Monetary Macroeconomics

Lecture 1

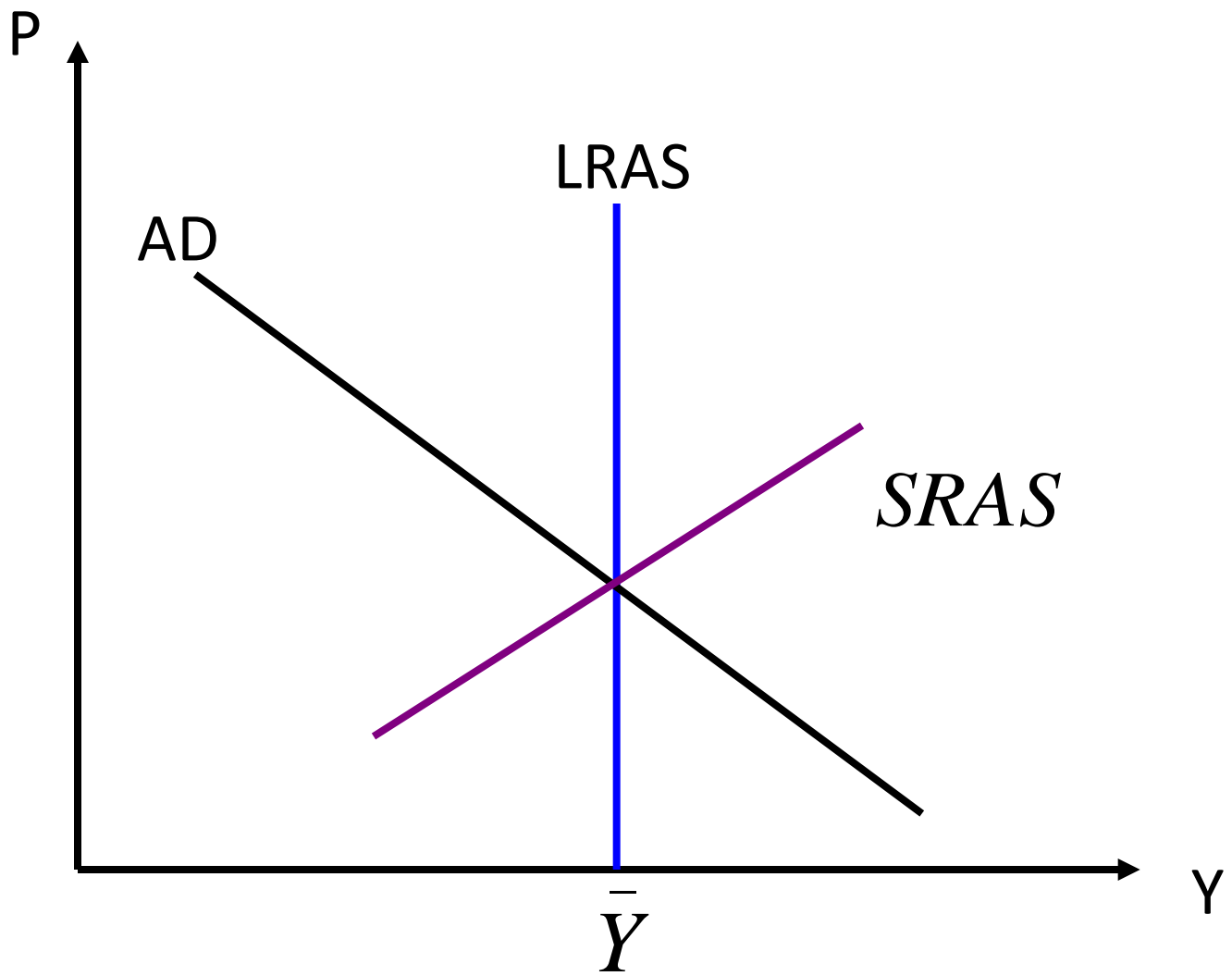# Introduction to the monetary approach to business cycles

Mark Hayes

Outline

- monetary vs intertemporal macroeconomics

- how the aggregate demand and supply model differs in the monetary model

- how the monetary model of aggregate demand and aggregate supply can be used to analyze the effects of "shocks"

- interpreting the data in the light of the model
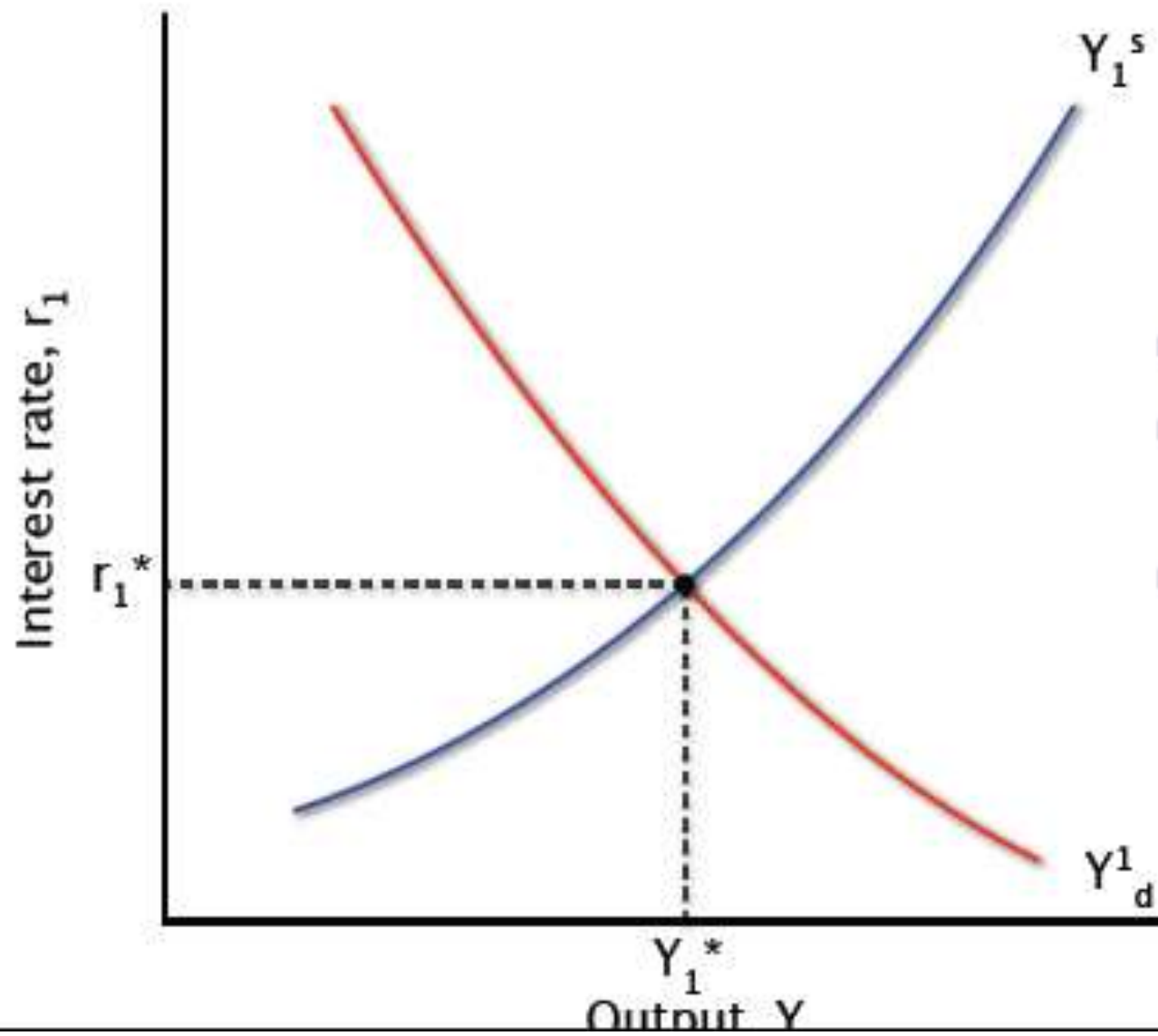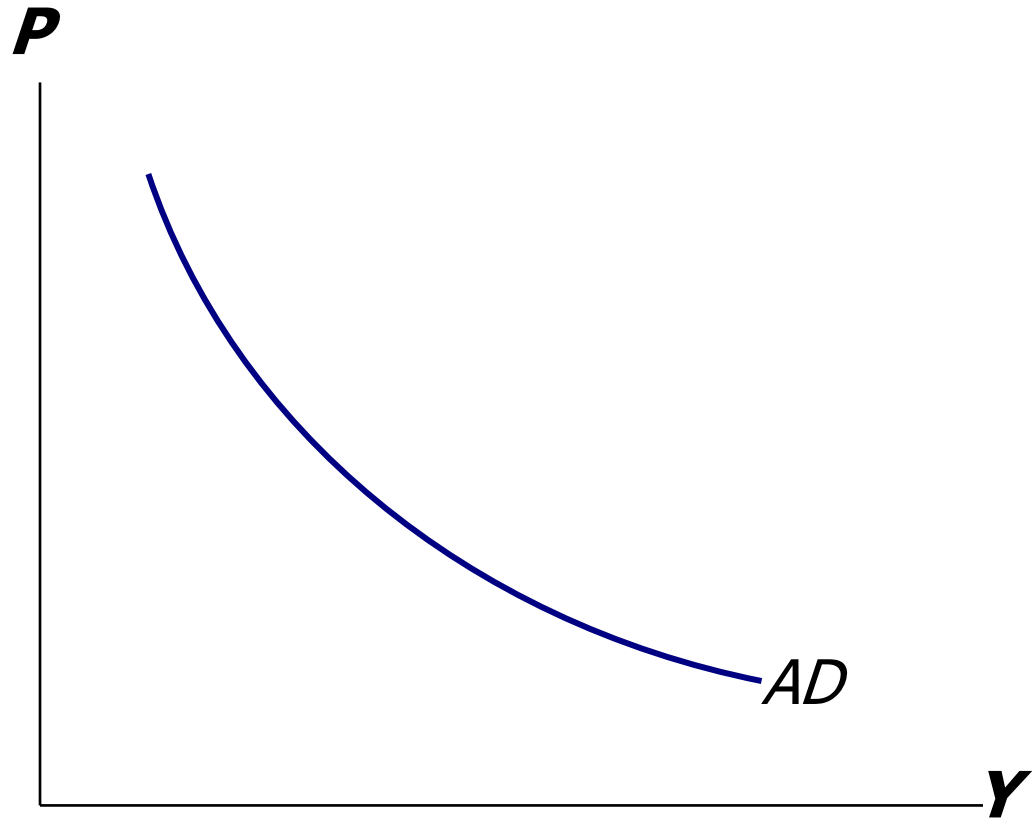
AD-AS with fixed prices
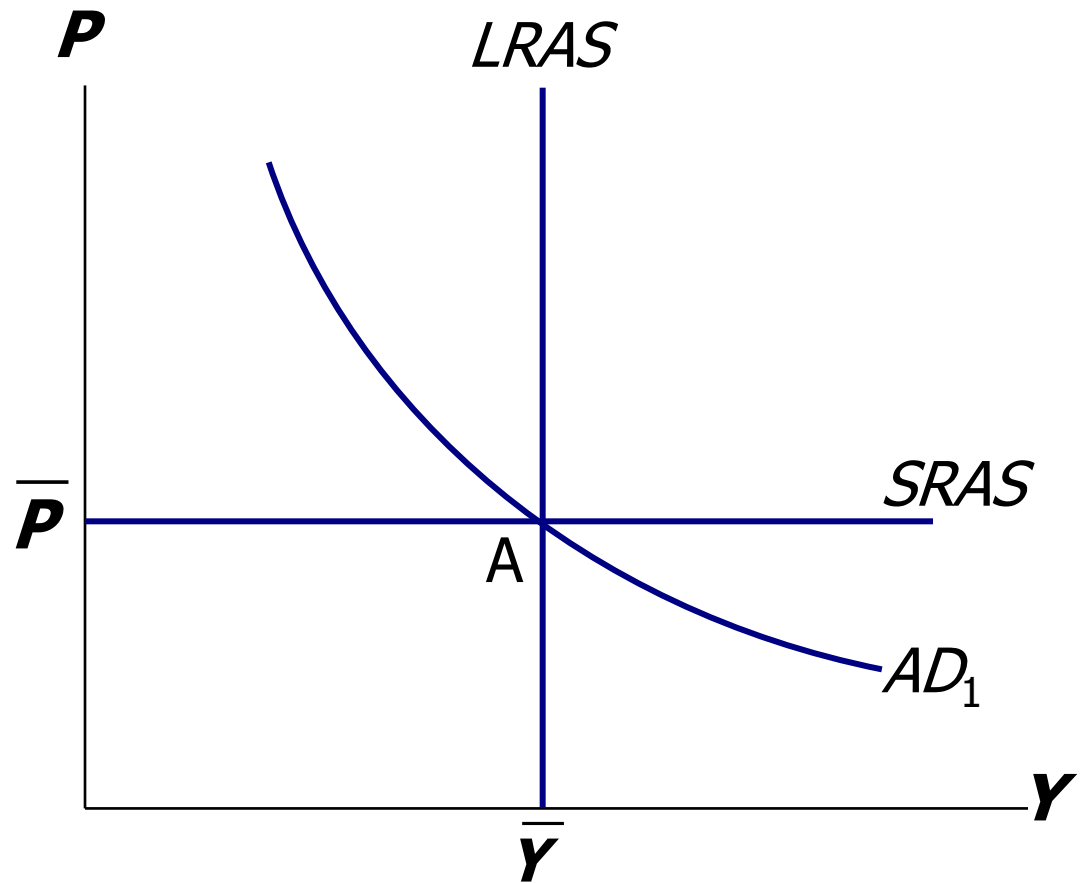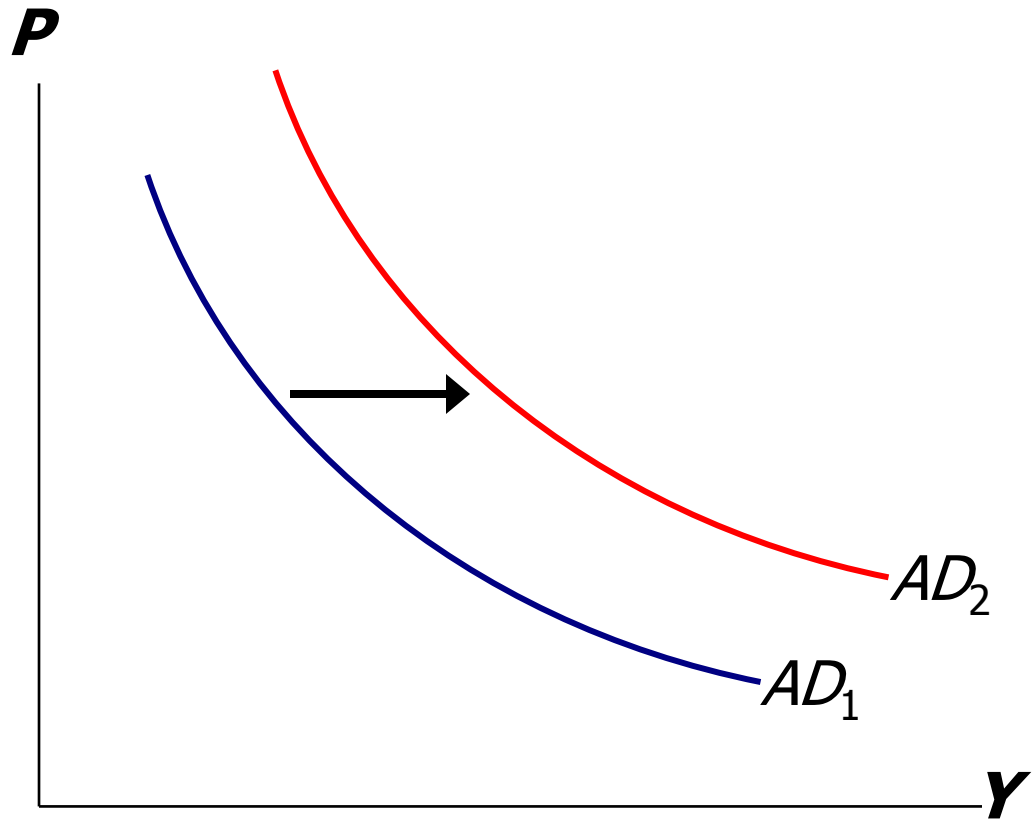
The downward-sloping *AD* curve

A fall in the price level causes a rise in real money balances (**M/P**).

This causes an increase in the demand for goods & services (we explain why later).

P

AD

Y

Shifting the *AD* curve

An increase in spending plans (demand) shifts the *AD* curve to the right, at any given price level.

P

AD_2

AD_1

Y

The short-run aggregate supply curve

The *SRAS* curve is horizontal:

The price level is fixed at a predetermined level, and firms sell as much as buyers demand.
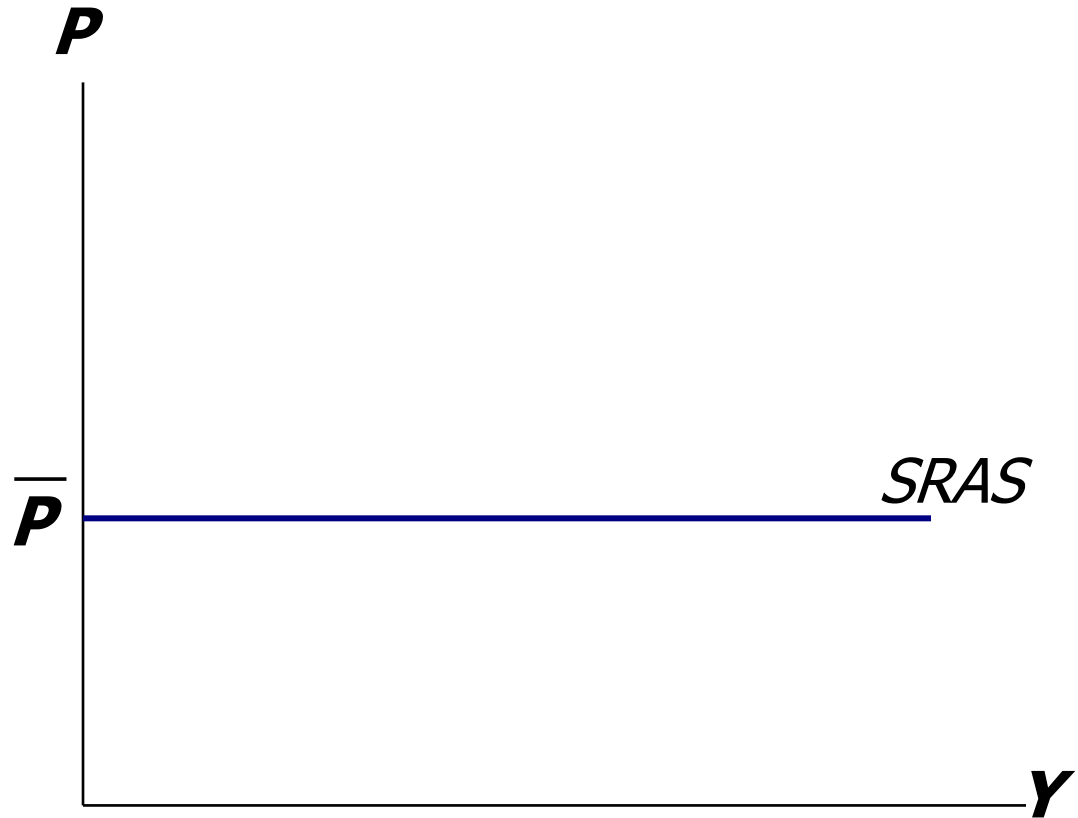
Short-run effects of an increase in demand

In the short run when prices are sticky,…

…an increase in aggregate demand…

…causes output to rise.

P

$\overline{P}$

$SRAS$

AD_2

AD_1

Y

Y_1

Y_2
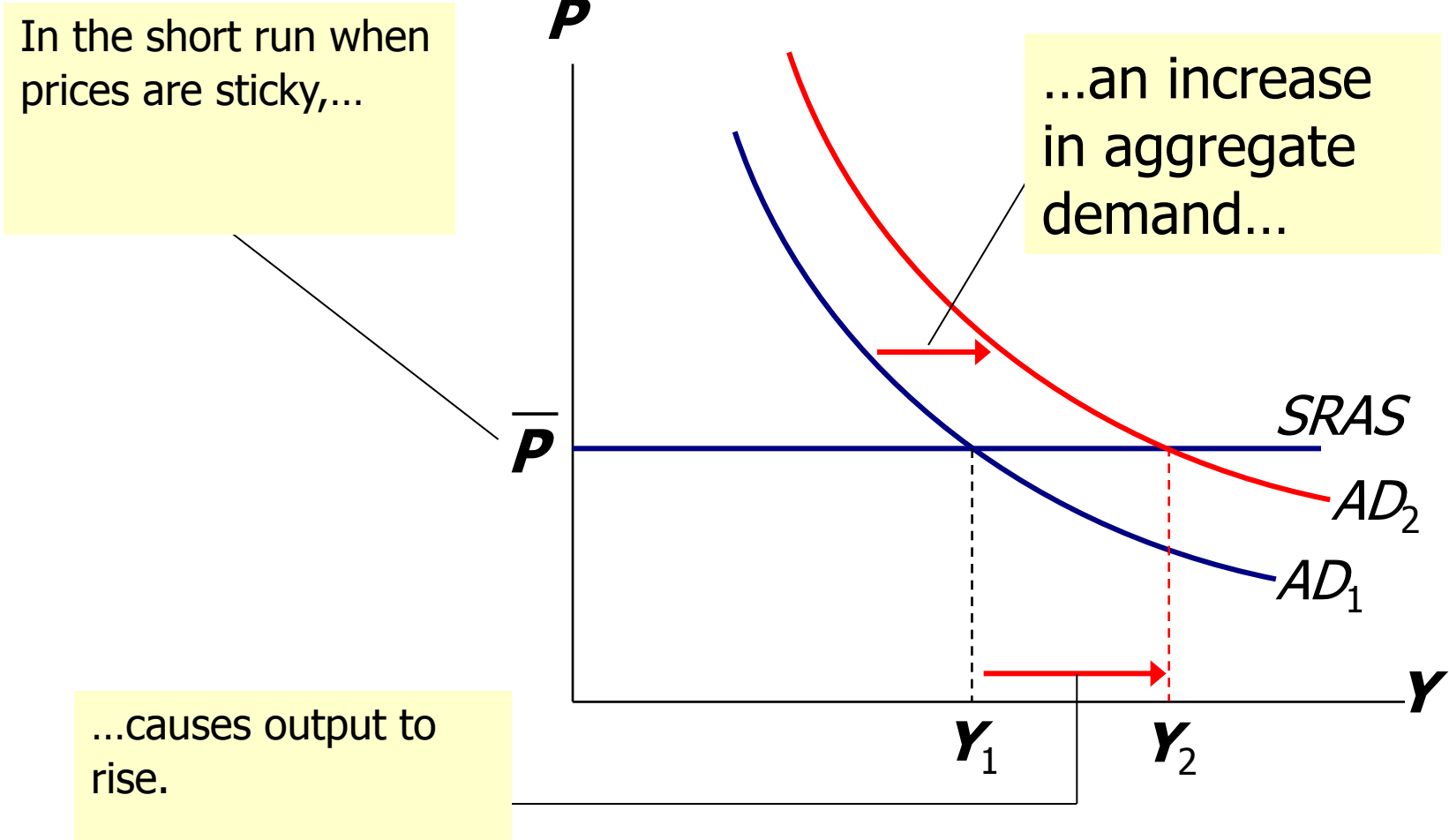
The long-run aggregate supply curve

$\overline{Y}$ does not depend on P, so *LRAS* is vertical.

P

LRAS

Y

$\overline{Y}$
$= F(\overline{K}, \overline{L})$
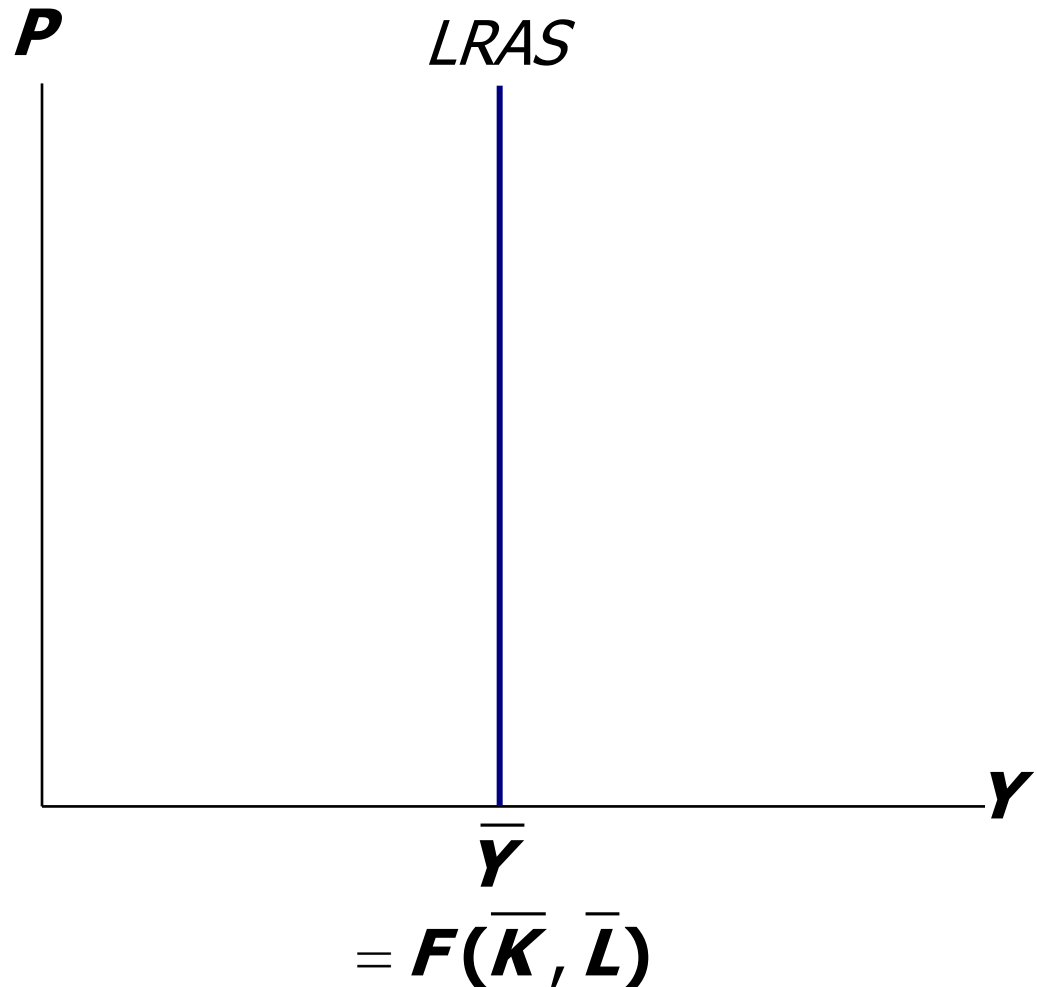
Aggregate supply in the long run

- Mankiw Chapter 3:
  In the long run, output is determined by
  factor supplies and technology

$$\overline{Y} = F(\overline{K}, \overline{L})$$

$\overline{Y}$ is the **full-employment** or **natural** level of output, at which the economy's resources are as fully employed as possible.

"Full employment" means that unemployment equals its natural rate (not zero).

From the short run to the long run

Over time, prices gradually become "unstuck."

When they do, will they rise or fall?

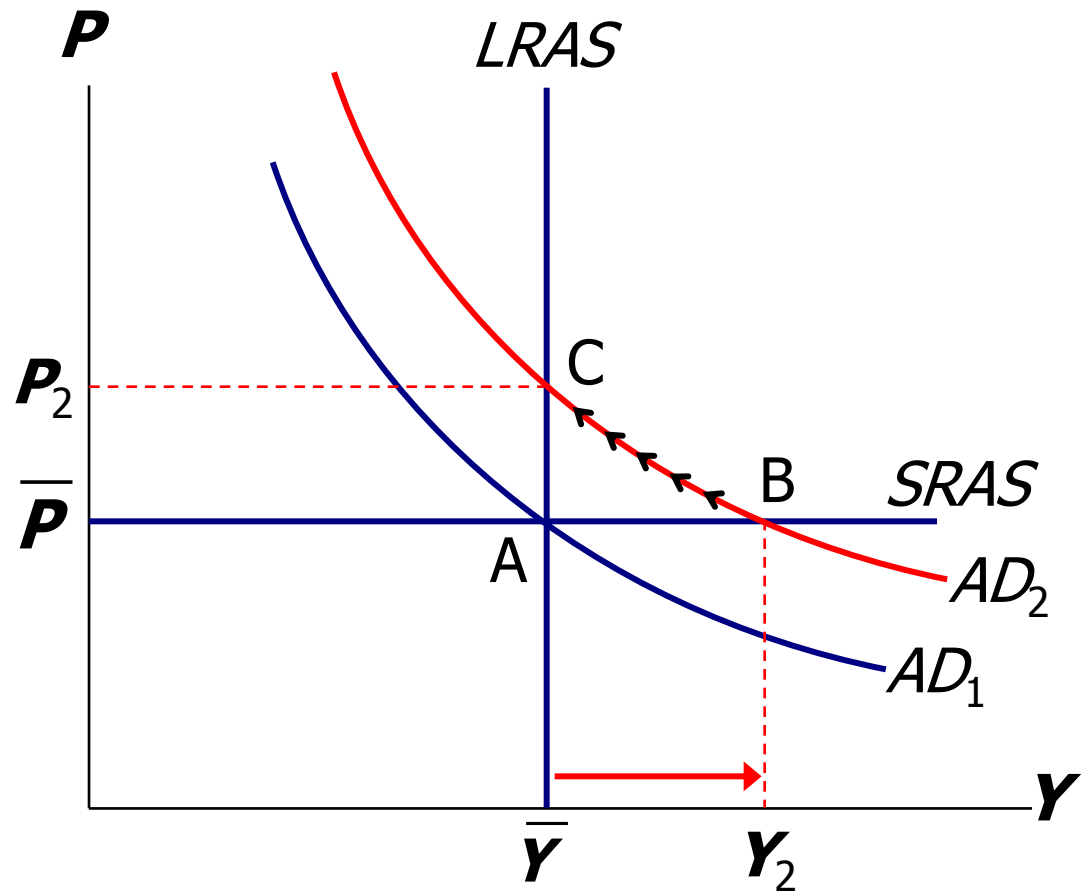| In the short-run equilibrium, if	then over time, P will…
$Y > \bar{Y}$	*rise*
$Y < \bar{Y}$	*fall*
$Y = \bar{Y}$	*remain constant*

The adjustment of prices is what moves the economy to its long-run equilibrium.

The effect of an increase in demand in the 'short run' and the 'long run'

A = initial (full employment) equilibrium

B = new short-run eq'm after a boom in confidence

C = long-run equilibrium

Shocks

- exogenous changes in aggregate supply or demand that 'shock' the economy out of long-run equilibrium

- think of a car's suspension on a bumpy road or a pendulum hanging in a waterfall

- shocks may be temporary, in which case the economy returns to the original equilibrium position

- or permanent, in which case the economy returns to a new equilibrium position, ie the long-run position moves as well as the short-run.
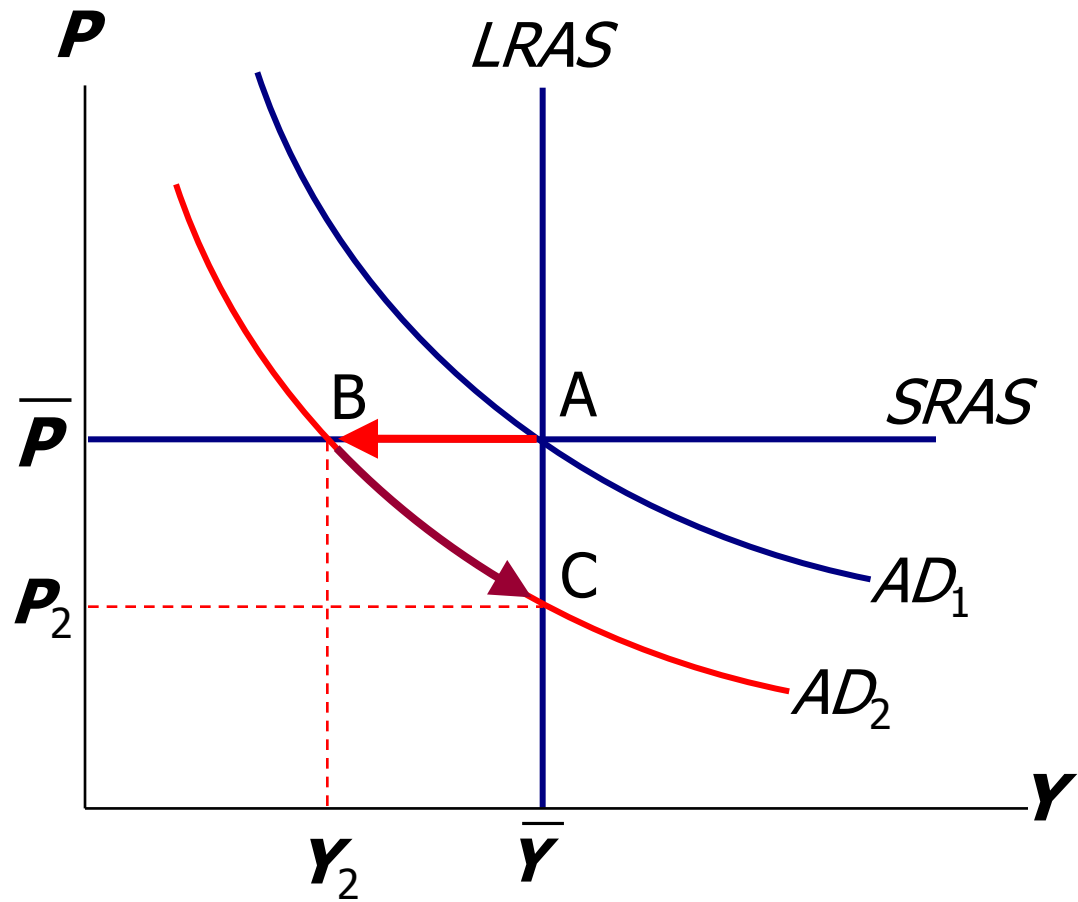
Demand shocks

- A banking crisis shatters consumer confidence and credit

- A new discovery boosts business investment

- War breaks out in a country with which we trade

The effects of a negative demand shock

AD shifts left, depressing output and employment in the short run.

Over time, prices fall and the economy moves down its demand curve toward full-employment.

Supply shocks

- A **supply shock** alters production costs, affects the prices that firms charge. (also called **price shocks**)

- Examples of *adverse* supply shocks:
  - Bad weather reduces crop yields, pushing up food prices.
  - War breaks out in a country which supplies raw materials
  - New environmental regulations require firms to reduce emissions. Firms charge higher prices to help cover the costs of compliance.

- *Favorable* supply shocks lower costs and prices.
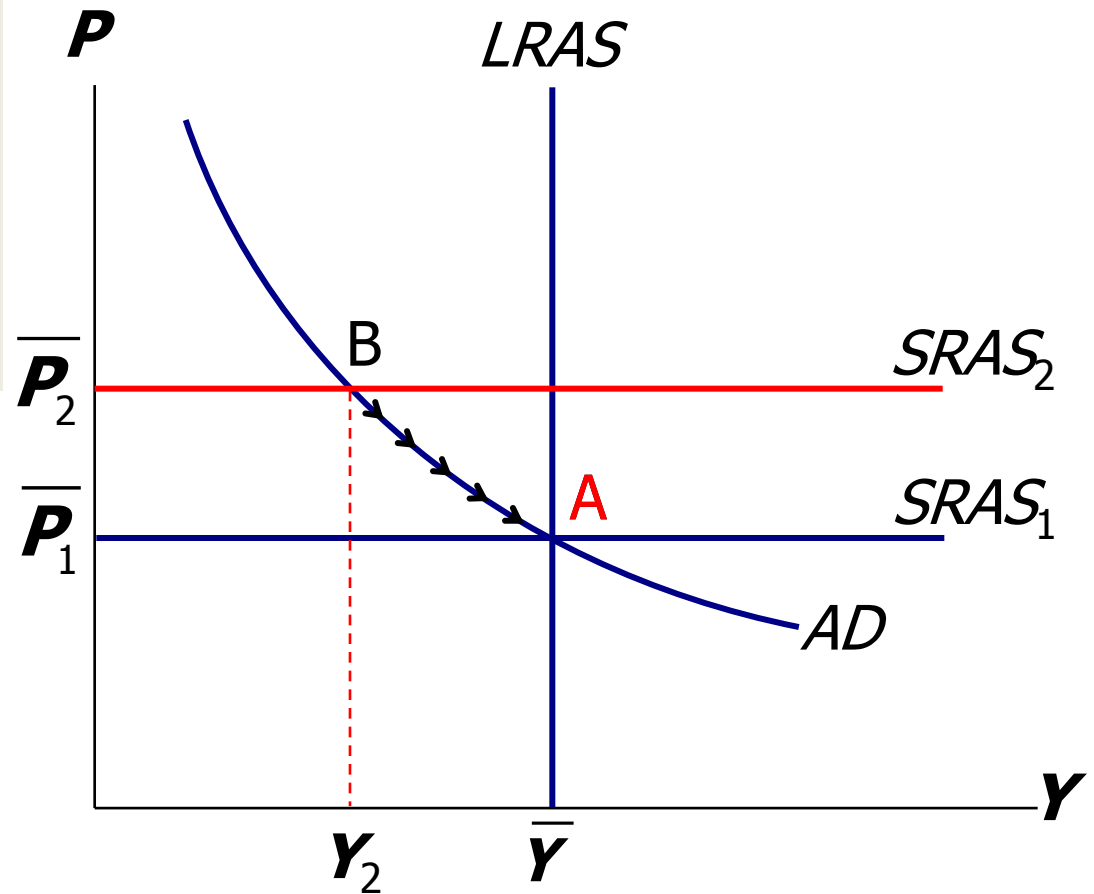
CASE STUDY: The 1970s oil shocks

- Early 1970s: OPEC coordinates a reduction in the supply of oil.

- Oil prices rose
  - 11% in 1973
  - 68% in 1974
  - 16% in 1975

- Such sharp oil price increases are supply shocks because they significantly impact production costs and prices.

CASE STUDY: The 1970s oil shocks

The oil price shock shifts *SRAS* up, Y and employment fall, price rises: **Stagflation**

In absence of further price shocks, prices will fall over time and economy moves back toward full employment.
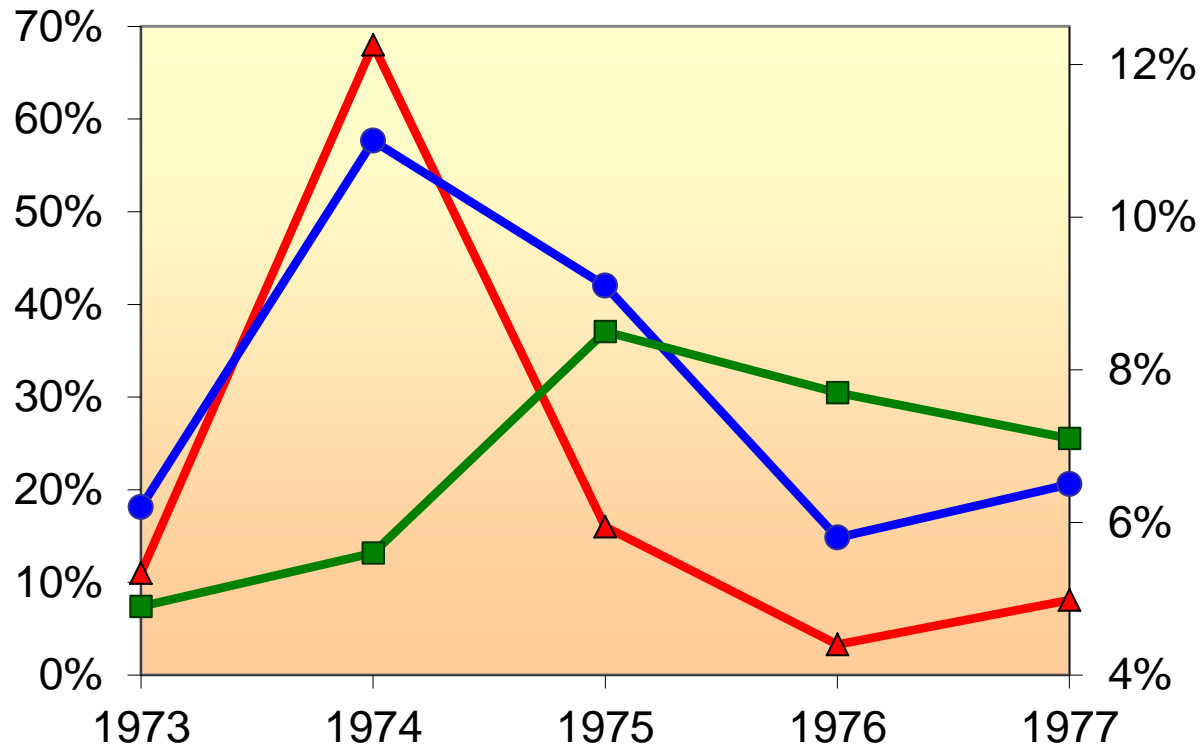
CASE STUDY: The 1970s oil shocks

Predicted effects
of the oil shock:
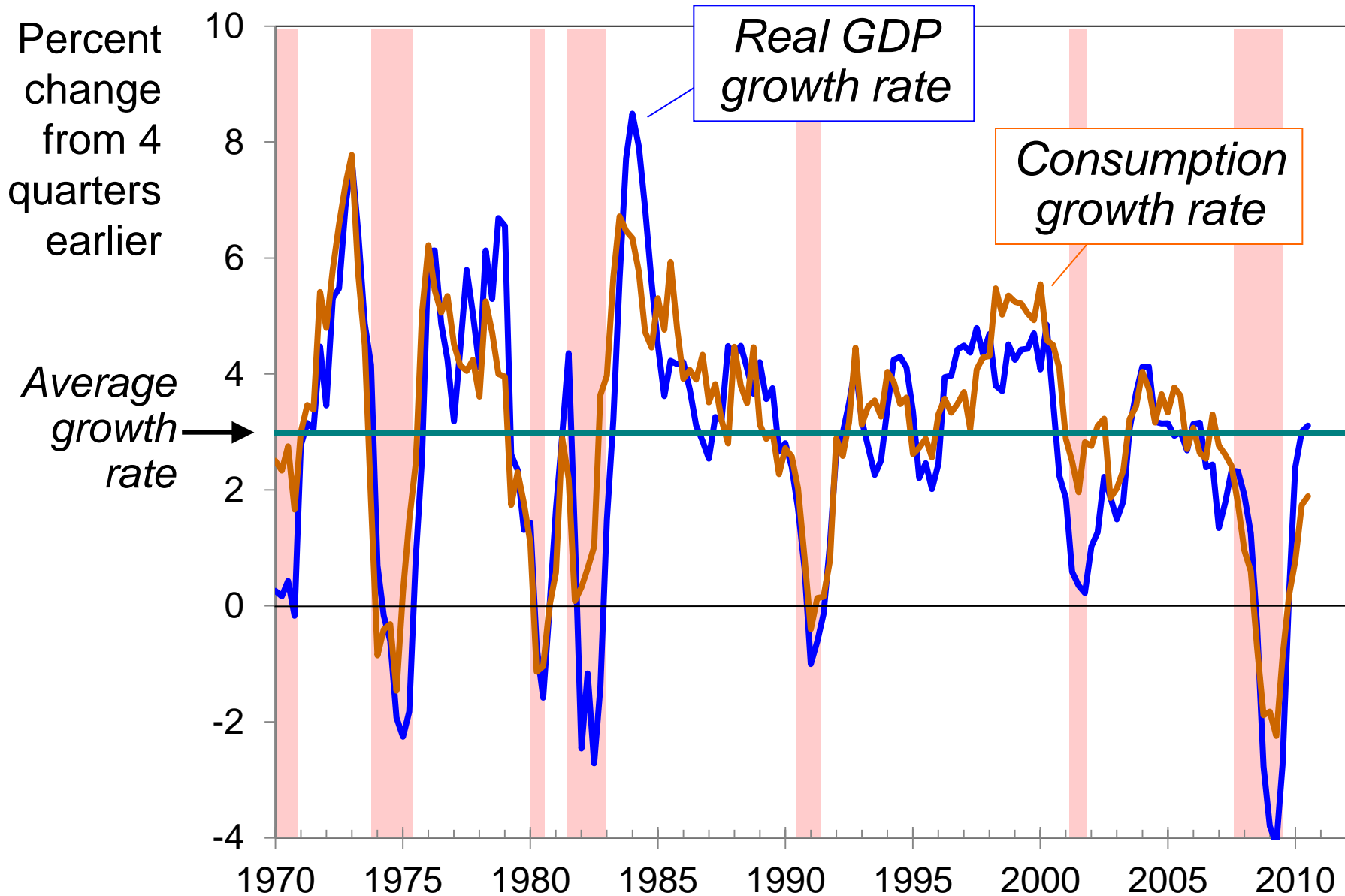- inflation ↑
- output ↓
- unemployment ↑

…and then a gradual
recovery.

NB: US economy

Legend:
- Change in oil prices (left scale)
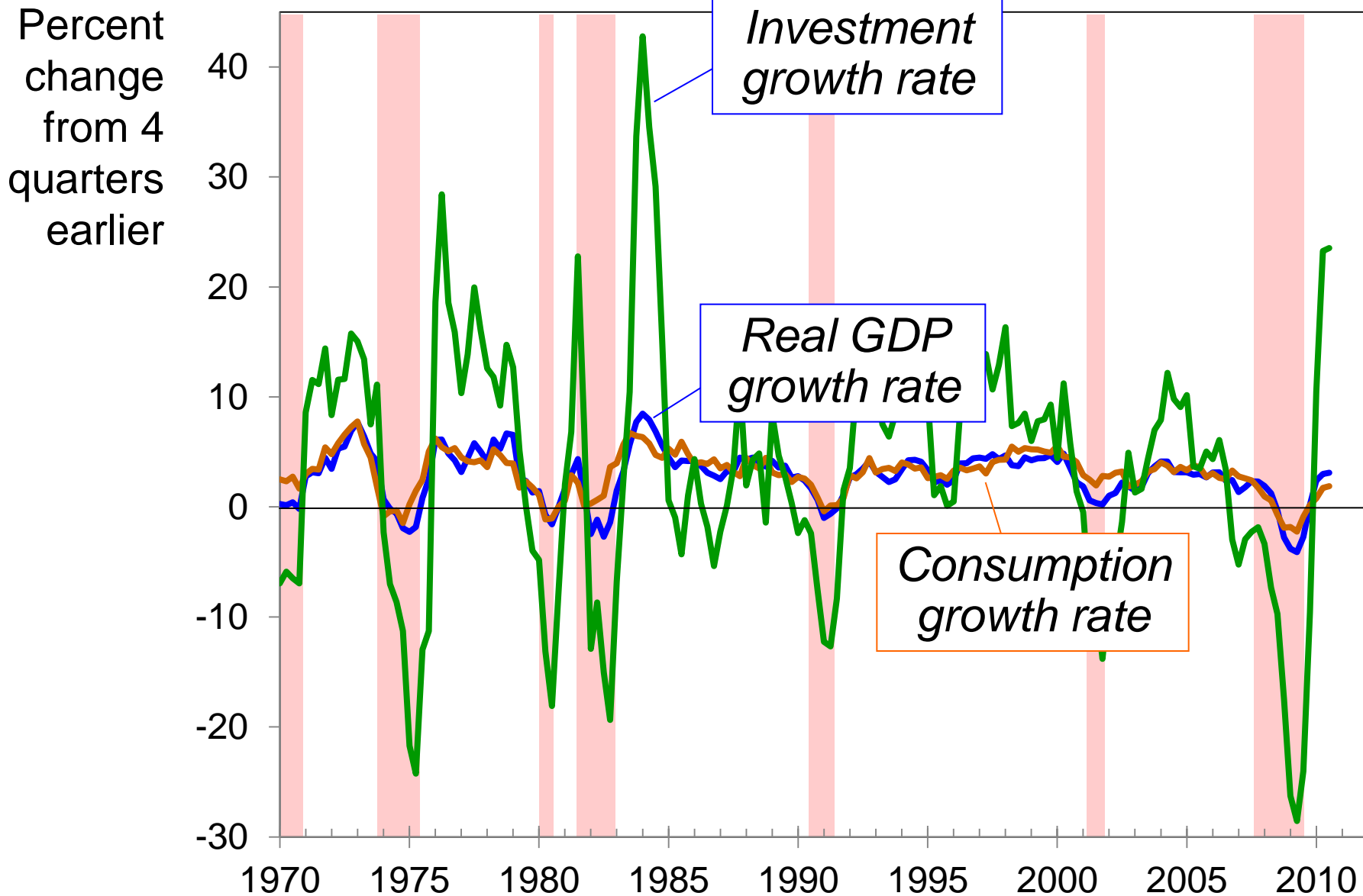- Inflation rate-CPI (right scale)
- Unemployment rate (right scale)

Growth rates of real GDP, consumption

Percent change from 4 quarters earlier

Real GDP growth rate

Consumption growth rate

Average growth rate →

Growth rates of real GDP, consump., investment

Percent change from 4 quarters earlier
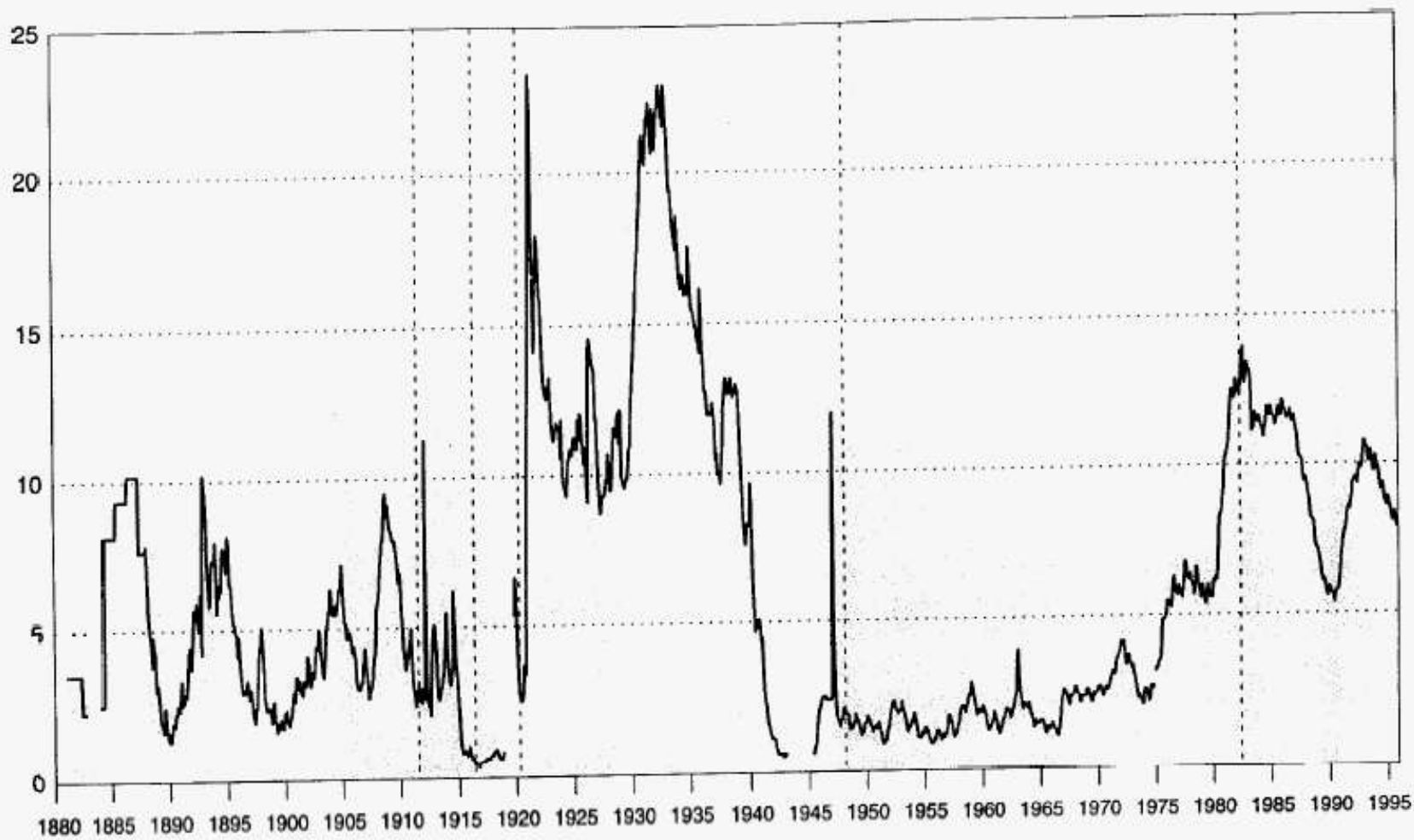
Investment growth rate

Real GDP growth rate

Consumption growth rate
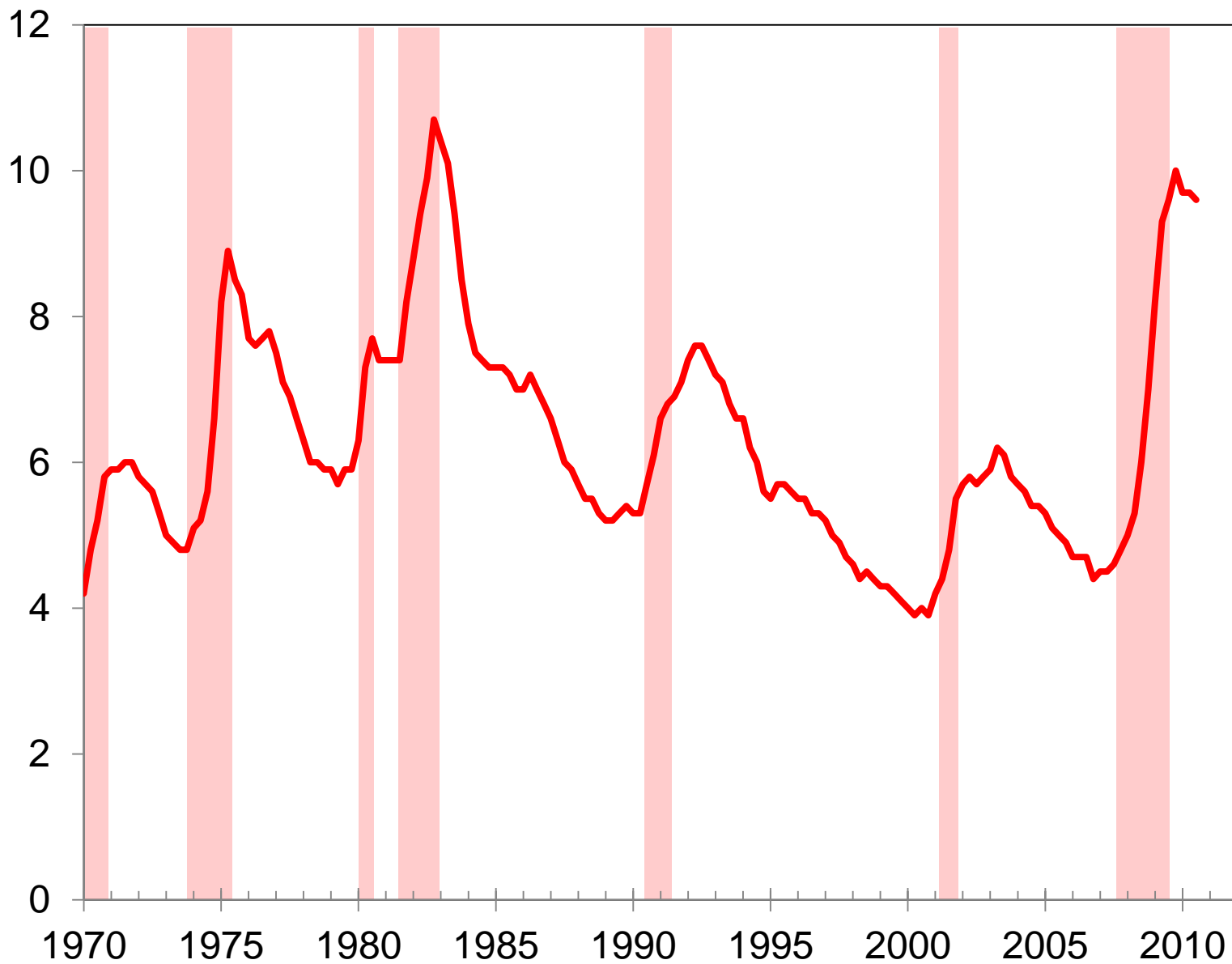
Unemployment

Figure 1 United Kingdom unemployment rates 1881-1995, not seasonally adjusted

Rates (per cent)

Note: Vertical dotted lines indicate beginning of new series

Chart A MPC's evaluation of GDP at the time of the May *Report*, ONS data at that time and latest ONS data[a]

Indices: 2008 = 100

'Backcast' at the time of the May *Report*

ONS data available at the time of the May *Report*

Latest ONS data
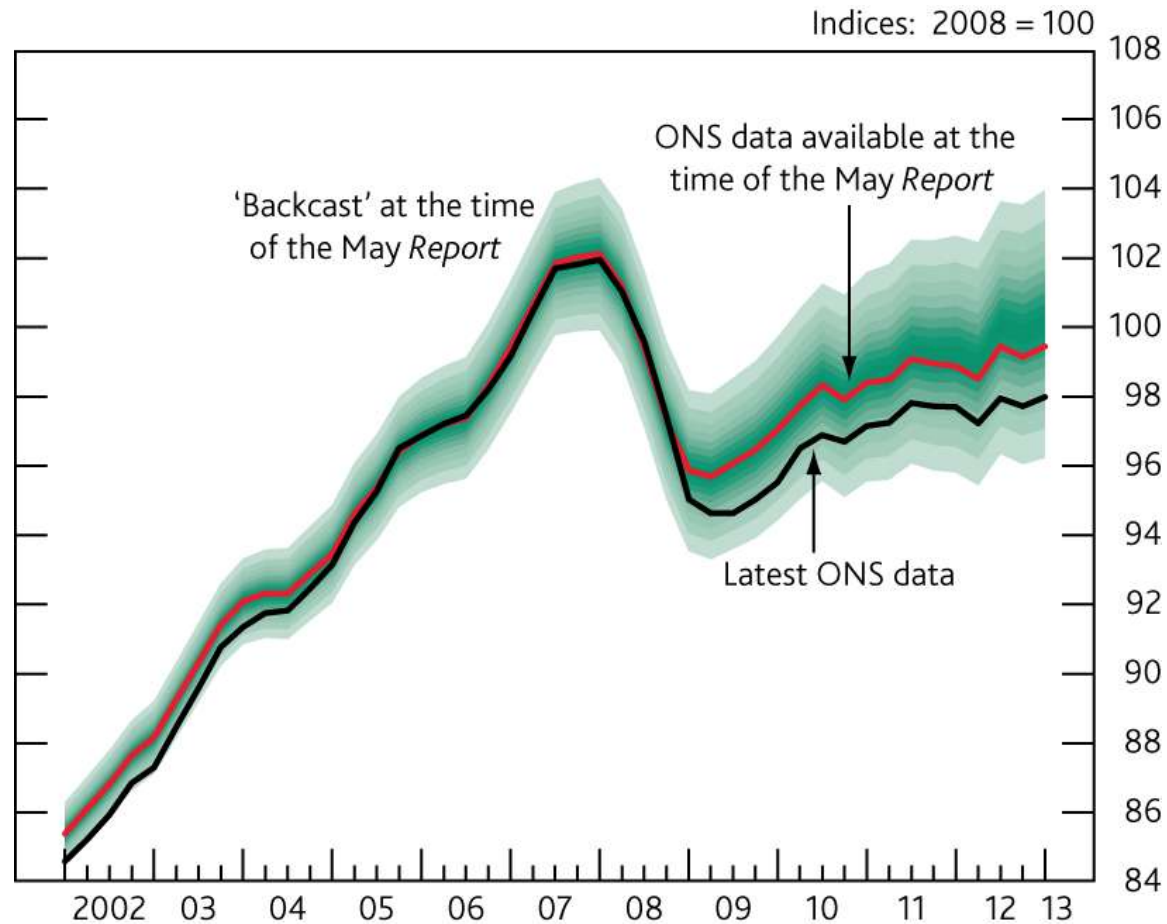
Sources: ONS and Bank calculations.

(a) Chained-volume measures. The fan chart depicts an estimated probability distribution for GDP over the past. It can be interpreted in the same way as the fan charts in Section 5.

Chart 1 GDP projection based on constant nominal interest rates at 0.5% and £375 billion asset purchases
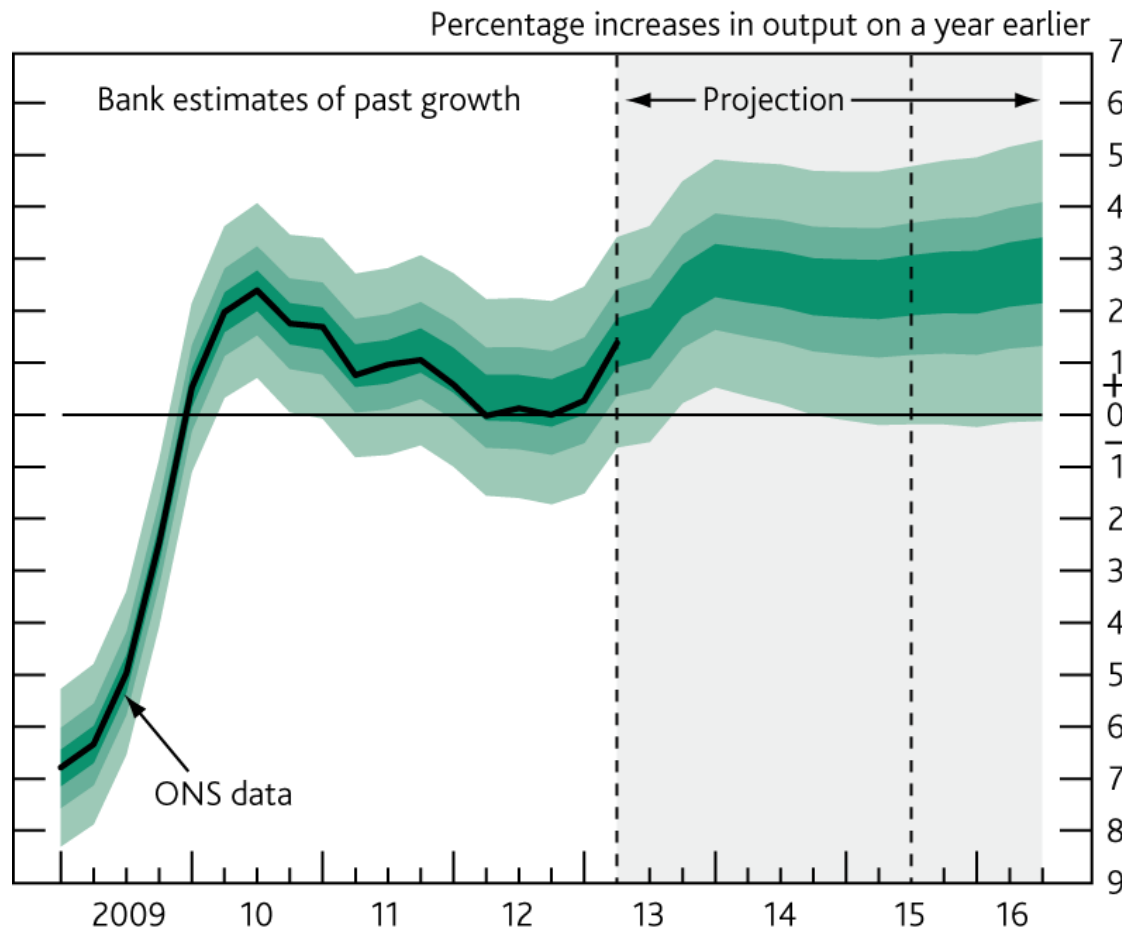
The fan chart depicts the probability of various outcomes for GDP growth. It has been conditioned on the assumption that the stock of purchased assets financed by the issuance of central bank reserves remains at £375 billion throughout the forecast period. To the left of the first vertical dashed line, the distribution reflects the likelihood of revisions to the data over the past; to the right, it reflects uncertainty over the evolution of GDP growth in the future. If economic circumstances identical to today's were to prevail on 100 occasions, the MPC's best collective judgement is that the mature estimate of GDP growth would lie within the darkest central band on only 30 of those occasions. The fan chart is constructed so that outturns are also expected to lie within each pair of the lighter green areas on 30 occasions. In any particular quarter of the forecast period, GDP growth is therefore expected to lie somewhere within the fan on 90 out of 100 occasions. And on the remaining 10 out of 100 occasions GDP growth can fall anywhere outside the green area of the fan chart. Over the forecast period, this has been depicted by the light grey background. In any quarter of the forecast period, the probability mass in each pair of identically coloured bands sums to 30%. The distribution of that 30% between the bands below and above the central projection varies according to the skew at each quarter, with the distribution given by the ratio of the width of the bands below the central projection to the bands above it. In **Chart 1**, the probabilities in the lower bands are slightly larger than those in the upper bands at Years 1, 2 and 3. See the box on page 39 of the November 2007 *Inflation Report* for a fuller description of the fan chart and what it represents. The second dashed line is drawn at the two-year point of the projection.
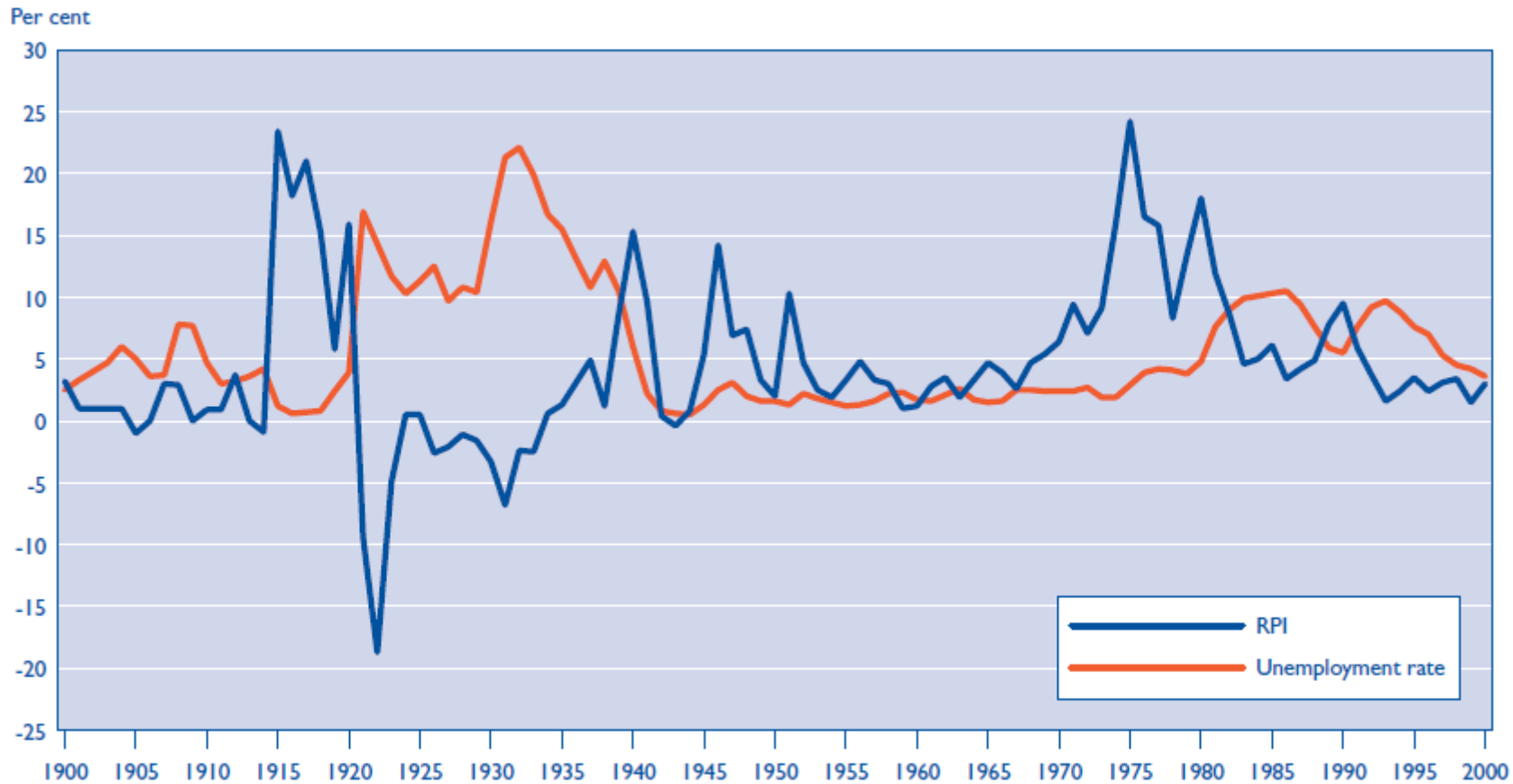
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Per cent

Legend:
- RPI
- Unemployment rate

a The RPI started in 1947. All figures before this date are estimated and are not official figures. They come from Layton and Crowther (1938). See *technical note* for further information on data sources.
b Unemployment data are based on register and claimant count data (see *technical note* for further information).
Note: Data have not been adjusted to reflect the post-2001 Census population estimates.

Summary

1. In the monetary model, the AD-AS model plots Y against P, rather than Y against r as in the intertemporal model

2. The aggregate demand curve (AD) slopes downward

3. The 'short-run' aggregate supply curve (SRAS) is horizontal

4. The 'long run' aggregate supply curve (LRAS) is vertical

Summary

5. The economy moves from 'short-run' to 'long-run' equilibrium through changes in P

6. Supply and demand shocks can push the economy temporarily out of its 'long-run' equilibrium

7. The consensus holds that $\bar{Y}$ is the 'natural' rate of output from the intertemporal model, although this is contested by the post-Keynesians.