20 MACROECONOMIC OBJECTIVES: LOW AND STABLE RATE OF INFLATION

REAL-WORLD ISSUE:

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

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

- Explain the concepts of inflation, disinflation and deflation
- Explain the costs of inflation
- Explain how inflation is measured
- Explain the problems in measuring inflation
- Explain and illustrate the causes of inflation
- Evaluate measures that may be taken to reduce inflation
- Distinguish between "good" deflation and "bad" deflation
- Explain the costs of deflation
- HL Calculate a weighted price index.
- HL Explain and illustrate the short-run Phillips curve
- HL Explain and illustrate the long-run Phillips curve
- HL Explain the concept of the natural rate of unemployment
- HL Evaluate the extent to which there might be a trade-off between inflation and unemployment.

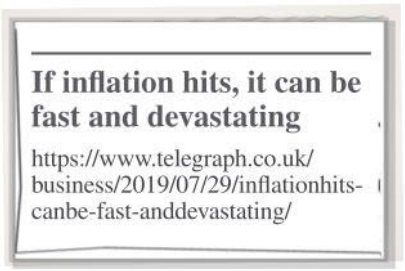
What is inflation?

In Chapter 13 you learned that one of a government's macroeconomic goals is price stability. Another way to express this is to say that governments desire a low and stable rate of inflation. *Inflation* is defined as a persistent increase in the average price level in the

economy, usually measured through the calculation of a consumer price index (CPI). The word "persistent" is of great importance in your understanding of the concept. A single increase in prices is not called inflation. When inflation occurs there is a sustained increase in the price level. It is also very important not to confuse inflation with an increase in the price of a particular good or service.

What are the costs of high inflation?

The reason that governments wish to keep inflation at a low level is because there are a significant number of negative consequences associated with higher levels of inflation.


If inflation hits, it can be fast and devastating

https://www.telegraph.co.uk/business/2019/07/29/inflationhits-canbe-fast-anddevastating/

- *Loss of purchasing power*: If the rate of inflation is 2%, then this means that the average price of all goods and services in the economy has risen by 2%. If your income remains constant, or rises by less than 2%, then you will not be able to buy as many goods and services as you could before the increase in the average price level. We say that there is a fall in real income, which means that there is a decrease in the purchasing power of income. If income is linked to the inflation rate, so that you automatically get a 2% "cost-of-living" increase, then you will not face a fall in your real income. This is the case for many jobs, particularly where there are strong unions. However, many people have jobs that do not offer the security of inflation-linked incomes. This may be because they are on fixed incomes or because they have weak bargaining power or because they are self-employed or on temporary contracts with no security. Thus, inflation reduces the purchasing power of their incomes, and will reduce their living standards. It is important to realize that expectations about inflation are important. Even when people's incomes are linked to inflation, they can be negatively affected if the actual rate of inflation turns out to be higher than the expected rate. For example, if the expected rate of inflation is 1.5% and wages are therefore increased by 1.5%, then workers will lose purchasing power if inflation turns out to be higher than expected at 2.5%.
- *Effect on saving*: If you save $1,000 in the bank at 4% annual interest, then in one year's time you will have $1,040. If the inflation rate is 6% then the real rate of interest (the interest rate adjusted for inflation) will be negative and your savings will not be able to buy as much as they could have in the previous year. You would have been better off spending the money rather than saving it, because it will have lost some of its purchasing power. Therefore, we say that inflation discourages saving.
- *Effect on economic growth*: If people do want to save money, rather than spend on consumption, then they may choose to buy fixed assets, such as houses or art. This means that there are fewer savings available in the economy for investment purposes and this has negative implications for economic growth.

- *Effect on interest rates*: Commercial banks make their money from charging interest to people who borrow money from them. If there is a high rate of inflation then banks raise their nominal interest rates in order to keep the real rate that they earn positive.
- *Effect on international competitiveness*: If a country has a higher rate of inflation than that of its trading partners then this will make its exports less competitive and will make imports from lower-inflation trading partners more attractive. This may lead to lower export revenues and greater expenditure on imports, thus worsening the trade balance. It might lead to unemployment in export industries and in industries that compete with imports.
- *Uncertainty*: Not only might there be reduced investment due to a fall in the availability of savings and higher nominal interest rates, but firms may be discouraged from investing due to the uncertainty associated with inflation. Again, this has negative implications for economic growth.
- *Labour unrest*: This may occur if workers do not feel that their wages and salaries are keeping up with inflation. It may lead to disputes between unions and management.

So who really wins and who loses when there is significant, sustained inflation? This is shown in Table 20.1.

Winners	Losers
People with index-linked incomes – because their incomes will increase in line with inflation, they do not really suffer from a fall in purchasing power, although there may be a time-lag involved.	People on fixed incomes/wages – such as pensioners, people relying on state benefits or workers on long-term fixed-wage contracts. They will suffer a significant fall in purchasing power over time.
People with high wage-bargaining power – such as workers in high-demand industries, and strong trade unions. They will be able to negotiate wage increases that cover the inflation rate, or even outstrip it.	People with low-wage-bargaining power – such as workers in low-demand industries and workers who do not possess high skill levels. They may not be able to negotiate wage increases that cover the inflation rate.
Borrowers – because the real interest rate is lowered by inflation, the amount paid back by the borrower will be worth less than the amount of the loan that was taken out.	Savers/lenders – because the real interest rate is lowered by inflation, the amount received by the saver will be worth less. If the inflation rate is greater than the nominal interest rate, the saver will actually lose money.
People who are "asset rich" – in times of high inflation, there is often a "flight to assets" as people buy assets, such as houses or precious metals, as opposed to saving. This leads to increases in the price of assets, which benefits people who already own assets.	People who are "cash rich" – in times of high inflation, people who have high amounts of cash will find that the value of their cash is significantly reduced over time. This will be made worse if the cash cannot be saved at a positive real interest rate.
Importers – imports will be relatively more attractive as the prices of domestic products increase, and so demand for imports will grow.	Exporters – exports will be relatively less attractive abroad as the higher prices make them compare less favourably with foreign goods and services.

▲ **Table 20.1** The winners and losers of inflation

Economics in action ATL Thinking, Communication and Research

Find an example of a country that is experiencing high inflation and identify the costs being experienced by the various stakeholders.

How is inflation measured?

It is necessary to have some kind of an accurate measure of the increase in the price level. The most widely used statistic to measure inflation is known as the consumer price index (CPI). In some countries this is referred to as the retail price index (RPI).

Not all prices change by the same amount over a given period of time – for example, the price of chocolate might increase by 5% in a year, while the price of petrol might increase by 10%. Neither of these is an appropriate measure of the change in the average price level. Statisticians in different countries around the world have slightly different ways of measuring the rate of inflation, but the central idea is the same. Simply put, they choose what is known as a representative "basket" of consumer goods and services and measure how the price of this basket changes over time. When the price of the basket increases then this means that the average price level has risen.

What is meant by a "representative basket of consumer goods and services"? It would be impossible to devise a measure of inflation that includes all goods and services bought by consumers. In each country the agency in charge of the compilation of economic data creates a list of the typical goods and services consumed by the average household. These items are grouped into a number of different categories. The prices of these items are measured each month to calculate the change in the price of the "basket". The change in the price of the basket is reflected in the measure called the consumer price index. It is important to point out that some of the goods and services consumed are far more important than others, because they take up a larger share of consumers' income. Thus, the categories are given a weight in the index to reflect their importance in the average consumer's income. The weights for the different categories of the UK CPI along with some examples of the items that are included are shown in Table 20.2.

Category	CPI Weight (%)
Food and non-alcoholic beverages (breads and cereals; meat; oils and fats; milk, cheese and eggs; fruit; vegetables; sugar, jam, honey, chocolate and confectionary sugar; coffee, tea and cocoa; mineral waters, soft drinks and juices)	8.0
Alcohol and tobacco (spirits; wine; beer; cigarettes and cigars)	3.2
Clothing and footwear (women's, men's and children's clothing; accessories; cleaning and repair of clothing; shoes and boots)	5.7
Housing and household goods (rents; maintenance; water supply; electricity, gas and other fuels)	29.8
Furniture and household goods (furniture and furnishings; carpets and other floor coverings; household textiles; household appliances; glassware and tableware; goods and services for household maintenance)	5.2
Health (medical products, appliances and equipment; out-patient services and hospital services)	2.2
Transport (new and second-hand cars; motorcycles and bicycles; spare parts and accessories; fuels and lubricants; vehicle maintenance and repairs; passenger transport by railway, road and air)	12.4
Communication (postal services; telephone and telefax equipment; mobile phone charges; Internet subscriptions)	2.0
Recreation and culture (audio-visual equipment and related products; data-processing equipment; recording media; repair of audio-visual equipment and related products; major durables for recreation and culture; games, toys and hobbies; equipment for sport and outdoor recreation; gardens, plants and flowers; pets, related products and services; recreational and cultural services; books, newspapers, magazines and stationery; package holidays)	12.5
Education (private school fees, evening classes and university tuition fees)	1.8
Restaurants and hotels (restaurants, take-aways and food delivery; bar charges; catering; canteens)	9.8
Miscellaneous goods and services (jewellery, clocks and watches; social protection; insurance; flower delivery; self-storage fees; funeral charges)	7.4

Source: Consumer price inflation basket of goods and services: 2019, Philip Gooding, Office for National Statistics

▲ **Table 20.2** UK CPI: categories and their weights

From the data we can conclude that spending on food and non-alcoholic beverages makes up 8.0% of the spending of the "typical" or average household. Thus, changes in the prices of the food and beverage products in the basket will be given a weight of 8.0% in the calculation of the index. The components and the weighting of the basket are determined by surveys of household spending habits and will change according to changes in consumption habits (see Table 20.3 for some examples of recent changes to the UK "basket"). The price of the basket is measured regularly by collecting prices from shopping outlets throughout the country and a national average price is determined. This is the measure of the national consumer price index and changes in the index represent the "headline" inflation rate. This is the rate of inflation most commonly used and the one that we are most familiar with for judging the overall state of the country's economy.

The UK Consumer Price Index

Currently, around 180,000 separate price quotations are used every month covering 650 representative consumer goods and services for which prices are collected in around 150 areas in the UK. The categories and their weightings, along with the representative item, are revised each year to take into account changing consumption patterns by households. To give one example, there has been an increasing tendency for consumers to spend more on the category of Housing and Household goods and so the weight of this component has risen a great deal. In the last nine years, it has increased from 12.9 to 29.8! Table 20.3 gives examples of changes to the basket in 2019.

CPI Sub-Category	Change	Comment
Bread and cereals	Added — Popcorn	This item has been added due to increased spending. Its inclusion widens the range of items in this part of the basket and, in particular, improves coverage of snack items.
Coffee, tea and cocoa	Added — Flavoured tea	Added to reflect the increased expenditure and shelf-space devoted to flavoured teas more generally.
Glassware, tableware and household utensils	Added — Bakeware — baking tray or roasting tin	Added to expand the range of kitchen equipment. It reflects a large increase in expenditure over recent years and the growing popularity in baking at home.
Non-durable household goods	Added — Washing liquid/gel	Washing liquid/gel now attracts higher expenditure than powder, reflected in the different varieties available to consumers and the increased shelf-space in stores.
Equipment for the reception and reproduction of sound and pictures	Removed — Hi-fi	Removed due to low coverage and declining consumer spend. This will be replaced by a portable speaker reflecting current trends.
Pets, related products and services	Removed — Complete dry dog food	Replaced by dog treats which attract higher consumer spending and are part of the growing popularity of pet treats more generally.
Miscellaneous printed matter, stationery and drawing materials	Removed — Envelopes	Removed from an over-covered area of the basket. Envelopes are a low weighted item as a result of the increasing use of new technology for communication.

Source: Consumer price inflation basket of goods and services: 2019, Philip Gooding, Office for National Statistics

▲ **Table 20.3** Changes to the CPI basket of goods in the UK in 2019

Economics in action

ATL Thinking, Communication and Research

Research the most recent changes to the CPI basket of goods in the UK. If you were researching cultural change in the UK, what could the changes to the CPI basket over the years tell you?

Theory of knowledge

In carrying out research or investigations, physical and social scientists have to deliberately choose to include or analyse certain data from a wide range of data, and their choices inevitably affect the outcomes. For example, when economists propose that one representative item be replaced with another representative item in the CPI basket they will use data concerning household spending, but there will necessarily be some judgment involved. To what extent do you think that this could affect the reliability of the statistic?

If the CPI basket is used to generate the inflation rate on which wage increases are based, how will this truly reflect the spending patterns of different groups of people?

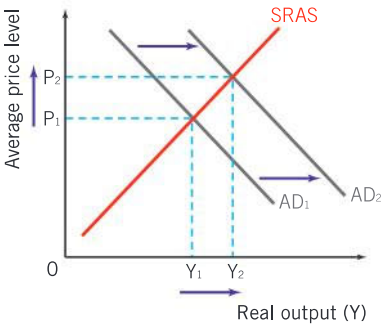
What are the issues involved in the measurement of inflation?

- Measuring inflation using the consumer price index has one main limitation. The basket used in any country represents the purchasing habits of a "typical" household, but this will not be applicable to all people. The purchasing habits of different people will clearly vary greatly. For example, the "basket" of a family with children will be very different from that of an elderly couple or a single person with no children. There may be variations in regional rates of inflation within a country. Although regional figures are published, the national figure is the more widely-used measure and this may not be an accurate reflection for a particular area. If the national average is used as the basis for wage negotiations or pension changes then these might not accurately reflect the price changes for a particular group. This will be harmful if the group has a higher cost of living than suggested by the national average and beneficial for those whose spending costs are less than the average.
- There may be errors in the collection of data that limit the accuracy of the final results. Because it would be utterly impossible to collect the prices of all items bought by all households in all possible locations, it is necessary to take sample items in a sample of selected cities and a sample of selected outlets. The layers of sampling are likely to lead to some degree of inaccuracy. The larger the sample, the more accurate the results will be, but this is time-consuming and very costly.
- As Table 20.3 shows, statisticians try to take into account changes in consumption habits by making changes to the basket. Items are removed or added to be more representative of the typical household's demand. However, this takes a good deal of time. Moreover, if the items in the basket are changed, then this limits the ability of analysts to make comparisons from one time period to another. This is complicated by the fact that the quality of goods changes over time. For example, when a computer company upgrades a computer to include more built-in memory, then the quality of the product improves. The price of the computer may rise to reflect the improvement. If the computer is in the typical basket, then this will feed into a higher rate of inflation, yet the product is not really the same product.
- Countries measure their rate of inflation in different ways and include different components. This can make it problematic to make international comparisons.
- Prices may change for a variety of reasons that are not sustained. For example, seasonal variations in the prices of food and volatile oil prices may lead to unusual movements in the inflation rate and can be misleading. Statisticians make some effort to reduce such

distorting effects by identifying a "core" rate of inflation that uses the information of the consumer price index but excludes food and energy prices.

- The CPI (or RPI) measures changes in consumer prices and is a very important indicator of an economy's health. However, there are other price changes which are important in judging the economic health and prospects of a country. For this reason economists also measure changes in the prices of the factors of production needed by the economy's firms. One way of doing this is through a commodity price index, which tracks changes in raw material prices. There are different types of commodity price indices. One measures changes in a weighted basket of a large number of different traded commodities. Others track a particular category of commodity, such as food commodities (eg sugar or coffee) or industrial commodities, which is further divided into metals (eg tin, copper) and non-food agricultural commodities (eg wool). Upward movements in commodity prices are signals of cost-push pressures and may be leading indicators (indicators which predict that a change will occur in the future) of inflation.

  Another index used is a *producer price index*, which tracks the price of goods as they leave the factories and before distributors, wholesalers or retailers (stores) add their profit margins.



▲ **Figure 20.1** Demand-pull inflation

What are the causes of inflation?

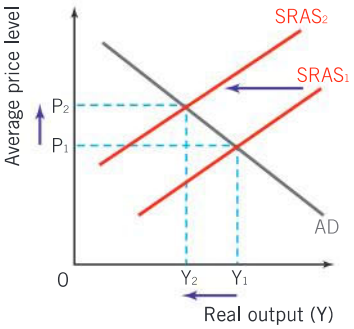
We can divide the causes of inflation into two main types: demand-pull inflation and cost-push inflation.

How does demand-pull inflation occur?

As the name suggests, demand-pull inflation occurs as a result of increasing aggregate demand in the economy. This can be seen in Figure 20.1. The increase in aggregate demand from AD_1 to AD_2 "pulls up" the average price level from P_1 to P_2.

The reasons for the increase in aggregate demand could be due to changes in any of the components of aggregate demand. For example, there could be a high level of consumer confidence, causing consumers to increase consumption; or there could be a high level of demand for a country's exports due to rising foreign incomes; or the increase might be due to an increase in government spending.

As noted in Chapter 2, there is a group of economists known as monetarists. Such economists believe that inflation is always caused by excessive growth of the money supply by the central bank.



▲ **Figure 20.2** Cost-push inflation

How does cost-push inflation occur?

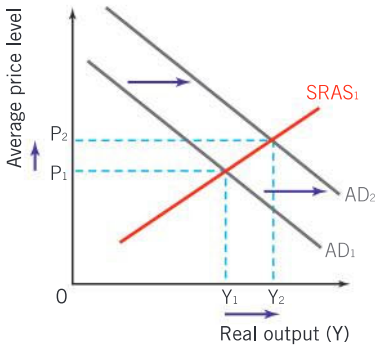
Cost-push inflation occurs as a result of an increase in the costs of production. Cost-push inflation is illustrated in Figure 20.2. As you

know, an increase in costs results in a fall in short-run aggregate supply from $SRAS_1$ to $SRAS_2$. This results in an increase in the average price level and a fall in the level of real output.

The causes of increases in costs are discussed in Chapter 16. Increases in the price level due to increases in the costs of labour may be referred to as *wage-push inflation*. Changes in the costs of domestic raw materials will increase firms' costs of production, creating cost-push pressures. Increases in the costs of imported capital, components or raw materials also increase costs of production to firms, causing *import-push inflation*. It is worth noting that a fall in the value of a country's currency can cause import-push inflation. This is because a lower exchange rate makes imported capital, components and raw materials more expensive, thereby increasing the costs of imported factors of production to the country's firms.

What happens if we have demand-pull and cost-push inflation together?

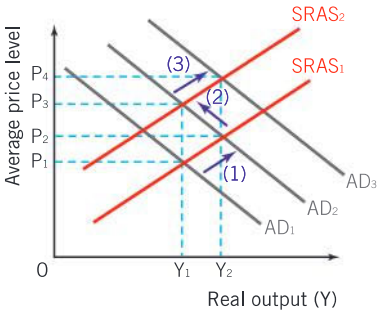
Regardless of the source of the increase in the average price level, one of the problems associated with inflation is its tendency to perpetuate itself. For example, consider what happens if there is an increase in aggregate demand due to increased wealth in the economy (perhaps due to rising house prices). Let's look at the effects in the short run as shown in Figure 20.3.



▲ **Figure 20.3** Demand-pull inflation

If we assume that the economy is near full employment then the increase in aggregate demand results in an increase in demand-pull inflation as the price level rises from P_1 to P_2, as shown in movement (1) in Figure 20.4.

The diagram shows what may happen next. The higher price level means that costs of production rise. Also, because the price level increases, workers will negotiate for higher wages and this further increases the costs of production. Thus, there will be a shift in the short-run aggregate supply curve from $SRAS_1$ to $SRAS_2$ as a result of cost-push pressures. This is the movement (2) in the diagram. The cycle will not necessarily stop there. Higher wages may give households the illusion that they have more spending power and this might encourage further increases in consumption, shown as another increase in aggregate demand to AD_3 and the movement (3) in the diagram. This may be referred to as an inflationary spiral.



▲ **Figure 20.4** An inflationary spiral

How might a government attempt to reduce inflation?

Inflation is a short-run problem and so supply-side policies to increase the long-run supply are not really suitable to cure it. Although successful supply-side policies will reduce the average price level over time, the time lag is too great for them to be an effective means of reducing inflation in the short-run.

Exercise 20.1

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1. Using an AD/SRAS diagram, explain how contractionary policies could be used to reduce demand-pull inflation.
2. a) Using an AD/SRAS diagram, explain how contractionary policies could be used to reduce cost-push inflation.
   b) With reference to your diagram in 2a, explain why contractionary policies might be unpopular in an economy.

For demand-pull inflation, caused by increased aggregate demand, the solution is obvious; the government and the central bank should use contractionary fiscal and monetary policy to reduce aggregate demand. For cost-push inflation, the solution is not so obvious. Cost-push inflation is caused by rising costs of production, but policy-makers have very little control over costs of production. Therefore, as counter-intuitive as it might seem, demand-side policies are needed to fight inflation, regardless of whether this is demand-pull inflation or cost-push inflation.

There are problems associated with such contractionary policies. First of all, from a political standpoint, such policies are highly unpopular. Looking first at fiscal policy, a voting population is unlikely to be happy to accept higher taxes as it reduces disposable income and the level of consumption. A reduction in government spending will inevitably impact upon a variety of groups in the economy and this may result in less support for the government. It takes a long time for a government to bring about a change in its fiscal policy. Budgets are developed over a long period and changes need to go through lengthy legislative procedures, where there may be great opposition to any budget cuts. Therefore, there would be a long time lag involved in using contractionary fiscal policy to bring about a decrease in aggregate demand.

As far as monetary policy is concerned, higher interest rates will also harm some people in the economy, most obviously anybody who has taken a loan or mortgage. Higher interest rates mean higher loan and mortgage repayments and will therefore be unpopular. Higher interest rates may also result in less borrowing by firms, and therefore less investment, which could harm the economy in the longer run.

Turkey's Erdogan reportedly fired his central bank chief for refusing to slash interest rates

https://markets.businessinsider.com/news/stocks/turkey-erdogan-fires-central-bank-chief-for-not-cutting-rates-2019-7-1028333541

Furthermore, if inflation is cost-push in nature, then a higher price level is accompanied by a lower level of real GDP, and thus a higher level of unemployment. Contractionary policies will result in a fall in aggregate demand, resulting in a further fall in real GDP and possibly even higher unemployment. However, economists could argue that although this would be a very painful outcome, it would be a necessary strategy to prevent inflation from continuing to rise, since the costs of high inflation are so damaging to the economy. Since governments are less likely to make unpopular political decisions by raising taxes and/or lowering government spending, the task of fighting inflation usually falls to central banks.

Rate Cuts Needed to Defend Fed's Inflation Target

https://www.wsj.com/articles/feds-evans-rate-cuts-needed-to-defend-feds-inflation-target-11563306804

In most industrialized countries the central bank is an independent body whose main goal is the maintenance of a low and stable rate of inflation. In theory, such central banks would be prepared to take action on monetary policy without concern for the political consequences.

In some countries, including Poland, South Korea, Canada, England, Australia and New Zealand, the central bank sets an explicit target rate of inflation. For example, as shown in the "Did you know?" box below,

the policy of the National Bank of Poland (NBP) uses changes in interest rates (eg base rates, reserves rates or discount rates) to keep the inflation rate within the targeted range of 2.5% plus or minus 1%. Other central banks, such as the Federal Reserve in the US, have an implicit target rate of inflation. That means that there is an informal target rate that these central banks choose, rather than an officially stated one.

The movement towards independence for central banks started in many countries in the 1980s and was partially due to the tendency of governments to use monetary policy to pursue short-term political objectives. Such tendencies often resulted in unacceptably high levels of inflation as governments, keen to be popular, were reluctant to adopt policies such as higher interest rates in order to fight inflation. As a result of the greater independence for central banks and inflation targeting, many countries have successfully prevented high inflation from occurring.

Targeting inflation, whether explicitly or implicitly, is said to be beneficial as it results in a reduction in inflationary expectations. The target acts as an anchor, holding down inflationary pressure. That is, as long as people have faith in the central bank's ability to contain inflation, then they will not expect higher rates of inflation. If they do not expect higher inflation then they will not make demands for increases in wages any higher than the expected rate of inflation and this will keep the costs of labour from rising excessively. This suppresses cost-push inflationary pressure.

It is fair to say that the more independent the central bank, the more likely that price stability will be maintained. If inflation is rising or inflationary pressures are building up, then a way to bring these down would be to raise interest rates. Central banks keep very close watch on signs of inflation and are ready to raise interest rates to reduce inflationary pressure. While a government would be reluctant to do this, the central bank can make the politically unpopular decision because it does not have to worry about being re-elected!

Nowadays, monetary policy is considered to be the most effective way of managing aggregate demand in the economy and changes in interest rates are considered the best weapon in the fight against inflation. Fiscal policy is not seen to be as effective as monetary policy in battling inflation. It would be very difficult for governments to reduce their spending because of their commitments to the public. Moreover, even if governments could reduce their spending, it would take a long time for the cuts to have any effect on the price level. Thus fiscal policy is not usually used to combat inflation.

For monetarists who believe that inflation is caused by excessive growth of the money supply, then the solution is plain. The money supply should only increase by the same amount as the real increase in national output. That is, if national output is growing by 3%, then the money supply should also grow by 3%. If money supply increases by more than 3%, then the economy will face a situation where "there is too much money

Did you know?

The policy of the central bank in Poland

"Narodowy Bank Polski implements the monetary policy guidelines determined by the Monetary Policy Council. The basic goal of monetary policy is to maintain price stability.

Since 1998, NBP has been pursuing direct inflation targeting. Since the beginning of 2004, the continuous inflation target has been standing at 2.5% with a permissible fluctuation band of ± 1 percentage point. This means that every month, annual CPI should be as close as possible to 2.5%.

Narodowy Bank Polski influences the level of inflation mainly by determining the official interest rates, which define yields on monetary policy instruments. In order to influence short-term interest rates on the money market, NBP uses modern monetary policy instruments, including:

- open market operations
- credit-deposit operations
- a reserve requirement.

By using the above mentioned instruments, NBP strives to maintain such a level of interest rates in the economy, which would maximize the probability of achieving the inflation target."

chasing too few goods" and so prices will rise to ration the output. Practically speaking, although central banks can influence the level of spending in the economy through monetary policy and the changes in interest rates, it is actually very difficult for governments and/or central banks to tightly control the actual money supply in the economy.

A significant problem facing governments is the possible trade-off between their different policy objectives. They may want to fight inflation by bringing about a decrease in aggregate demand, but this might result in a higher level of unemployment. If they try to fight unemployment and increase economic output (achieve economic growth) by increasing aggregate demand, it might create inflationary pressure.

Exercise 20.2

ATL Thinking and Communication

Pakistan Raises Rate for Sixth Straight Time

Pakistan's central bank raised its key rate for a sixth straight time as inflation accelerated outside the range projected by the monetary authority and concerns about fiscal consolidation persisted.

State Bank of Pakistan, the most aggressive central bank in Asia, is seeking to restore price and economic stability. Inflation accelerated to 8.2% in February, overshooting the central bank's average forecast range of 6.5% to 7.5% for the year. The recent increase is mostly due to significant increases in the price of petrol and petroleum products, following a significant devaluation of the Pakistani rupee.

The target policy rate was raised to 10.75% from 10.25%, the State Bank of Pakistan said in a statement. The cumulative 5% rate increase since last year is also to contain the financial blow outs from Pakistan's twin current-account and budget deficits, which limited the nation's ability to repay debt and pay for much-needed imports.

Source: Adapted from *Pakistan raises rate for sixth straight time* by Faseeh Mangi 29 March 2019, www.bloomberg.com

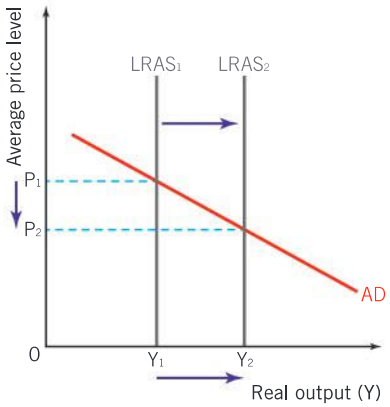
1. Using an AD/AS diagram, explain the cause of the recent increase in the inflation rate.
2. Using an AD/AS diagram, explain how the increases in interest rates might slow the inflation rate. What would happen to the demand for cars if there was a significant increase in the level of income tax?

What is deflation?

Deflation is defined as a persistent fall in the average level of prices in the economy. There are two broad explanations for a sustained fall in the price level and economists have used these to categorize "good deflation" and "bad deflation".

How does "good" deflation work?

The first type of deflation, "good" deflation, comes about from improvements in the supply side of the economy and/or increased productivity. A simple, aggregate demand/aggregate supply diagram will illustrate that an increase in the long-run, aggregate-supply curve can result in an increase in real output and a fall in the price level. If the level of real output increases then we can assume that there is a lower level of unemployment as more workers will be needed to produce the higher level of output. This is shown in Figure 20.5. The shift from $LRAS_1$ to $LRAS_2$ can be caused, as we know, by an improvement in the quality or quantity of factors of production. When this happens, the average price level will fall from P_1 to P_2, deflation and the level of real output increases from Y_1 to Y_2, economic growth leading to increased employment. The level of the increase in employment will depend upon how *labour intensive* production is in the economy.



▲ **Figure 20.5**

How does "bad" deflation work?

The second type of deflation, "bad" deflation, finds its source in the demand side of the economy. Another simple aggregate demand/aggregate supply diagram will illustrate that a fall in aggregate demand will result in a decrease in the price level and a decrease in real output. If real output decreases then it is assumed that the level of unemployment will rise, as firms will need fewer workers if there is less demand.

Both causes of deflation result in a fall in the price level, but we might say that the first is positive because it results in an increase in real output and a fall in unemployment, while the second is negative because it results in a fall in real output and a rise in unemployment.

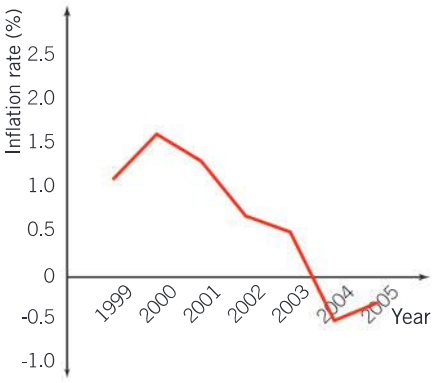
It is very important that you do not confuse deflation with a falling rate of inflation, which is referred to as *disinflation*. Consider Figure 20.6 which shows the inflation rate for a country for the years 1999 to 2005.

From 1999 to 2000 the inflation rate rose from 1.2% to 1.6%. From 2000 to 2001 the inflation rate fell from 1.6% to 1.3%. This means that the average level of prices rose, but at a lower rate than in the previous year. This is disinflation. In the next two years, the inflation rate continued to fall. Prices were still rising, but by a smaller and smaller amount. Moving into 2004, the country experienced deflation, where the average level of prices actually fell by 0.5%. From 2004 to 2005 the country was still in a period of deflation, where average prices fell by 0.3%.

Exercise 20.3

ATL Thinking and Communication

1. Draw, and label fully, a SRAS/AD diagram to show how "bad" deflation comes about.
2. Explain, using the diagram, how "bad" deflation is caused.
3. Draw, and label fully, a **LRAS**/AD diagram to show how "good" deflation comes about.
4. Explain, using the diagram, how "good" deflation is caused.



▲ **Figure 20.6** Changing rates of inflation and deflation

Exercise 20.4

ATL Thinking and Communication

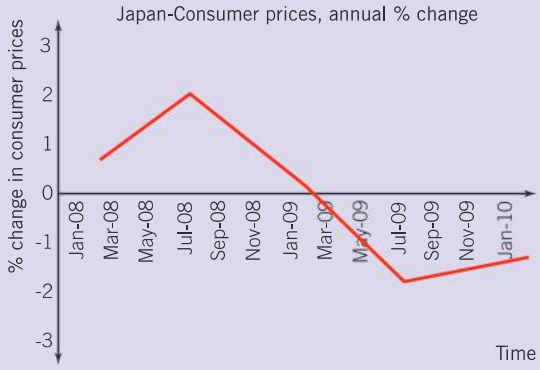
Consider the data for Japan in the graph below and answer the following questions.

Using definitions and actual values in your answers, identify the period of time in which Japan experienced:

a) inflation

b) disinflation

c) deflation.



What are the costs of "bad" deflation?

Although, as consumers, we might be pleased to face falling prices, a significant number of problems can be associated with a sustained fall in the price level. In fact, some economists might argue that the costs of "bad" deflation are greater than the costs of inflation. The costs include:

- *Unemployment*: The biggest problem associated with deflation is unemployment. If aggregate demand is low then businesses are likely to lay off workers. This will further reduce aggregate demand. This may then lead to a *deflationary spiral*.
- *Deferred consumption*: If prices are falling, consumers will put off the purchase of any durable goods as they will want to wait until the prices drop even further. This may be referred to as deferred consumption. This can lead to a fall in aggregate demand and a *deflationary spiral*.
- *Falling consumer confidence/uncertainty*: If households become pessimistic, or uncertain, about the economic future, then consumer confidence will fall. Low consumer confidence is likely to further depress aggregate demand. Thus, a *deflationary spiral* may occur.
- *Effect on investment*: When there is deflation, businesses make less profit, or make losses. This may lead them to lay off workers. Furthermore, business confidence is likely to be low and this is likely to result in reduced investment. This has negative implications for future economic growth.

Key concept
ECONOMIC WELLBEING

Key concept
EFFICIENCY

- *Costs to debtors*: Anyone who has taken a loan (this includes all homeowners who have taken a mortgage to buy their home) suffers as a result of deflation, because the value of their debt rises as a result of deflation. If profits are low, this may make it too difficult for businesses to pay back their loans and there may be many *bankruptcies*. This will further worsen business confidence.
- *Policy ineffectiveness*: Deflation makes the use of monetary policy ineffective. (See Chapter 17 for detail on monetary policy.) The very low or negative interest rates associated with deflation make expansionary monetary policy ineffective, since it is not possible to reduce interest rates substantially to increase aggregate demand.

Exercise 20.5

ATL Thinking and Communication

Read the article below and then answer the following questions:

a) Explain the difference between deflation and disinflation referred to in paragraph 1.

b) Identify and explain the advantages of deflation that are mentioned in the article.

c) Identify and explain, using an AD/AS diagram, the disadvantages of deflation that are mentioned in the article.

Deflation won't impact consumers if short term, say analysts

By Julia Chan and Yiswaree Palansamy, 1st March 2019

Malaysia is in a state of disinflation, and not deflation, contrary to reports stating otherwise, says economist James Alin from University Malaysia Sabah (UMS). The UMS School of Business and Economics lecturer said that the consumer price index (CPI), an indicator for inflation, has decreased but not gone into the negative as of January, 2019. "So actually we are not in deflation yet – just disinflation. The last time the country was in deflation was four years ago," he said.

He argues though that deflation has some positives, "Decreases in the consumer prices index can be a good thing in the short run, because prices of goods and services we consume daily are falling. In other words, our disposable income increases. Prices going up and down is an indication that the markets mechanism is working rather well," he said.

However, he also contended that the change in prices will not affect the average consumer by much. "Actually 45 percent of goods listed are non-durable and perishable items, one can buy more when it is cheaper but is it possible to stock? Most of those are once-in-a-while purchases. You don't buy clothing every day just because it's cheaper, unless you are rich and addicted to shopping. As an individual, they can only consume roughly the same amount of these items categorised in the CPI whether it is more expensive or cheaper," he said naming things like food, furniture, water consumption and property. So changes are minimal in impact for consumers. For high-end consumers, it may be of more impact," he said.

Alin said that the negative aspect of deflation is when the CPI hits and remains at negative rates over a long period of time, low prices of goods and services may cause small and medium-size firms to go out of business. "This is where the impact will be felt. If a person is selling things at low prices, he may not be able to sustain the business, and this will result in laying off employees or shutting down. Prolonged deflation results in impending recession – when economic growth is negative for two consecutive quarters of a year – and deflation will have worse effects compared to inflation, because interest rates can only be lowered to zero," he said.

"So it is a fine balance – too high prices and people suffer, too low and companies and employees suffer. It's a tough balance," he said.

Source: Adapted from *Deflation won't impact consumers if short term, say analysts,* by Julia Chan and Yiswaree Palansamy, 1st March 2019, www.malaymail.com

How do you create a weighted price index to calculate inflation?

We already know from earlier in this chapter that there are different types of price indices used to measure inflation, such as commodity price indices and consumer price indices. A weighted price index takes a "basket" of products and the products are then given a different weight (or importance), based upon the relative amounts that people spend on them.

Let us use a simple consumer price index to explain how this works. The table below shows a hypothetical, simplified basket of goods which might be bought by typical consumers in an economy and the price indices for two years:

Category	Index for year X	Index for year (X + 1)
Housing	120	130
Foodstuffs	105	105
Travel	120	125
Clothing	120	110
Entertainment	125	130
Average index	**590/5 = 118**	**600/5 = 120**

▲ **Table 20.4** Unweighted price index information for year X and year (X + 1)

In table 20.4 consumer expenditure has been split into five categories. The average price level for each year is shown by taking the price indices for each category of expenditure, totalling them, and then dividing by the number of categories. We see that over the two years the average index increases from 118 to 120. This means that we can work out the inflation rate by using the following equation:

$$\text{Inflation rate} = \frac{\text{Index for (X + 1)} - \text{Index for X}}{\text{Index for X}} \times 100$$

$$\text{In our case, this gives } \frac{120 - 118}{118} \times 100 = \frac{2}{118} \times 100 = 1.69\%$$

However, this is a very simplistic and inaccurate measure since it gives all of the categories an equal weighting, so a fall in the price of clothing has an equal and opposite effect to the increase in the price of housing. This is obviously not accurate, since it is highly likely that an increase in the cost of housing would have a greater impact on people's incomes than the fall in price of clothing, as people spend much more on housing per month than they do on clothing.

This is why weights are used to calculate price indices. They stress the relative importance of each category of goods. In the case of consumer price indices the weighting is based upon the relative expenditure on each category. A set of weighted figures are shown below in table 20.5.

Category	Index for year X	Weight	Index for year X times weight	Index for year (X + 1)	Weight	Index for year (X + 1) times weight
Housing	120	0.4	48	130	0.4	52
Foodstuffs	105	0.2	21	105	0.2	21
Travel	120	0.2	24	125	0.2	25
Clothing	120	0.1	12	110	0.1	11
Entertainment	125	0.1	12.5	130	0.1	13
Totals		**1.0**	**117.5**		**1.0**	**122**

▲ **Table 20.5** Weighted price index information for year X and year (X + 1)

In table 20.5 we have the same price index figures as in our earlier example, but now there are weights to represent relative expenditure. Consumers spend 40% of their income on housing and so it is given a weight of 0.4. In the same way, they only spend 10% of their income on clothing and so the weight (importance) of clothing in the weighted consumer price index is only a quarter of the weight of housing expenditure. The total of all the weights is 1.0.

The index for year X is calculated by multiplying the index for each category by its weight and then adding the individual totals, thus giving 117.5. The index for year (X + 1) is calculated in the same way, with an outcome of 122.

We can then work out the inflation rate by using the same equation as earlier:

$$\text{Inflation rate} = \frac{\text{Index for (X + 1)} - \text{Index for X}}{\text{Index for X}} \times 100$$

$$\text{This now gives us } \frac{122 - 117.5}{117.5} \times 100 = \frac{4.5}{117.5} \times 100 = 3.83\%$$

As we can see, the weighted inflation rate is significantly larger than the unweighted rate – 3.83% as opposed to 1.69%. This is because the increase in the price of housing, the most important expenditure, is given its proper importance and is not cancelled out by the fall in the price of less important expenditures.

Note

These are the types of questions you might see in HL Paper 3.

Exercise 20.6

ATL Thinking and Communication

The price index figures for country X for two years are shown below:

Category	2022	2023
Housing	110	120
Transport	106	110
Foodstuffs	120	120
Entertainment	110	100
Clothing	105	105

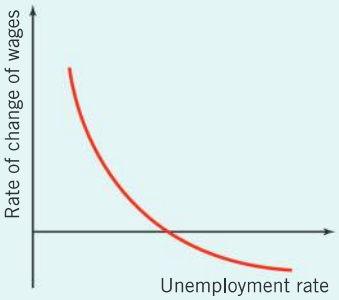
Base year = 2019

1. Calculate the average index for each year.
2. Calculate the unweighted inflation rate for 2022/23.

The expenditure patterns of the population of the country are surveyed and it is discovered that the average household spends 35% of its income on housing, 25% on transport, 15% on foodstuffs, 15% on entertainment and 10% on clothing.

3. Explain, with the help of the figures above, the relative importance of the weighting.
4. Assuming that consumer expenditure patterns do not change over the period 2022/23, construct a table showing the weighted indices for 2022 and 2023.
5. Calculate the weighted inflation rate for 2022/23.
6. Explain the differences between the inflation rates that you have calculated in 2 and 5.

Higher Level



▲ **Figure 20.7** The original Phillips curve

Is there a trade-off between inflation and unemployment?

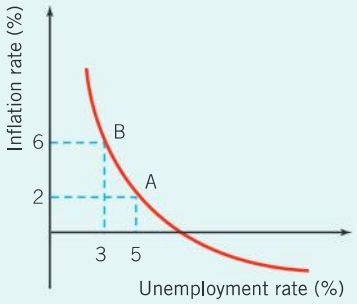
Having looked at unemployment in the previous chapter, we may now consider the relationship between the two macroeconomic problems of unemployment and inflation.

What is the original Phillips curve?

In 1958, Alban Williams Phillips, a New Zealand-born economist working at the London School of Economics, published a significant work in which he presented his argument that there was an inverse relationship between the rate of change of money wages (ie wages not adjusted for inflation) in the economy and the rate of unemployment as shown in Figure 20.7. His observation was based on his study of UK data from 1861 to 1913.

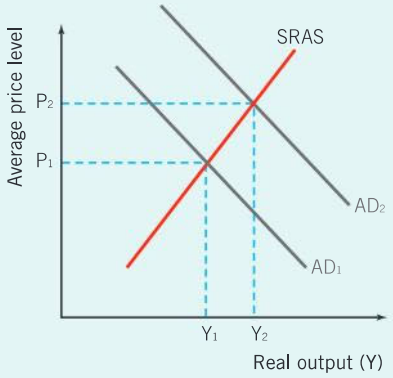
The explanation for this was that, if there was a low level of unemployment, firms would have to pay higher wages to attract labour. If unemployment was high then unemployed workers would be competing with each other to obtain available jobs, so that wages offered could be relatively low. During an economic expansion, when more output is demanded and more workers are needed, wages rise more quickly than they would if there was a contraction in activity and lower levels of demand. The rate of change of money wages could actually become negative, ie wages could fall at high levels of unemployment because workers would be willing to accept the lower wages rather than remain unemployed.

Other economists adapted the relationship established by Phillips and applied it to data from other countries to establish the pattern that we now refer to as the Phillips curve. This shows the inverse relationship between the inflation rate (rather than the change in money wages) and the unemployment rate of an economy as shown in Figure 20.8. This is due to the fact that, since wages make up a large proportion of firms' costs, changes in wages feed directly through to changes in the price level.



▲ **Figure 20.8** The Phillips curve as it is usually drawn

Another way to express this relationship is to say that there is a "trade-off" between inflation and unemployment. For example, as shown in Figure 20.8, an unemployment rate of 5% might be accompanied by an inflation rate of 2%. If unemployment were to fall to 3%, then inflation would rise to 6%. As one variable decreases, the other increases. The implication of this trade-off for government objectives is clear. If the main objective of a government is to reduce the rate of unemployment this can be done, but at the expense of a higher rate of inflation. Similarly, if inflation is perceived to be too high then it can be lowered by allowing the unemployment rate to increase. The trade-off can also be explained using aggregate demand/aggregate supply analysis, as shown in Figure 20.9.

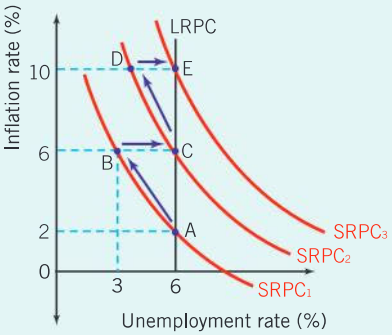


▲ **Figure 20.9** Phillips curve relationship through AD/AS analysis

The economy is initially in equilibrium at Y_1, at a price level of P_1. If the government feels there is too much unemployment at this point, then it might use Keynesian demand management techniques to bring about an increase in AD, from AD_1 to AD_2. This will result in an increase in output, which is produced by hiring more workers, so unemployment is assumed to fall. However, there is also a higher price level, that is, higher inflation. In agreement with the Phillips curve, a decrease in unemployment occurs at a cost of higher inflation. This would be like the movement from A to B in Figure 20.8.

This existence of a trade-off between inflation and unemployment was supported by data up to the 1970s. From this time on, however, evidence about inflation and unemployment began to suggest that the relationship shown by the Phillips curve was no longer valid, as both inflation and unemployment rose in many economies. The combination of high inflation and high levels of unemployment is known as stagflation. According to the Phillips curve, the two problems should not worsen simultaneously and so the model came under attack.

Higher Level



▲ **Figure 20.10** The long-run Phillips curve

What is the long-run Phillips curve?

It was the monetarist economists led by Milton Friedman who were the biggest critics of the original Phillips curve. According to their analysis there is no trade-off between inflation and unemployment. This is consistent with the explanation of the new classical long-run aggregate supply provided in Chapter 15. Recall that according to the new classical economists, the economy will automatically tend towards its long-run equilibrium at the full employment level of output.

Figure 20.10 can be used to explain this adaptation of the Phillips curve model. Assume that the economy is in long-run equilibrium at point A on $SRPC_1$. The labour market is also in equilibrium so that the only unemployment that exists is the natural unemployment of 6%. The inflation rate is 2%. People expect inflation to be 2% and negotiate any pay increases based on this expected rate. Now, consider what would happen if the government decided that they wanted to reduce unemployment and so adopted an expansionary demand-side policy – for example, increasing government expenditure. Aggregate demand would increase and this, in turn, would lead to an increase in the demand for labour and so an increase in wage levels. However, at the same time, there would be an increase in the inflation rate, in this case to 6%.

In the short run there would be a fall in unemployment as workers who had not been prepared to take jobs at existing wage levels before are now attracted by what they think are higher wages and the economy moves from A to B on the diagram. However, these are higher nominal wages and real wages have not risen. In this case, we would say that the workers have suffered from money illusion. When the workers realize that their real wages have not risen, they then leave the jobs and unemployment goes back to the natural rate, but now at an inflation rate of 6%.

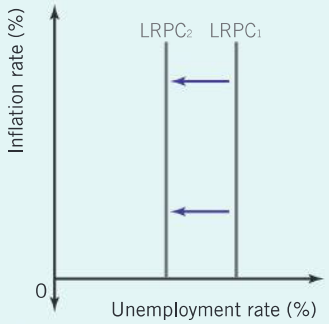
The economy does not return to point A. Now that inflation is running at 6%, people will expect prices to continue to rise at 6% and negotiate an equivalent increase in wages, so the economy will be at point C on the diagram, on a new short-run Phillips curve, $SRPC_2$. Unemployment has returned to its natural rate at a higher rate of inflation. Any attempt to use demand management again to reduce the unemployment below this natural rate will only result in higher inflation (C to D to E) and a move to another short-run Phillips curve, $SRPC_3$.

The natural rate of unemployment is the unemployment rate that is consistent with a stable rate of inflation. As long as governments do not use expansionary policies, inflation will not accelerate at the natural rate of unemployment. However, if expansionary policies are used, then inflation will accelerate.

The long-run Phillips curve is vertical at the natural rate of unemployment (NRU). At any given point in time, there may be a short run trade-off between inflation and unemployment, but the economy will always return to unemployment at the natural rate. Governments cannot

reduce this rate by using demand management policies. The natural rate of unemployment is the unemployment that occurs when the economy is at full employment and the labour market is in equilibrium.

Of course this is not to say that the long-run unemployment rate cannot be reduced at all! The key point here is that supply-side policies, not demand management policies, are the solution for reducing the natural rate of unemployment. Supply-side policies will reduce the natural rate of unemployment and shift the long-run Phillips curve to the left from $LRPC_1$ to $LRPC_2$ as shown in Figure 20.11. This would be the equivalent of a rightward shift in the long-run aggregate supply curve or an outwards shift in a country's production possibilities curve.



▲ **Figure 20.11** Supply-side policies can reduce the NRU

This confirms conclusions drawn about unemployment at the end of Chapter 19. Demand-side policies may be appropriate for reducing cyclical demand-deficient unemployment, but not for reducing the frictional, seasonal and structural unemployment that make up the natural unemployment.

The OECD itself admits that the natural rate of unemployment "can only be estimated with uncertainty". Nonetheless, estimates of the NRU are made. What is evident is that it varies considerably over time and between countries.

Differences between countries are due to a number of factors, including the availability of unemployment benefits, trade union power, the extent of labour market regulations and wage-setting practices by firms. Countries with more benefits and considerable regulation of labour markets tend to have a higher NRU. When organizations such as the OECD recommend that countries make labour market reforms to reduce unemployment, they are usually referring to measures that will reduce the natural rate.

EXAMINATION QUESTIONS

Paper 1, part (a) questions

1. Explain the concept of demand-pull inflation. [10 marks]
2. Explain the concept of cost-push inflation. [10 marks]
3. Explain the monetarist explanation of inflation. [10 marks]
4. Explain **three** consequences of inflation. [10 marks]
5. Explain **three** consequences of deflation. [10 marks]
6. Explain **three** problems involved in the measurement of inflation. [10 marks]

HL Explain why there may be a trade-off between inflation and unemployment in the short run. [10 marks]

Paper 1, part (b) questions

1. Using real-word examples, evaluate methods that might be used to reduce inflation. [15 marks]
2. Using real-word examples, discuss the extent to which demand-side policies are effective in reducing inflation. [15 marks]
3. **HL only** Using real-word examples, discuss the Phillips curve in terms of the trade-off between inflation and unemployment. [15 marks]
4. Using real-world examples, discuss the potential conflict between low inflation and low unemployment. [15 marks]

Paper 2: 2-mark and 4-mark questions

Consider the following data and answer the questions:

JAPAN	2014	2015	2016	2017	2018
Consumer price index (% change from previous year)	2.76	0.79	–0.12	0.47	0.98
Unemployment rate (% of labour force)	3.59	3.38	3.12	2.81	2.44

UNITED STATES	2014	2015	2016	2017	2018
Consumer price index (% change from previous year)	1.62	0.12	1.26	2.13	2.44
Unemployment rate (% of labour force)	6.17	5.29	4.87	4.35	3.90

Note: Labour market data are subject to differences in definitions across countries.

Source: OECD Data, March 2019, data.oecd.org

2-mark questions

Define the following terms, indicated in bold in the data:

a) Consumer price index [2 marks]

b) Unemployment rate [2 marks]

4-mark questions

1. With reference to the data, explain why we can say that Japan experienced deflation and disinflation between 2014 and 2016. [4 marks]
2. With reference to the data, explain the trends in inflation and unemployment in the United States, between 2015 and 2018. [4 marks]