

Problem Set 5 · The AS-AD model

1. (i) Identify in Fig. 1 periods during which the evolution of the inflation rate and the unemployment rate is consistent with a stable Phillips curve and periods in which it is not. (ii) Answer the same question with respect to Fig. 2.

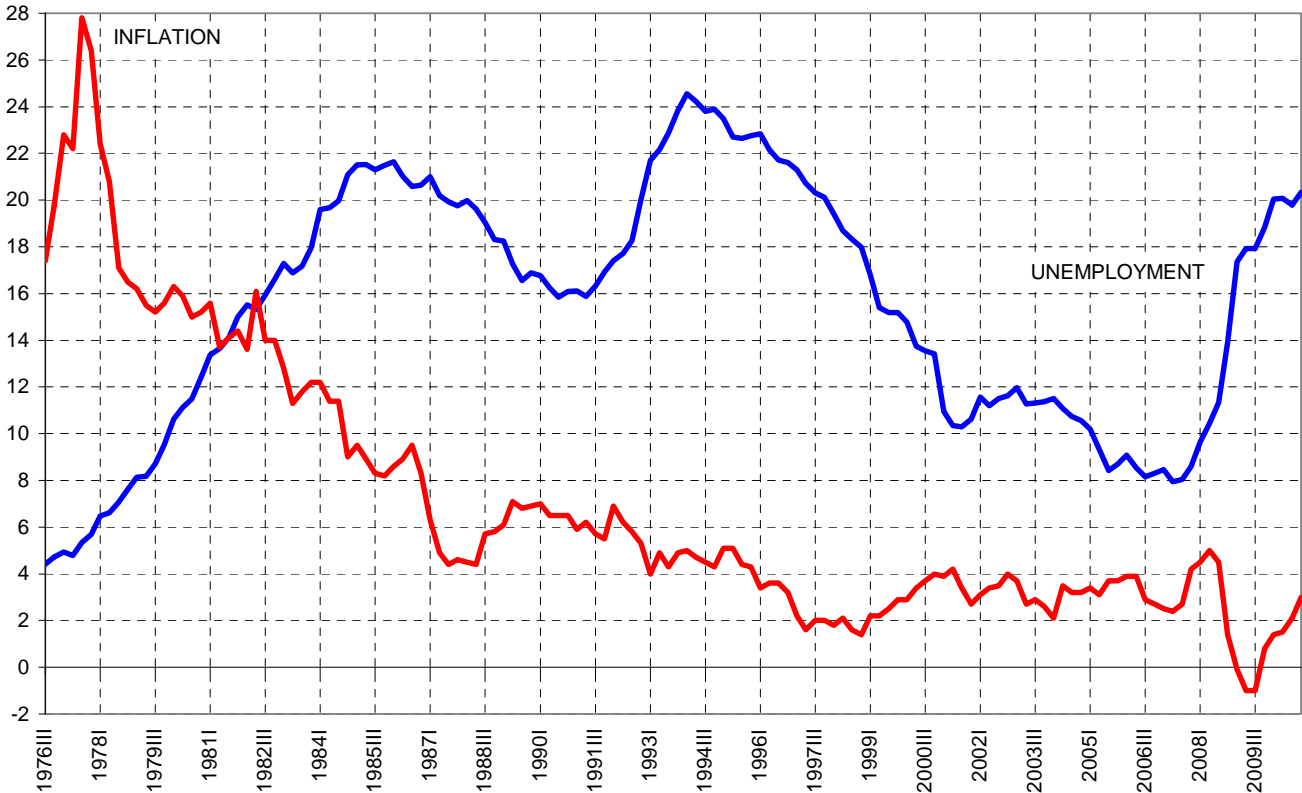


Fig. 1. Unemployment rate and inflation rate, Spain, 1976III–2010IV

http://www.ine.es/jaxi/menu.do?type=pcaxis&path=/t22/e308_mnu&file=inebase&N=&L=0
<http://www.ine.es/jaxiBD/tabla.do?per=01&type=db&divi=IPC&idtab=105>

UNEMPLOYMENT AND RPIX INFLATION 1981-2000

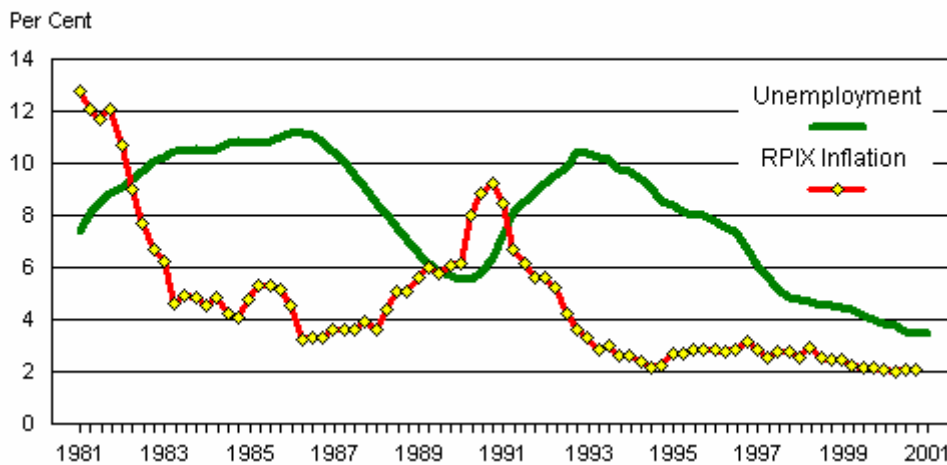
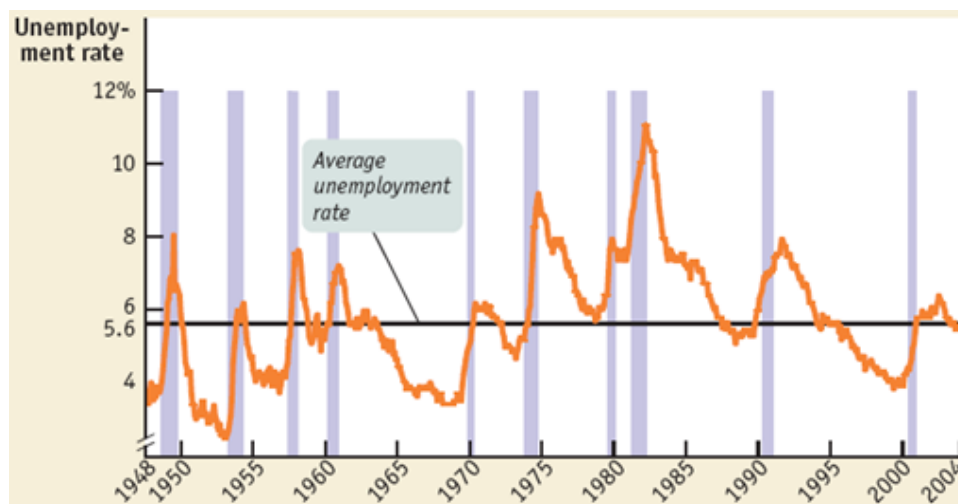


Fig. 2. Unemployment rate and inflation rate in the UK

RPIX = retail price index excluding mortgage interest payments (underlying inflation rate)

http://www.tutor2u.net/economics/content/topics/inflation/philips_curve.htm

2. On inspection, what is the relationship between the unemployment rate and the business cycle that the graph on the right suggest? Is it suggesting that the unemployment rate is a procyclical or countercyclical variable? [recessions = shaded areas]



Unemployment rate
for the US economy

<http://www.worthpublishers.com/krugmanwellsnew/main.htm>

3. (i) During the world recession of the 1970s, economies typically experienced a rise in the inflation rate and, at the same time, a reduction in real GDP. What changes in the functions of the AS-AD model could explain that outcome? (ii) During the world recession of the 1930s, economies typically experienced a decrease in both the inflation rate and real GDP. What changes in the functions of the AS-AD model could explain that outcome? (iii) In terms of the evolution of the inflation rate and real GDP, to which of the two abovementioned crises is the present crisis more similar? Explain your answer.

4. By means of the AS-AD model, and assuming that the economy is initially at its macroeconomic equilibrium determine the effect on the macroeconomic equilibrium of the following events. In each case, explain the difference between assuming that the economy is on the non-inflationary region of the AS function and assuming that it is on the inflationary region.

- (1) A significant number of immigrants come to the economy
- (2) Autonomous consumption (the consumption that does not depend on income) falls
- (3) The central bank buys government bonds
- (4) Tourists no longer want to visit the country
- (5) Oil prices surge
- (6) The rest of the world becomes more competitive
- (7) The rest of the world becomes richer
- (8) The foreign nominal interest rate rises
- (9) 20% of employed workers retires
- (10) The domestic stock market crashes
- (11) A drought devastates the country
- (12) The economy experiences a technological revolution
- (13) The government cuts taxes on the firms' profits
- (14) Trade unions go on strike for two-weeks
- (15) 50% of all the banks in the economy go bankrupt
- (16) 50% of all the firms in the economy close
- (17) The world wide web is closed
- (18) The government severely cuts spending on public services
- (19) The government simultaneously reduces transfers and taxes
- (20) The government reduces the firms' contributions to social insurance
- (21) It becomes easier for firms to dismiss workers
- (22) One of the previous events and the following one in the list simultaneous occur
- (23) Businessmen expect a drop in consumption
- (24) The government offers subsidies to develop renewable sources of energy
- (25) Businessmen become extraordinarily optimistic about future business conditions
- (26) The government defaults on public debt payments

- (27) People expect a rise in the inflation rate
- (28) People expect a rise in the interest rate
- (29) Firms expect a rise in the government budget deficit
- (30) Alien intelligent life is discovered

5. The AD function is given by $AD = 1/\pi$. The AS function is defined in two parts: $Y = \pi/4$ if $0 \leq \pi \leq 8$ and $Y = 2$ if $\pi > 8$.

- (i) Graph the two functions and indicate the maximum level of production.
- (ii) Compute the macroeconomic equilibrium.
- (iii) Compute again the macroeconomic equilibrium if the AS function changes to $Y = \pi/4$ if $0 \leq \pi \leq 12$ and $Y = 3$ if $\pi > 12$.
- (iv) Suggest three events that could have caused the previous shift in the AS function.
- (v) Compute the macroeconomic equilibrium if the AS function is as in (iii) and the AD function is $AD = 16/\pi$.
- (vi) What event could explain the move from $AD = 1/\pi$ to $AD = 16/\pi$? Indicate some event that could not.

6. Suggest some event that may lead the economy to enter the hyperinflationary region of the AS function.

7. Suppose Okun's law takes the following form: $\Delta u = 12 - \Delta y$, where $\Delta u = u - u_{-1}$ and $\Delta y = y - y_{-1}$. Let the Phillips curve be given by $\pi = 5 - u$. (i) Graph each of the two relationships. (ii) Combine the two equations to obtain an AS function. (iii) Graph the resulting AS function.

8. Consider the Phillips curve $\pi = a - b \cdot u$, where a and b are positive constant. (i) Make a graph of the Phillips curve. (ii) Let a include the inflation rate π^e expected by workers and firms. Show graphically the effect on the Phillips curve of an increase in π^e .

9. By assuming Okun's law as presented in exercise 7, explain how a Phillips curve can be obtained in the AS-AD model when the AD function is allowed to shift but the AS function is not.

10. (i) Indicate two events, not appearing in the notes, that may hit positively on aggregated planned consumption. (ii) Do the same for investment. (iii) Do the same for net exports.

11. Explain the difference between a procyclical variable and a coincident variable.

Multiple-choice questions

1. A period of rising GDP and falling unemployment is called

- (a) Okun's law.
- (b) business cycle.
- (c) depression.
- (d) None of the above

2. It is reasonable to expect some factories to remain idle

- (a) during the contractionary period of the business cycle.
- (b) never during the business cycle.
- (c) when the economy is entering the inflationary region of the aggregate supply function.
- (d) None of the above

3. The macroeconomic equilibrium lies on the inflationary region of the AS function. Starting from this point, an increase in the number of firms together with an increase in the number of consumers cannot lead to

- (a) an increase in the aggregate production.
- (b) an increase in the inflation rate .
- (c) a reduction in the inflation rate.
- (d) a reduction in the aggregate production.

4. What is typical of a recession?

- (a) Workers are laid off, the inflation rate rises
- (b) GDP falls, the inflation rate rises
- (c) unemployment falls, the inflation rate falls
- (d) None of the above

5. By itself alone, the AS-AD model can be used to predict the changes in the
- unemployment rate.
 - real interest rate.
 - inflation rate.
 - real exchange rate.
6. What explanation is valid to justify a downward-sloping aggregate demand function?
- Wealth effect: if the inflation rate falls, money's purchasing power rises and people would like to consume more.
 - Interest rate effect: if the inflation rate falls, by the Fisher effect, the nominal interest rate also falls, which stimulates consumption and investment.
 - Competitiveness effect: if the inflation rate falls, domestic goods become comparatively cheaper, so net exports rise.
 - None of the above
7. In the AS-AD model, both the AS function and the AD function shift to the right. As a result,
- the inflation rate necessarily rises.
 - the economy is experiencing a recession.
 - it is likely that real GDP will rise.
 - it is impossible for disinflation to be occurring.
8. Which sentence is not true?
- In the AS-AD model, every change in the AD function always causes a change in the inflation rate.
 - Negative shocks to the AS function tend to cause stagflation.
 - According to the AS-AD model, during the expansion period of the business cycle, the inflation rate tends to rise.
 - Neither (b) nor (c) is false.
9. A rise in production together with a fall in the inflation rate has been observed. What could explain that result?
- Only the AD function has been modified.
 - Both the AD function and AS function may have changed.
 - Necessarily, only the AS function has been modified.
 - None of the above
10. In the AS-AD model, production has risen and the inflation rate has remained unchanged. A possible explanation is that
- consumers have lost part of their wealth.
 - the oil prices are on the rise.
 - there has been a cut in the taxes consumers pay while the economy remains on the non-inflationary region of the AS function
 - None of the above
11. In a fixed exchange rate regime, the government decides a devaluation of the domestic currency. According to the AS-AD model, this policy is likely to
- fuel inflation.
 - reduce the nominal exchange rate.
 - increase the interest rate.
 - raise the unemployment rate.
12. Aggregated planned expenditure is more likely to rise if
- the interest rate and the exchange rate rise.
 - the interest rate rises and the exchange rate falls.
 - the interest rate falls and the exchange rate rises.
 - the interest rate and the exchange rate fall.
13. If people feel poorer because of a fall in the price of financial assets,
- the AD function will shift to the left because people will be induced to consume more.
 - the AD function will shift to the right as people will be induced to consume more.
 - the AD function will shift to the left because people will be induced to consume less.
 - the AD function will shift to the right as people will be induced to consume less.
14. A shift of the AD function to the left cannot be explained by
- the general belief that the economy is entering a recession.
 - a tax reduction combined with a cut in the government purchases of goods.
 - the price level goes down faster at the rest of the world than at home.
 - None of the above.
15. What cannot shift right the AD function?
- Consumption rises, investment falls.
 - Net exports falls, government expenditures rise.
 - Consumption falls, net exports fall.
 - None of the above.