disincentives and increased flexibility in labour markets.

On the other hand, pro-market supply-side policies can be criticized on the following grounds:

- Benefits usually take a long time to materialize. They are thus long-run policies incapable of dealing with short-run problems.
- Tax cuts may instead induce more leisure and less labour and investment, proving more of a gift to the better-off segments of the population.
- Privatization often has led, at least in the short run, to increased unemployment.
- Deregulation may prove unsuccessful in raising competition and lowering prices. The 1990s energy crisis in California is perhaps a good example of the dangers that deregulation of utility companies may bring, as the market may become dominated by a single private monopoly which has no incentive to keep prices down.
- The smaller safety net that results from, say, lower and stricter unemployment benefits may lead to increased income inequality and segments of the population may be marginalized.

Industrial policy

- Within this second, rather controversial, group one may also include 'industrial policies'. 'Industrial policies' are championed by policymakers who considered government intervention and guidance necessary for the productive capacity of an economy to increase. This group considers market forces inadequate to guide financial capital and investments to their most productive uses and thus government was necessary to do the job and 'pick winners', i.e. industries and firms to support as they were thought to be the most promising for growth. Subsidized low interest loans, lower rates of taxation or tax allowances, and protection from foreign competition are some of the measures employed. Some successful as well as unsuccessful developing countries have adopted such measures. Many, if not all, advanced economies have also employed such policies in varying degrees.

Inflation

Inflation is defined as a sustained increase of the average level of prices. The **inflation rate** is the percentage by which the average price level, expressed as a price index, has risen between two periods.

A price index (a number without units of measurement) makes comparisons through time much easier. Using statistical criteria some year is chosen to be the 'base' (or reference) year and all other years are expressed as a percentage of it. The price index for the base year will be equal to 100.

Measuring inflation HL

- The average level of prices is measured through a price index which is a *weighted average* of the prices that the *typical consumer* faces expressed as an *index number*.
- Statisticians determine through surveys the basket of goods and services that the *typical* household buys.
- The average is a *weighted average* as goods and services are not of equal significance to the typical consumer. The weight for each good are the expenditures on it expressed as a proportion of total expenditures made.
- The cost of purchasing the basket is recorded and then expressed as an *index number*.

Problems of measurement

- The typical consumer is a fictitious person. This person is both young and old, lives both in a city and on a farm and is both well off and relatively poor. As a result it is problematical to use the inflation rate figure to determine, for example, by how much a government should increase pensions, as an older person consumes more health care and less entertainment than a younger individual.
- The weights used to construct the average price level are fixed. As a result the effect on the inflation rate of an increase in the price of some good is overestimated. Even though consumers will switch away from it and purchase other cheaper substitutes, its significance (its weight) in the construction of the average will be the same. The official inflation rate may thus overestimate true inflation. This is referred to as the 'substitution bias'.
- New products are not immediately taken into account in the construction of the average price level. It took a few years for the price of cell phone services to enter the typical basket of goods and services in many countries. This is referred to as the 'new product bias'.
- Prices from new retail outlets such as online stores (Amazon) or mega and discount stores may not be sufficiently sampled. Since these retail outlets usually have lower prices the official inflation rate may overestimate true inflation. This is referred to as the 'new retail outlet bias'.
- Improved quality of goods and services may not be properly accounted for in the construction of the average price level. A better version of a product may be 10% more expensive but may last 50% longer than the older version, rendering it effectively cheaper. Again, the official inflation rate may overestimate true inflation. This is referred to as the 'quality bias'.

Costs of inflation

- Inflation increases uncertainty in business decision-making so it makes it more difficult for firms to judge whether an investment prospect will or will not be profitable. As a result investment spending decreases and thus, in the long run, growth and employment rates may decrease.
- Exports become less competitive in foreign markets. As a result, the export sector shrinks and trade imbalances may result.
- Households on fixed money incomes (such as wage earners and pensioners) suffer a decline in their purchasing power. Income distribution may worsen.
- The efficiency of the price mechanism is lost because inflation distorts the signalling power of relative price changes. A consumer or a firm witnessing the price of good X rising cannot be sure that it is now relatively more expensive as she cannot know whether the prices of other similar goods have increased by the same percentage. This confuses the decisions of consumers and of firms.
- Inflation, in general and on average, redistributes national income from the poor to the well-off since the former have fewer choices to hedge against inflation and, in addition, they cannot borrow. The wealthy can borrow from the banking system and proceed to invest in assets whose value is expected to rise faster than inflation.
- If actual inflation proves higher than expected inflation, then borrowers gain at the expense of lenders. The money they will be paying back will be worth less than expected.

But mild inflation reduces the real wage costs of firms and may thus help their competitiveness.

Tip

Have in mind that the costs of inflation may easily be rewritten as benefits of price stability.

Deflation

Deflation refers to a process of continuous decreases in the average price level. If the inflation rate is negative then the economy is suffering from deflation. In January 2006 consumer prices changed by –0.8% in Japan. This means that the average consumer price level had decreased by 0.8% compared to January 2005. Japan was suffering from deflation.

Tip

Disinflation refers to a decrease of inflation. Prices continue to rise but at a slower rate. If, for example, inflation has decreased from 8.7% to 5.5% annually then prices continue to increase but at a slower rate.

Costs of deflation

- Consumers delay purchases since they come to expect further price decreases. Aggregate demand decreases even more, pushing even lower the average price level.
- Firms are forced to cut prices to win over customers, squeezing their profit margins and forcing them to cut down on costs. Wages fall and layoffs follow so AD shifts further to the left.
- The real value of outstanding debt increases. Indebted consumers become hesitant to make purchases and indebted firms hesitate to make investments so AD decreases even more and so does the average price level.
- Since the real value of outstanding debt increases, some households and some firms cannot service their loans. Banks accumulate 'bad' loans (loans that are not repaid) and thus the risk of a banking crisis with repercussions on the real economy increases.
- Since nominal interest rates cannot decrease below zero the central bank cannot use easy monetary policy to reflate the economy. Expansionary fiscal policy may also prove ineffective as households may prefer to save and postpone spending.

But exports become more competitive abroad and AD may increase as a result of a rise in net exports.

Causes of inflation and deflation

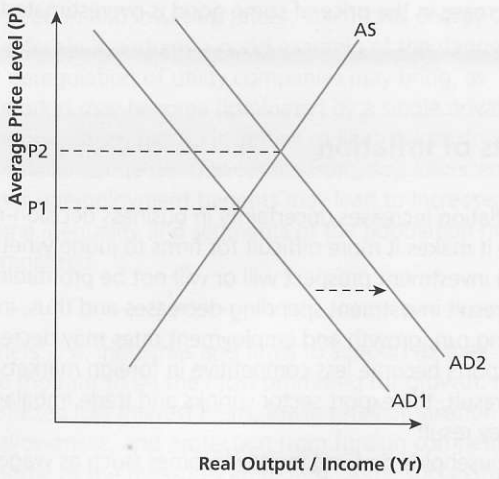
Through the AD/AS diagram it is clear that any factor that increases aggregate demand will lead to an increasing price level, i.e. inflation, as well as any factor causing an adverse shift of aggregate supply. The former is known as demand-pull inflation and the latter as cost-push inflation, even though once an inflationary process begins it is difficult in practice to distinguish between the two.

Demand-pull inflation

In the case of demand-pull inflation the extent of the inflationary effect resulting from the increase in aggregate demand depends on how steep the AS curve is, in other words how close to full employment the economy is operating. The closer to the full employment level of output (the steeper AS is), the greater the effect on the average price level of an increase in aggregate demand.

Figure 3.20 illustrates demand-pull inflation as the average price level is shown to increase from P1 to P2 following a shift to the right of aggregate demand from AD1 to AD2.

Figure 3.20 Demand-pull inflation



Causes of inflation and deflation continued

Causes of demand-pull inflation

- Rapid increase in consumption and investment expenditures caused by excessively optimistic and confident consumers and firms.
- A surge in exports. Exports may increase as a result of an undervalued or depreciating currency especially if the price elasticity of supply of exports is low (i.e. if bottlenecks exist in the production of exports). Faster growth abroad may also suddenly increase foreign demand for our products.
- Profligate government spending is a typical cause of demand-pull inflationary pressures. Also, poorly designed tax cuts may feed demand and inflationary pressures instead of increasing the incentive to work or to invest.
- Inflationary expectations themselves are a common cause of continuing inflation. If prices are expected to continue climbing then all firms and workers with pricing power will increase their prices and wages to keep up.
- Perhaps the single most important cause of inflation is 'excessive monetary growth'. The easiest way to understand this is by quoting Milton Friedman's famous saying that inflation exists when 'too much money is chasing after too few goods' and thus that inflation is a purely monetary phenomenon.

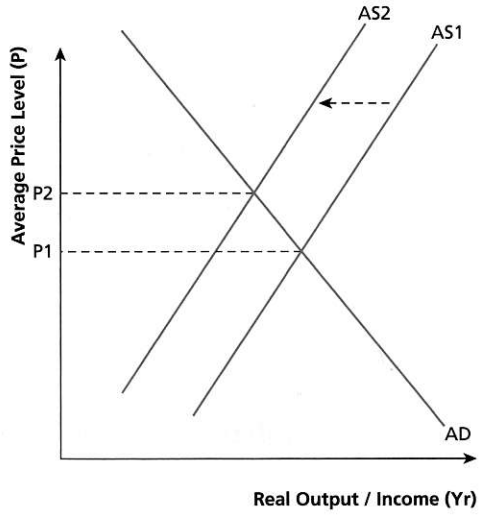
Tip

Bear in mind that increases in AD will affect not only the average price level but also real output. Mild inflation may thus accompany a rise in real output and employment.

Cost-push inflation

Figure 3.21 illustrates cost-push inflation as the average price level is shown to increase from P1 to P2 following a shift to the left of aggregate supply (an adverse supply shock) from AS1 to AS2.

Figure 3.21 Cost-push inflation



Causes of cost-push inflation

- A rise in the price of oil (energy costs) is perhaps the most common cause of cost-push inflation. Oil is still the predominant form of energy for firms so a sustained and sharp increase in the price of oil will increase production costs across the board and thus prices.
- Powerful labour unions, as they may be in a position to achieve for their members wage increases higher than any productivity gains.
- A devaluation (or a sharp depreciation) of the currency since it makes import prices higher. Not only will the average price level immediately rise and lead workers to demand higher wages but domestic production costs will also increase if firms import a lot of raw materials and intermediate products.
- Rising commodity prices (as these are products used as inputs in manufacturing) because of rising world demand. The explosive growth in China has increased manufacturing and construction costs in many other countries.
- An increase in indirect taxation. This would be a óne-off increase in the average price level so it would hardly qualify as a cause of inflation (a *sustained* increase in prices) unless it leads to demands for higher wages and an inflationary spiral begins.
- A productivity slow-down. Production costs would rise but such a development would typically require some unfavorable institutional change.

Tip

The shift toward services in many advanced economies has decreased their dependence on oil, so increasing oil prices do not prove as inflationary as in the past.

Causes of inflation and deflation continued

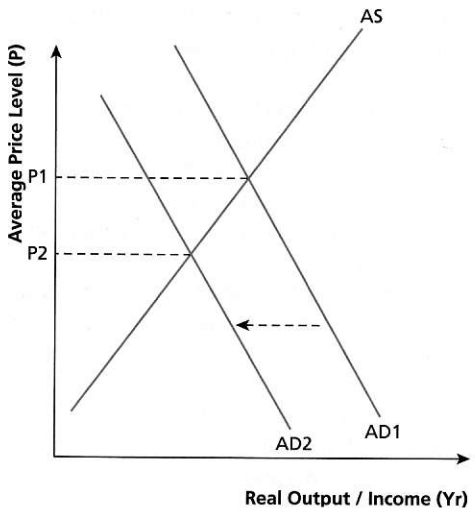
Causes of deflation

Figure 3.22 illustrates a case of deflation since the average price level is shown to decrease from P1 to P2 as a result of decreasing aggregate demand from AD1 to AD2.

Deflation can be caused by:

- A decrease in aggregate demand, often the result of a domestic crisis, like a banking crisis or the collapse of a major industry but possibly a result of an external crisis that led to a sudden contraction of the export sector.
- Aggregate demand rising more slowly than expected. Extremely optimistic firms may have overinvested in new capacity leading to a large shift to the right of aggregate supply. If aggregate demand fails to rise as fast as originally anticipated, a decreasing average price level may result.

Figure 3.22 Deflation

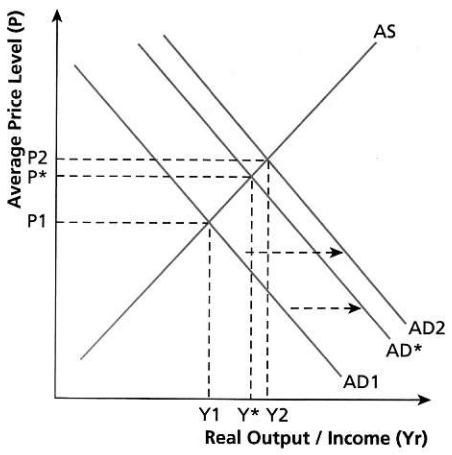


Policies to deal with inflation and deflation

Policies to deal with demand-pull inflation

- In the case of demand-pull inflation, typically, tight monetary policy is adopted (increasing the interest rate) often accompanied by fiscal 'restraint' (meaning lowering government spending and raising taxes; lowering budget deficits). To show how tighter monetary policy (and fiscal restraint) will hopefully help lower inflation use Fig. 3.23.
- Given AD1 and AS, the average price level is at P1. As a result of demand-pull inflation aggregate demand would increase to AD2 and the price level to P2. If the central bank increases interest rates (tight monetary policy) some households may cut down their spending on durables and some firms may lower their investment spending so aggregate demand will not increase as fast all the way to AD2 but will increase only up to AD*. Prices will rise but not as much. Inflation will be lower.
- Note though that whereas real output would rise to Y2 it will now as a result of the contractionary policy employed rise only up to Y*. Output increased but not as fast so economic growth slowed down.

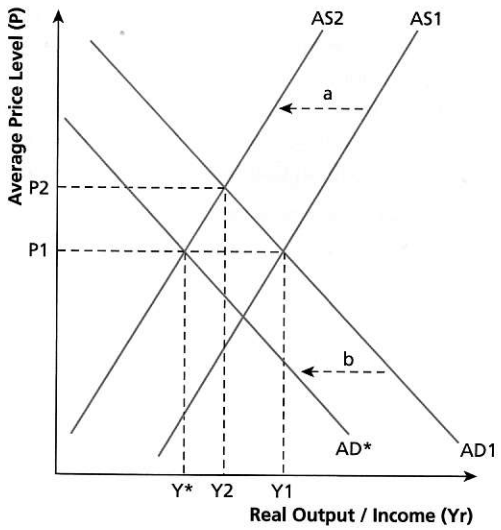
Figure 3.23 Dealing with demand-pull inflation



Policies to deal with cost-push inflation

- The policy response is less obvious in the case of cost-push inflation. It may seem that supply-side policies are in order but supply-side policies are difficult to adopt and implement and take a long time to have any effects. Of course, appropriate supply-side policies are always helpful to contain inflation since by shifting AS to the right any increase in AD will be absorbed without the average price level rising. Non-inflationary growth will be achieved (refer to Fig. 3.16).
- Thus, even if inflation is 'cost-push', it is contractionary demand management policies that are employed by policymakers. The typical immediate response to any inflationary pressures emerging in an economy is for policymakers to tighten monetary policy, i.e. to increase interest rates and make borrowing more costly.
- Figure 3.24 illustrates the situation. Initially real output is at Y1 and the average price level at P1. Assume an adverse supply shock shifting AS from AS1 to AS2 (arrow a) and leading to a higher price level P2. Cost-push inflation is even more costly than demand-pull inflation as real output has also decreased from Y1 to Y2 and unemployment rises.

Figure 3.24 Dealing with cost-push inflation



Policies to deal with inflation and deflation continued

- Let policymakers tighten monetary policy by increasing interest rates in an attempt to maintain the average price level at P1. If the policy is successful and the increased borrowing costs decrease spending by households and firms, then AD will shift to AD* (arrow b) maintaining prices stable at P*. Note though that the negative effect on economic activity (on real output) will be more severe as it will further decrease to Y* and unemployment will increase more. Usually this is considered a short-run cost worth suffering as price stability helps accelerate growth and employment generation in the long run.

Tip

Increased exposure to international competition also exerts a dampening effect on inflation. Not only are domestic firms forced to become more efficient and lower their prices but also they may benefit from cheaper sources of supply.

Dealing with deflation

- Deflation has proven to be a most difficult problem to deal with. Japan, a major advanced economy, suffered the consequences of deflation for many years. Deflation creates a vicious circle of decreasing prices leading to decreasing aggregate demand leading to decreasing prices that is extremely difficult to break. Monetary policy is ineffective and fiscal policy is weakened. Somehow policymakers have to convince the public that inflation should be expected. Governments have resorted to printing dated vouchers to force recipients to spend them and not save them. Deflation is often corrected through the increase in aggregate demand that results from cheaper exports.

Unemployment

Who are the unemployed?

An individual is considered unemployed if she is actively searching for a job and cannot find one. The unemployment rate is the ratio of the number of unemployed over the size of the labour force (also referred to as the workforce or the working population) times 100. The labour force includes the employed and the unemployed.

Problems in measuring unemployment

- Even though there seems to be a clearcut distinction of who should and who shouldn't be considered unemployed, measuring the unemployment rate is fraught with problems. The unemployment rate may underestimate or overestimate the true level of unemployment in a country. How do governments arrive at the unemployment rate? The answer is either through surveys (survey method) or by counting the number of those registered as unemployed and receiving unemployment benefits (claimant method).
- The numbers of unemployed and the unemployment rate are estimates in that they are based on household surveys. For a surveyed individual to be considered unemployed she must be without work, available to start work and she must have actively sought gainful employment at some time, usually during the previous four weeks. Surveyed individuals may misrepresent their true status. Survey-based statistics often overestimate the true level of unemployment. In addition they may suffer from poor sample and questionnaire design and limited coverage of the population.
- On the other hand registered unemployment data count the number of individuals registered as unemployed and receiving unemployment benefits. These national statistics are dependent on whether the eligibility conditions are satisfied. Claimant unemployment statistics often underestimate true unemployment as governments have been accused of manipulating eligibility requirements to underreport the unemployment statistics.

Costs of unemployment

Private costs (costs that the individual suffers)

- The single most important cost an unemployed individual incurs is his lost income.
- Another cost is the possible loss of up-to-date skills.
- Being unemployed increases the chances of remaining unemployed. Employers prefer to hire an individual currently employed elsewhere to hiring an unemployed worker. Not only will her skills be up to date but also the employer avoids the risks created by asymmetric information (not knowing why the unemployed lost her job in the first place).
- The loss of self esteem that often results and the increased probability that the person will resort to alcohol or drugs are other possible private costs.

Social costs (costs that society suffers)

- Given that the so-called 'economic problem' is scarcity, it becomes evident that the greatest cost of unemployment is the lost output that could have been produced and never will. The economy operates inside its production possibilities frontier.
- Tax revenues collected are lower because of the lower incomes and the resulting decreased private spending.
- Government spending increases because of the unemployment benefits paid and the increased number of training and retraining programmes that government often finances.
- If unemployment is high and prolonged, society may experience higher levels of drug and alcohol abuse and hence higher incidences of crime and violence and other negative externalities.
- If unemployment is concentrated in regions and/or in age groups such problems may become even more pronounced.

However, there may be some benefits arising from unemployment. 'Free marketeers' believe that union power weakens and thus there is reduced cost inflation pressure in the economy and greater labour market flexibility. Increased geographical and occupational mobility is also mentioned as a possible positive side effect of unemployment as workers are forced to move or change occupation.

Types of unemployment and policies to lower it

Seasonal unemployment

- Construction workers are laid off in the winter. This type of unemployment is expected and there is nothing the government can do about it. Unemployment statistics though are often corrected ('seasonally adjusted') so that policymakers can determine true changes in unemployment, not those due to the changing seasons.

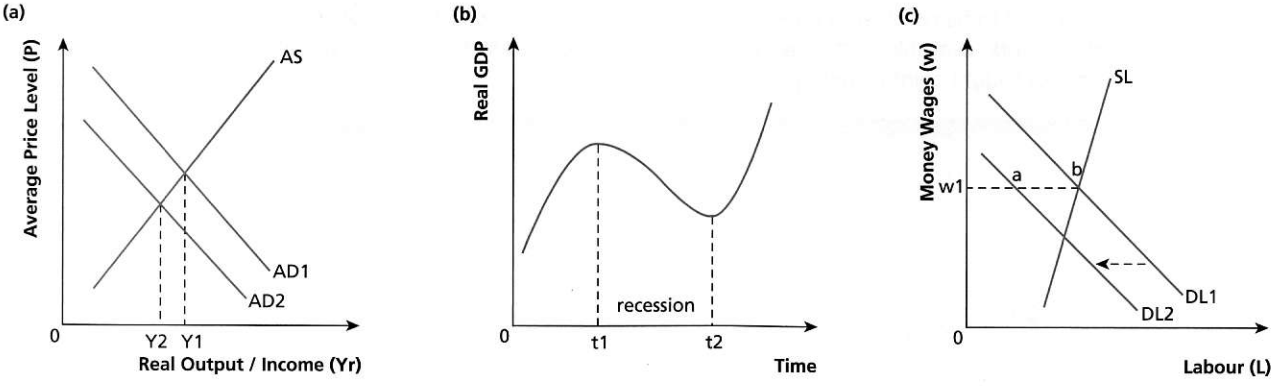
Frictional unemployment

- Frictional unemployment refers to people who are between jobs. This is unemployment of a short-term nature and is largely unavoidable in an economy since people will always voluntarily switch jobs searching for better ones or relocating.
- Faster and better labour market-related information will decrease but not eliminate frictional unemployment. Governments can thus minimize frictional unemployment by ensuring that job vacancies as well as the profiles of those available for work become known faster and more widely.

Cyclical (Keynesian or demand-deficient) unemployment

- This type of unemployment is directly related to the business cycle. Higher unemployment will necessarily accompany a recession because of the lower level of economic activity. A decrease in aggregate demand will force some businesses to shrink and others to close down.
- In Fig. 3.25a aggregate demand decreases for some reason from AD1 to AD2 resulting in a decrease in economic activity and a decrease in real output from Y1 to Y2. The economy has entered a recession illustrated in the trade cycle in Fig. 3.25b. The lower level of economic activity forces firms to decrease their demand for labour. Some firms

Figure 3.25 Cyclical unemployment



Types of unemployment and policies to lower it continued

may shrink, others may even shut down because of the recession. In Fig. 3.25c the labour market is illustrated with demand for labour decreasing from DL1 to DL2. Money (nominal) wages are assumed to remain at w1 as a result of labour unions and/or contracts ('sticky wages'). Excess supply of labour results, equal to ab, reflecting the resulting cyclical unemployment.

- Unemployment due to cyclical reasons is dealt with by expansionary demand-side policies. Effectively the government will attempt to close the deflationary gap. Interest rates are cut in the hope that households and firms will be convinced to spend more and the government may even lower taxes and increase expenditures depending on the state of their finances.

Structural unemployment

- Structural unemployment is perhaps the most serious type of unemployment since it is of a long-term nature. It represents those remaining unemployed long after recovery is under way in an economy. An economy may be booming but structural unemployment will not decrease.
- It is the result of the evolving structure of an economy because of rapid technological advancement or shifting comparative advantage. The changing structure of an economy results in a mismatch between the skills available by the unemployed and the skills required by the labour market. New technologies render certain professions obsolete but at the same time create new job opportunities. The internet may have, for example, decreased the demand for shop workers and postmen but created new jobs for web designers and software engineers. But if the laid-off shop worker or the employee of the postal service is not trained in computers then he or she may find it difficult to get a job.
- It is also the result of labour market rigidities. Minimum wage laws and wages set through collective bargaining between industries and labour are examples of labour market-related rigidities. They both result in higher unemployment as wage rates are set above their equilibrium, market-clearing level. If pension plans in one industry are not easily transferred to another industry then occupational mobility is hampered. Consider a worker losing his job in industry A but prevented from taking a job offer in industry B because he cannot transfer his pension rights so he will be unemployed.
- Lastly, institutional disincentives are considered as causes. Laws preventing firms from firing employees as well as high unemployment benefits are examples.

Policies to lower structural unemployment

Eliminating structural unemployment is not possible but the following are considered to help decrease it:

- Training and retraining seminars permit structurally unemployed workers to find new jobs.
- Ensuring that school curricula are capable to prepare individuals who are creative and willing to learn.
- Reducing the power of trade unions.
- Eliminating minimum wage laws and collective bargaining.
- Reducing non-wage labour costs (such as national insurance contributions).
- Reducing the level of unemployment benefits and the length of time that benefits can be collected.

However:

- The reduction in structural unemployment that some of these measures may bring about may come at a significant cost to society. Decreasing worker protection may lead to labour and social unrest which, as discussed earlier, may hamper growth. Segments of the population may become marginalized and income distribution more unequal, again with adverse effects on growth and development.

Finally:

- Expansionary demand-side policies are ineffective to deal with structural unemployment as any decrease in unemployment will be temporary and at the cost of higher inflation. This point will become clear later.

Tips

Policies that attempt to deal with structural unemployment are of a microeconomic nature belonging to the broader class of supply-side policies discussed.

Also, even though it sounds counterintuitive, a growing economy may over the long run suffer from higher structural unemployment. This is because the different income elasticities of demand of the different industries and sectors of an economy will change its structure.

Real wage unemployment (or classical unemployment)

- Real wage unemployment is considered a result of labour unions maintaining the real wage rate (the purchasing power of the money wage rate) too high (above the equilibrium level) for the labour market to 'clear'.

Equilibrium and disequilibrium unemployment

- Unemployment that exists when the labour market is in equilibrium is considered as 'equilibrium' unemployment and is more widely known as the 'natural' rate of unemployment (NRU, see below).
- On the other hand, cyclical unemployment and real wage unemployment are both examples of 'disequilibrium' unemployment as the prevailing wage rate is not the equilibrium wage rate.

The natural rate of unemployment

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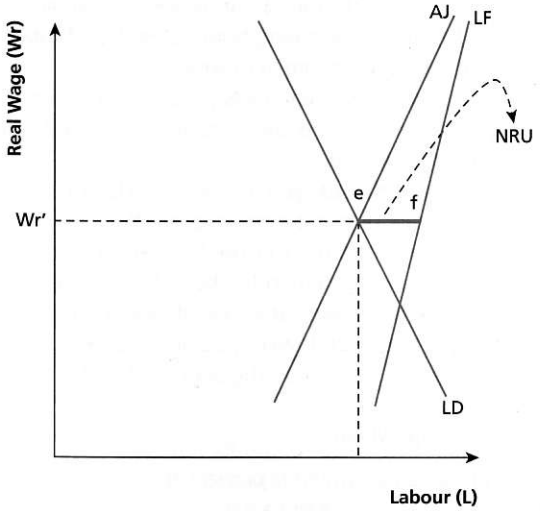
- The natural rate of unemployment (NRU) is a term introduced by Nobel laureate Milton Friedman, the best known advocate of monetarism.
- The basic idea conveyed is that there may still be unemployment in the labour market even if participants on both sides of the market satisfy their objectives and equilibrium prevails.
- In Fig. 3.26 the curve LD illustrates the labour demand that firms express in the market. It shows how many workers firms are willing to hire at each real wage rate. It is downward sloping as at higher real wage rates they will be willing to hire fewer workers. The curve LF illustrates the labour force available at each wage rate. It shows the number of individuals working or looking for a job at each wage rate. It is slightly upward sloping as at a higher real wage rate more people will be convinced to enter the labour market and search for a job.
- It is the curve AJ that makes this model of the labour market different. It is the 'accept jobs' curve and shows at each wage rate the number of individuals willing to accept a job offer and work. If you are looking for a job you will not necessarily accept the first job offer you get. You may hope to obtain a better job and given the level of benefits collected it may be worth continuing the search. AJ is also upward sloping as the LF is upward sloping but the horizontal distance at each wage rate between AJ and LF decreases because the probability of accepting a job offer will be higher at a higher wage rate.
- The labour market is in equilibrium at Wr'. At Wr' the number of people firms are willing to hire is equal to the number of people willing to accept a job offer. Note though that there is still unemployment even though the labour market is in equilibrium as 'ef' workers are in the labour force but without a job. The unemployment that exists when the labour market is in equilibrium is known as the **natural rate of unemployment.**

Figure 3.26 The natural rate of unemployment



- Since these 'ef' individuals would not be willing to accept a job offer even if there was one, the NRU is of a voluntary nature. If the wage rate say, because of labour unions was higher above Wr' then part of the resulting unemployment would be of an involuntary nature and part of a voluntary nature. Note though that the voluntary portion at that higher than equilibrium wage rate is not the NRU.
- The NRU is also considered to be of a structural nature as if the AJ curve shifts to the right because of lower unemployment benefits it would decrease.

The Phillips curve

The original Phillips curve

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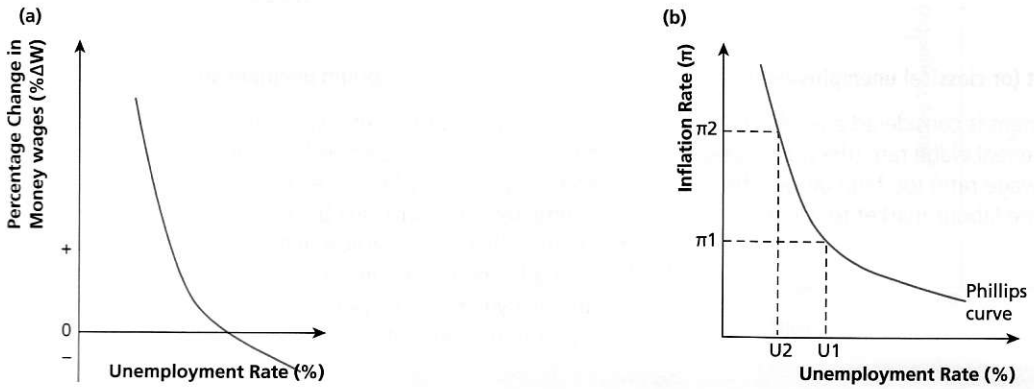
Since the early 1960s and until the mid 1970s economists relied on an empirical result that Alban W. Phillips, a New Zealand economist at the London School of Economics, made in 1958. His work, the Phillips curve, became one of the most famous relationships in macroeconomics. It showed that there was a stable trade-off between the inflation rate and the unemployment rate of an economy.

His original empirical (statistical) work examined UK data on the annual percentage change in money wages and the annual unemployment rate over a period of 96 years (1861–1957). Figure 3.27a shows what he found: that the percentage change in money wages and unemployment were inversely related. If unemployment was low ('tight' labour market) then money wages rose a lot as employers

Figure 3.27 The original Phillips curve



The original Phillips curve continued

HL

were forced to bid up wages to find employees, while if unemployment was high ('slack' labour market) then money wages increased by a little or even decreased (as firms could hire without having to offer more or even by offering less than last year's prevailing money wage).

Moving from wage inflation to price inflation was the next step. Since wages typically form a big proportion of production costs and since firms in practice often set their price as percentage of their unit costs (a mark-up) it seemed sensible to explore how the annual inflation rate and the unemployment rate were related. Figure 3.27b illustrates what was found: inflation and unemployment were inversely related. If unemployment decreased then inflation increased while if inflation decreased unemployment would increase. The negatively sloped curve in Fig. 3.27b is the original Phillips curve.

This stable inverse relationship seemed to suggest that governments could exploit this trade-off between inflation and unemployment. It was as if the Phillips curve presented policymakers with a menu of choices. They could achieve a lower unemployment rate but at the cost of higher inflation or they could lower inflation but at the cost of higher unemployment.

This statistically determined relationship was compatible with the ruling Keynesian theory. Remember that the Keynesian perspective stressed the importance of aggregate demand in the determination of equilibrium income. If AD rose then real output would increase and thus unemployment would decrease. However, this rise in AD would also lead to inflationary pressures. Thus, as shown in Fig. 3.27b, if using expansionary demand-side policies unemployment decreased from U1 to U2 then inflation would increase from $\pi 1$ to $\pi 2$.

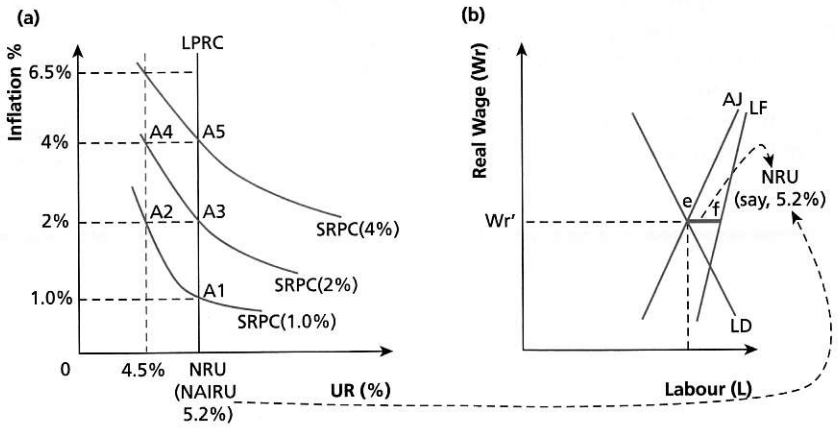
The long-run Phillips curve

HL

This is also known as the expectations-augmented Phillips curve or the Phelps–Friedman critique.

- Since the late 1960s the original Phillips curve relationship suffered both empirical and theoretical setbacks. Inflation and unemployment were both increasing in the 1970s. The term 'stagnation' was coined, implying recession together with rising inflation. The original inverse relationship had collapsed and traditional Keynesian analysis found it hard to explain what was going on.
- But beyond this empirical refutation of the original Phillips curve there came a theoretical attack. Ed Phelps and Milton Friedman (both Nobel laureates) independently claimed that in the long run the Phillips curve was vertical at the equilibrium rate of unemployment (the natural rate) and any trade-off between inflation and unemployment could exist only in the short run. This became known as the Phelps–Friedman critique and the theory as the expectations-augmented Phillips curve.
- If a government tried to lower unemployment below this equilibrium ('natural') rate using expansionary policies it would succeed only *temporarily* and at the cost of permanently higher inflation. The short-run trade-off between inflation and unemployment was only because workers suffer from 'money illusion': they form their expectations about inflation *adaptively* (meaning that they form their expectations about next year's inflation by looking at *past* inflation rates) so they are *slow* to realize that inflation accelerates as a result of the expansionary policies pursued.
- Fig. 3.28b illustrates a labour market in equilibrium with unemployment being at its natural level (distance 'ef' is the NRU). Say that this is at 5.2% and that the economy has been experiencing inflation equal to 1.0% for some time now so that workers again expect 1.0% inflation next year (point A1 in Fig. 3.28a). Assume now that the government adopts expansionary policies to try to lower unemployment to 4.5% *below the equilibrium ('natural') level*. Inflation accelerates now to 2.0%. As a result the real wage rate decreases and firms hire more workers. Unemployment decreases to 4.5% and the economy has moved to point A2. Workers are slow to realize that inflation is actually higher at 2.0% and thus that the real wage is lower. But when their expectations adjust they will demand higher money wages, increasing the real wage for firms back to its original equilibrium level Wr'. Firms will fire workers so unemployment returns to its equilibrium rate at 5.2% (point A3).

Figure 3.28 The long-run Phillips curve (the expectations-augmented Phillips curve or the Phelps–Friedman critique)



The long-run Phillips curve continued

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- If the government insists on trying to decrease unemployment below its natural rate using expansionary demand-side policies it would need to 'engineer' higher and higher inflation rates so that workers would be temporarily fooled and accept job offers. In Fig. 3.28a, inflation would have to accelerate to 4.0% while workers expect it to be at 2.0% for unemployment to drop again and for the economy to move to point A4 before adjusting back to A5.
- The policy implication is clear: governments should *not* try to lower unemployment below its equilibrium (natural) rate using expansionary demand-side policies as it is futile. Any decrease in unemployment will be *temporary* and at the cost of higher inflation. In the long run, when expectations have adjusted and there is no money illusion, there is no trade-off between inflation and unemployment. There is only one rate of unemployment and it is compatible with any rate of inflation as long as this rate of inflation does not accelerate (and thus temporarily lead to 'money illusion'). In the long run the Phillips curve is vertical at the NRU, which is also known for this reason as the **non-accelerating inflation rate of unemployment** (NAIRU).

Distribution of income

The fifth macroeconomic goal

HL

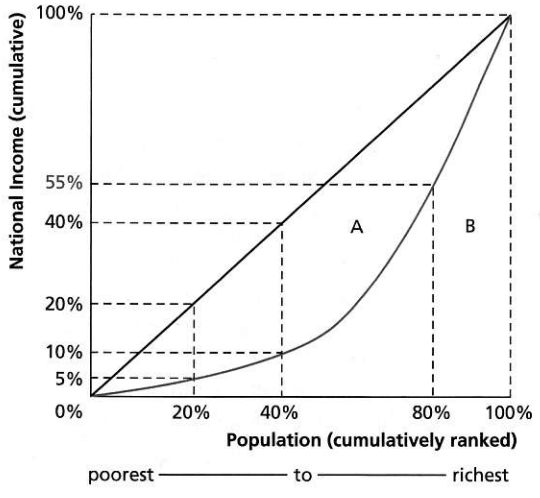
The fifth macroeconomic goal is to ensure that income distribution is equitable. Equitable does not mean equal. It means fair. But fairness is an elusive concept and it means different things to different people.

The Lorenz curve and the Gini coefficient

HL

- Income distribution is illustrated through a **Lorenz curve** and the degree of income inequality is measured through the **Gini coefficient**.
- In Fig. 3.29 population (income recipients) is plotted on the horizontal axis in *cumulative* percentages, i.e. from poorest to richest households. Thus at, say, the 20% point we have the poorest 20% of the population and at the 40% point we have the poorest 40% of the population. On the vertical axis we measure the percentage of income received by each percentage of the population.
- The **Lorenz curve** shows the proportion of national income earned by each income group. For example, the poorest 20% in Fig. 3.29 receives only 5% of national income. Note that 100% of the population will of course receive 100% of national income. Also note that the diagonal is the line of equality (perfectly equal income distribution).
- The further away from the diagonal, the more unequal the size distribution of income while the closer to the diagonal the more equal the distribution of income is. If in a country income distribution worsens it means that the Lorenz curve moves further away from the diagonal.
- The **Gini coefficient** measures the degree of income inequality in a population. It is the ratio of the area between the Lorenz curve and the diagonal over the area of the half square in which the curve lies. Focusing on Fig. 3.29, the Gini coefficient is found by dividing area (A) by area (A + B).

Figure 3.29 The Lorenz curve and the Gini coefficient



- The Gini coefficient can vary from 0 (denoting perfect equality) to 1 (denoting perfect inequality). Typically highly unequal income distributions are distributions with a Gini coefficient between 0.50 and 0.70. Some representative values of this coefficient are: Brazil 0.60, Argentina 0.48, USA 0.40, UK 0.36, Australia 0.35, Sweden 0.25 and Austria 0.23.
- Often what matters is not the level but the direction of change, i.e. whether income distribution is becoming more or less unequal.

Possible benefits and costs of a more equitable income distribution

A more equitable distribution may help accelerate growth and promote human and economic development in many ways:

- The propensity to consume of the poor is higher than that of the rich so redistribution will increase aggregate demand especially for basic goods and services.
- Social tensions are lower and thus governments can more easily undertake important economic reforms which require a high degree of consensus within the population. If people feel that they enjoy the fruits of economic growth then they will be willing to work harder and sacrifice more now in order for them or their children to enjoy more at a later date. They will be willing and able to save more, permitting higher rates of investment and thus growth. Fewer social tensions decrease uncertainty and risks for domestic and foreign investors.
- The very poor will be able to afford access to crucial resources such as education so the amount and quality of productive resources available to a country increases.
- Trust increases among the population so the cost of economic transactions decreases. More economic activity will take place thus accelerating growth.

However, an excessively equal income distribution could lower economic efficiency. It could lower the incentives for hard work and for risk taking. Growth may be undermined.

Direct and indirect taxes

Direct taxes are taxes on income, on profits and on wealth. The burden of a direct tax cannot be shifted onto another entity. Indirect taxes include taxes on goods and on expenditures and they have been discussed earlier. The burden of an indirect tax can be shifted onto a different entity.

Progressive, proportional and regressive taxation

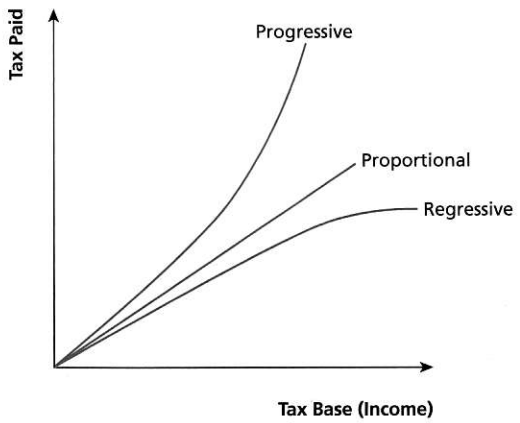
To explain the difference between the above types of taxes it is important to define the marginal and the average tax rate. The **marginal tax rate** is the percentage taken by the government on the last krone or dollar earned. It is the extra tax paid as a result of an extra krone or dollar earned. The **average tax rate** is the ratio of the tax collected over income earned or more generally the ratio of the tax collected over the tax base.

Thus:

- A progressive tax system is one in which higher-income individuals pay *proportionately more* so the average tax rate rises as income rises. In a progressive income tax system the marginal tax rate is greater than the average tax rate (remember that if the average increases it follows that the marginal is greater than the average).
- A proportional tax system is one in which all individuals pay the same proportion of their income independently of the level of their income. In a proportional tax system the average tax rate remains constant as income rises so the marginal tax rate is equal to the average tax rate. A **flat-rate** (proportional) income tax exists in several countries such as Latvia, Russia and Estonia and is considered by many others. It presents many advantages over the progressive income tax systems that most countries have. Disincentives are lower, administrative costs are lower, it is simple and thus more transparent and it is potentially even fairer as loopholes do not exist which usually higher-income households take advantage of.
- A regressive tax system is one in which poorer individuals pay a greater proportion of their income. In a regressive tax system the average tax rate decreases as income rises so the marginal tax rate is less than the average tax rate. Indirect taxes are proportional with respect to expenditure but regressive with respect to income. This is why indirect taxation on food and basic goods is lower or zero.

In Fig. 3.30 the horizontal axis measures the tax base (say, income) and the vertical the amount of tax paid. A proportional tax system is illustrated by any straight line through the origin. In a progressive tax system the slope of the line is increasing while in a regressive tax system the slope of the line is decreasing.

Figure 3.30 Progressive, proportional and regressive taxation



How can income be redistributed more equitably?

Short-run solutions

Usually governments resort to a mixture of progressive income taxes coupled with a system of transfer payments. Transfer payments include pensions, unemployment benefits, disability benefits, subsidies, etc. By taxing higher income households more heavily than lower income households and spending more on transfer payments, national income may be redistributed in an attempt to satisfy the equity goal. Social health insurance is usually part of a package that aims at effectively increasing the income of the lower income strata.

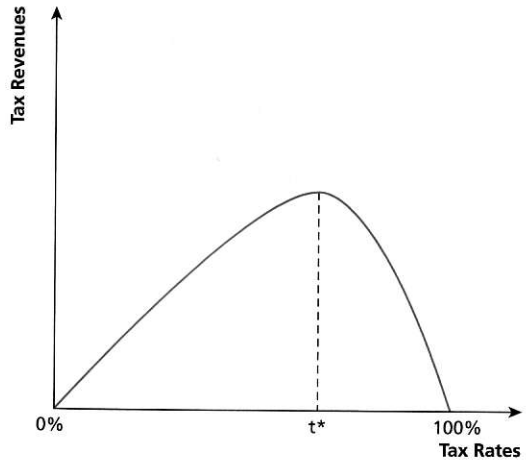
Long-run solutions

In the long run, the most effective route to a more equitable income distribution is by improving the quality and access to education and health services for the most deprived income groups. Job creation policies are also of utmost significance. Lastly, lower corruption and a fair judicial system are also important.

The Laffer curve and tax cuts HL

- In the early 1980s an American economist, Arthur Laffer, became popularly known because of a diagram that he supposedly sketched on a napkin of a Washington DC restaurant while having dinner. This diagram showed the obvious: that as tax rates rise, tax revenues also increase but only up to a point, beyond which tax revenues collected will start to decline.
- Focusing on Fig. 3.31, with a 0% tax rate the government will collect zero tax revenues so the Laffer curve starts from the origin. As the tax rate increases, tax revenues will also increase but only up to a certain point. There is a tax rate (say, t* in Fig. 3.31) such that if the tax rate increases even more then tax revenues collected will start to decrease. This decrease in tax revenues is because higher and higher tax rates create disincentives for people to work and to invest. At the limit, a 100% tax rate will lead to zero tax revenues for the government as there is no reward to individuals for any productive effort.
- The policy implication is that in countries with high tax rates it may very well be the case that by decreasing tax rates the government will collect more tax revenues as a result of the improved incentive to work and for firms to invest.
- *(optional)* Whether a decrease in tax rates will or will not induce more labour supply depends on the substitution and income effects. If the tax rate decreases then leisure becomes more expensive so individuals will tend to work more. On the other hand, if the tax rate decreases then disposable income increases and since leisure is considered a normal 'good' people will tend to work less. It follows that the effect of a tax cut on labour supply depends on which one of the two effects dominates.

Figure 3.31 The Laffer curve



Tip

Try to make sure that the maximum of the Laffer curve you draw is not right above the mid-point 50% tax rate as this could be misleading. We do not know the tax rate after which the disincentives created are so strong that tax revenues start to decrease.

Inflationary and deflationary gaps: an alternative presentation

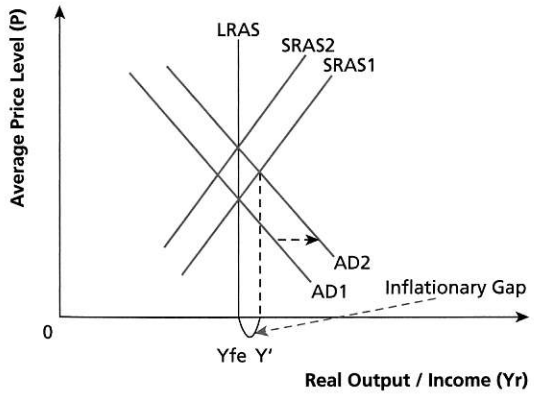
The inflationary gap

HL

Assume an economy in long-run equilibrium. It is operating at the full employment level of real output which corresponds to the natural rate of unemployment. Remember that this implies that the labour market is in equilibrium, i.e. that the real wage rate is such that it equates the number of workers firms are willing to hire with the number of workers that are willing to accept a job offer. It is also assumed (as the economy is in long-run equilibrium) that expectations have adjusted, i.e. that the anticipated rate of inflation is equal to the actual rate of inflation.

- An increase in AD from AD1 to AD2 in Fig. 3.32 will fool workers who will accept jobs as inflation will accelerate, exceeding the anticipated rate, and thus there will be a *temporary increase in real output to Y'* this temporary difference between Y' and Yfe is known as the **inflationary gap**. As money wages are slow to respond, the real wage rate decreases so firms hire more workers to produce more output and workers accept as they do not realize that inflation has accelerated. The increased output level Y' corresponds to the temporary decrease of unemployment below the NRU that money illusion creates.

Figure 3.32 The inflationary gap: an alternative presentation



- When expectations of inflation adjust and money wages rise, the real wage increases back to its original level. Production costs for firms increase and so the short-run aggregate supply shifts left from SRAS1 to SRAS2. Output will return to the full employment level and unemployment back to its natural level.

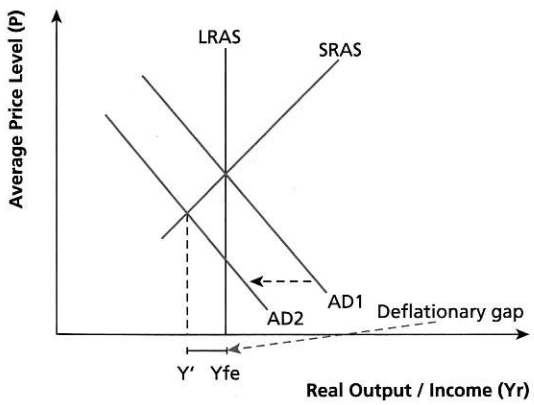
The deflationary gap

HL

Assume an economy in long-run equilibrium operating at the full employment level of output Yfe.

- If now AD in Fig. 3.33 drops from AD1 to AD2 then the equilibrium level of output will decrease to Y'. The difference (Yfe – Y') is known as the deflationary gap.
- This diagram can also be used to show that the equilibrium level of output and the full employment level of output do not necessarily coincide.

Figure 3.33 The deflationary gap: an alternative presentation



Schools of economic thought: a brief outline

The Classical School

HL

- Given that scarcity is *the* fundamental economic problem, an economy will surely always fully utilize its scarce resources. An economy will thus produce whatever its scarce resources and its technology permit it to produce.
- 'Supply creates its own demand': this is known as Say's law (a French economist) and it means that production creates income and this income will necessarily be used to purchase whatever was produced.
- Overproduction was ruled out, as overproduction implies excess supply which in competitive markets leads to lower prices and thus market clearing.
- Prolonged unemployment also was ruled out as it implies excess supply in labour markets. Excess supply leads to lower wages forcing the labour market to 'clear' (demand for labour to equal supply of labour).
- Flexibility of prices and wages guaranteed that the product and labour markets would 'clear' (that demand would equal supply).
- The economy would thus tend to operate at or near the full employment equilibrium. Any deviation from full employment would be temporary.
- It follows that there would be no need for the government to intervene. This is known as *laissez faire–laissez passer*.

The Keynesian School

HL

- Demand for output creates the supply of output. It is 'effective' demand that determines equilibrium output and income. An economy's total output depends on the level of 'effective' demand, later referred to as **aggregate demand**.
- There is thus no guarantee that an economy will find itself (will be in equilibrium) at the 'full employment' level of output. Equilibrium may occur below full employment (a deflationary or recessionary gap may exist).
- If the private sector (which includes households and firms) for whatever reason (perhaps just psychological) is unable to express sufficient demand for goods and services in an economy to lead to full employment of resources then the government could raise *its own* spending on goods and services (as well as lower taxation) to increase the level of total demand to the level at which all resources are fully employed. This is known as expansionary (or reflationary) fiscal policy.
- The inherent **instability** of a market (capitalist) economy led to the observed short-run fluctuations of output around its long-run trend. This instability was a result of consumption and investment being unstable as well as the existence of the multiplier effect and the interaction of the multiplier and the accelerator.
- Instability (the business or trade cycle) required government intervention. Counter-cyclical demand-side stabilization policies were introduced which include fiscal and monetary policies.
- Fiscal policy was considered most effective in times of deep recession.

The Monetarists

HL

Two major developments in the 1970s were responsible for the change in direction in Economics: the great inflation of the 1970s and the deconstruction of the Keynesian interventionist approach by Milton Friedman and the Chicago School (or, more generally, by the Monetarists). Friedman's pro-market ideas began to dominate economic theory and with M. Thatcher in 1979 in the UK and R. Reagan in 1980 in the US they also started to dominate policymaking.

In 1973, the first oil crisis erupted, leading to the quadrupling of the price of a barrel of oil in one day. The effect was 'stagflation', the coexistence of rising unemployment and rising inflation. This was a blow to Keynesian economics as the two were thought to be inversely related through the Phillips curve.

- Monetarists are considered the intellectual heirs of the Classical school of thought.
- Friedman and the Monetarist school tried to show that a market economy is inherently stable and thus there is no need for an active role for the government. Consumption expenditures were not thought to depend on the current level of income and the role of expectations on the business investment spending decision was diminished. Thus private spending was more stable.
- Monetarists first pointed out the possibility of 'crowding-out', thus weakening deficit spending as a tool to reflate a flagging economy.
- Inflation for Friedman was a 'purely monetary phenomenon' with 'too much money chasing after too few goods'. They even considered monetary policy as potentially destabilizing and preferred to rely on pro-market supply-side policies.

The Monetarists continued

HL

- They discredited the Phillips curve inflation–unemployment trade-off, trying to show that in the long run the Phillips curve is vertical at the natural rate of unemployment, a term that Friedman himself coined.
- Extreme Monetarists considered that anything the government can do the market can do better. Government failure was even more likely than market failure.
- Several ideas related to Monetarism are the basic ingredients of the so-called **Washington Consensus** which pushed stabilization, liberalization and structural adjustment onto developing nations with very debatable results. The East Asian Crisis of 1997–98 may have marked a turnaround in economic thinking. Rising inequalities between and within countries suggest that managing national economies as well as the global economy may be necessary after all. The question of course that still remains is: what kind of managing?

IB Questions: Section 3

SL Long Essays

1a Explain the following types of unemployment (a) frictional (b) structural (c) cyclical/demand-deficient (d) real wage/classical. (10 marks)
1b Evaluate the effectiveness of the different measures available to governments to deal with the types of unemployment in 1a. (15 marks)

2a Identify the components of aggregate demand and briefly explain two factors that might determine each of these components. (10 marks)
2b Evaluate the likely impact on an economy of a substantial rise in the level of interest rates. (15 marks)

3a Explain the costs of inflation and deflation. (10 marks)
3b Evaluate demand-side policies as a means of reducing inflation. (15 marks)

4a The world economy may be subjected to economic shocks, such as a sudden increase in oil prices and terrorist attacks. With the help of an aggregate demand/aggregate supply diagram explain the possible economic effects of such shocks. (10 marks)
4b Evaluate the main economic policies that governments might use to minimize these effects. (15 marks)

5a Explain the various costs of unemployment. (10 marks)
5b Evaluate the alternative policies aimed at reducing unemployment. (15 marks)

6a Briefly explain the main policy objectives of governments. (10 marks)
6b Discuss the ways fiscal policy might be used to achieve these objectives. (15 marks)

7a With the help of examples explain the purpose of the various supply-side policies. (10 marks)
7b Evaluate the success of these measures in countries where they have been implemented. (15 marks)

8a What macroeconomic policies should a government adopt if it wished to reduce aggregate demand in an economy? (10 marks)
8b Should a government attempt to manage the level of aggregate demand to influence unemployment and inflation rates? (15 marks)

HL Long Essays

1a Explain why a government might find it difficult to maintain a low rate of inflation as the economy approaches full employment. (10 marks)
1b Evaluate the proposition that the priority in economic management should be the maintenance of low unemployment. (15 marks)

2a Explain the relationship between the Lorenz curve and the Gini coefficient. (10 marks)
2b Evaluate the effectiveness of the various methods that governments may use to redistribute income. (15 marks)

3a Explain how interest rates can be used to bring about an increase in economic activity. (10 marks)
3b Discuss the strengths and weaknesses of demand-side policies. (15 marks)

4a What are the possible causes of unemployment? (10 marks)
4b Evaluate possible policies that may be used to lower the natural rate of unemployment. (15 marks)

5a What are the macroeconomic objectives of government? (10 marks)
5b Assume the government chooses to pursue one of these objectives. Evaluate the possible consequences for the other objectives. (15 marks)

6a With the help of diagrams distinguish between demand-pull and cost-push inflation. (10 marks)
6b Explain which policies would be appropriate to deal with these two types of inflation. (15 marks)

7a Explain the difference between demand-side and supply-side economic policies. (10 marks)
7b 'Higher economic growth can only be achieved through the implementation of supply-side policies.' Discuss. (15 marks)

8a Explain the economic problems that high unemployment may cause for a country. (10 marks)
8b Discuss the reasons why governments find the goal of full employment difficult to achieve. (15 marks)

Gross domestic product continued

in her money wage but prices of goods and services have also increased by 5% then her real wage has remained constant as she can buy on average exactly the same as before.

Measurement of GDP

There are three conceptually equivalent ways of arriving at the GDP figure for a country:

- the **output method**, where we add all domestically produced final goods and services;
- the **expenditure method**, where we add all expenditures made on domestically produced final goods and services;
- the **income method**, where we add all incomes generated in the domestic production process.

Conceptually the three methods are equivalent and, with some minor adjustments, the figures arrived at through each method are equal. The value of all output produced did not become thin air but ended up in 'pockets' in the form of wages, profits, interest or rent, i.e. as income to the factors of production involved. This income is then spent on this output. Each method is useful because of the breakdown it permits. The output method, for example, will give us the share of total output accounted for by each of the three sectors of an economy as well as the output of different industries. The expenditure method permits us to monitor the level of investment spending through time or the proportion of government expenditures in total economic activity. The income method provides information about the proportion of total income earned by labour in contrast to owners of capital.

Two minor accounting complications

Domestic output or income vs. national output or income

- Gross domestic product refers to output produced within the boundaries of a country independently of the nationality of the factors of production involved. Gross national product refers to the value of final output produced by domestically owned factors of production independently of where production actually takes place. For example, UK GNP figures will include the income earned by British multinational corporations abroad but will not include the income earned by foreign multinational corporations in the UK.
- To convert GDP to GNP:

  GNP = GDP + Net Factor Income from Abroad

where Net Factor Income from Abroad = (income earned abroad – income paid abroad)

Gross vs. net

- Some portion of investment spending is aimed at replacing obsolete capital equipment (known as depreciation, or capital consumption). The stock of capital of an economy actually increases only by the difference between (gross) investment spending and depreciation.

  Net Investment = Gross Investment – Capital Consumption

and

NNP = GNP – Depreciation

Problems in GDP measurement

- GDP measurement is fraught with problems.
- Official GDP figures in many countries understate the true level of economic activity because of the existence of a large parallel (or black, shadow) economy. Individuals in many countries underreport their incomes *to avoid taxation*. A heavy tax burden, especially high marginal (i.e. top) tax rates may be responsible for this tax-evading behaviour. Some productive activity may also be illegal per se (drugs, prostitution, etc.).
- Furthermore, 'do it yourself' activities are not included. If Joey repairs his car himself instead of taking it to the mechanic the value of the service he produces will not show up in official statistics.
- This becomes an important issue in the case of many developing countries because **subsistence farming** (defined as farming to feed one's family) is not included in GDP measurements, thus tending to underestimate per capita income levels.
- Lastly, data collection in many countries is poor and unreliable.

IB Questions: Section 3 continued

HL Short Essays

1 'Macroeconomic equilibrium does not necessarily occur at full employment.' Explain this statement using the concepts of inflationary and deflationary gaps.

2 Explain how a progressive tax system may be used to redistribute income.

3 Explain how an increase in government spending can lead to crowding out.

4 Explain the multiplier effect of an increase in government spending.

5 Explain how the multiplier and the accelerator might be linked to each other.

6 Explain how double counting can occur in calculating national income and how measuring value added can overcome this problem.

7 Keynesians and Monetarists have different views of the likely shape of a country's aggregate supply curve. Using diagrams show how these shapes can affect macroeconomic policy.

8 What are the main problems involved in measuring inflation?

9 Use an AD/AS diagram to analyse the likely effects of an increase in interest rates.

10 Use an AD/AS diagram to analyse the likely effects of an increase in income tax.

11 Examine two reasons why a government might wish to control increases in its expenditures.

12 Explain why the goal of full employment might conflict with the goal of economic growth.

13 What is demand-pull inflation and what can governments do about it?

14 Use an AD/AS diagram to explain how cost-push inflation may occur and outline two ways in which it might be controlled.

15 What are the likely consequences of deflation?

16 Use a Phillips curve to explain the concept of the natural rate of unemployment.

17 Why might knowledge of the shape of a country's Phillips curve be useful to policymakers?

18 Explain two policies that a government might use to deal with the problem of demand-deficient (cyclical) unemployment.

19 What is structural unemployment and what measures might governments take to combat it?