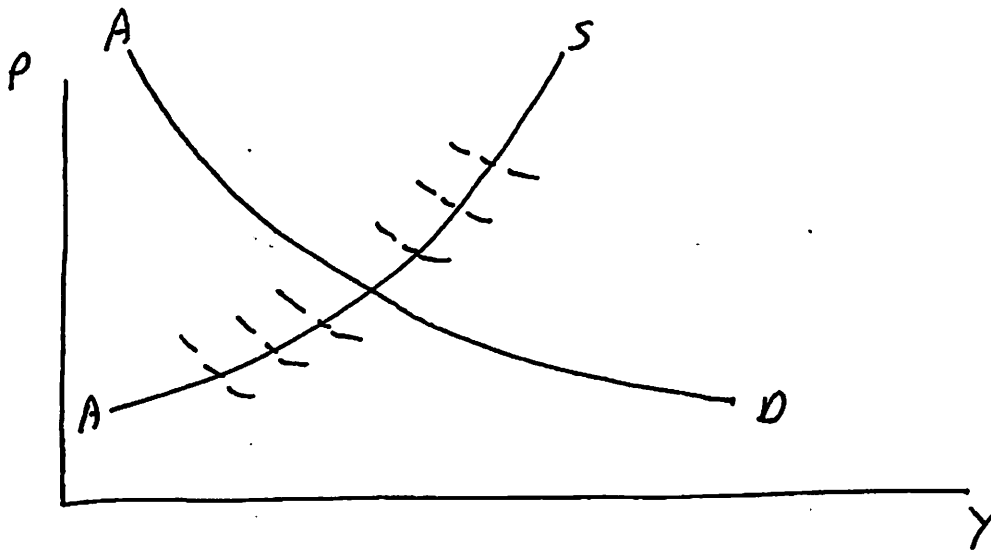


Lecture 11

Labor Market (Chapter 14)

- Why is there unemployment? (Class discussion)
- Phillips Curve
- Plot of the price of imports
- NAIRU

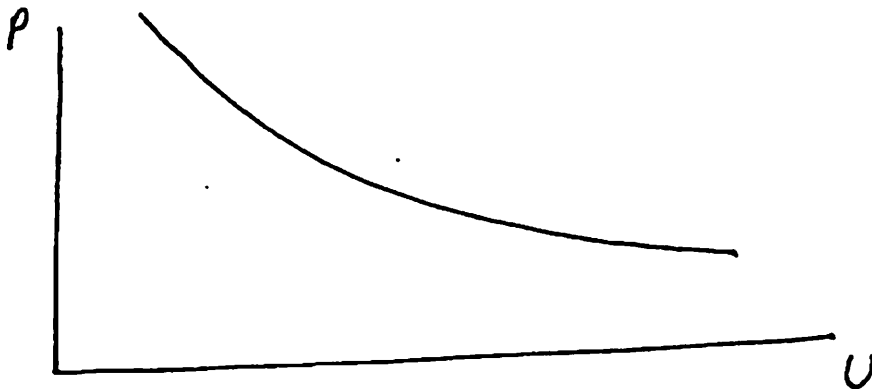
ONLY AD SHIFTS -- NO COST SHOCKS



$Y \uparrow \Rightarrow U \downarrow$

$Y = \text{OUTPUT}, U = \text{UNEMPLOYMENT}$

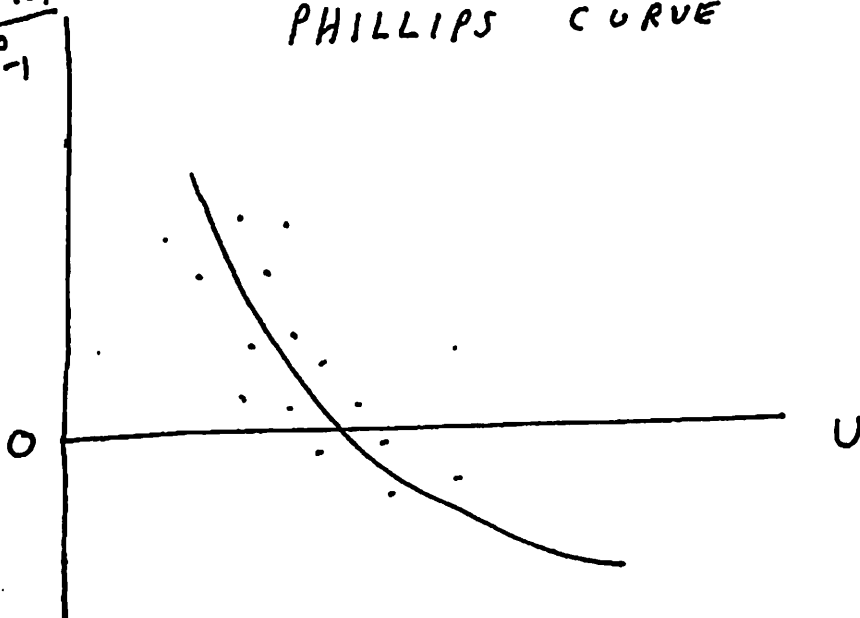
$Y \downarrow \Rightarrow U \uparrow$



INFLATION

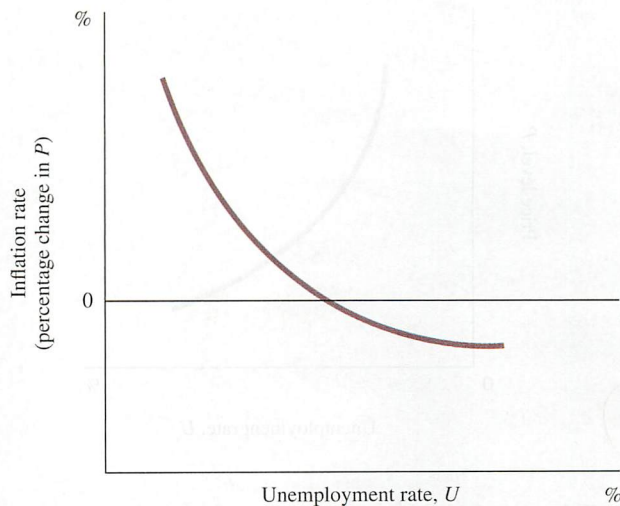
$$\dot{P} = \frac{P - P_{-1}}{P_{-1}}$$

PHILLIPS CURVE



► FIGURE 13.5 The Phillips Curve

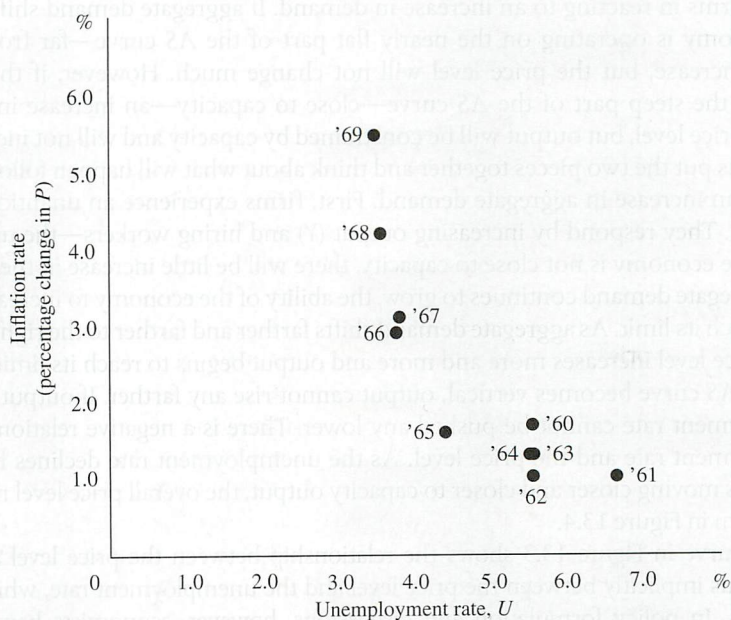
The Phillips Curve shows the relationship between the inflation rate and the unemployment rate.



► FIGURE 13.6 Unemployment and Inflation, 1960–1969

During the 1960s, there seemed to be an obvious trade-off between inflation and unemployment. Policy debates during the period revolved around this apparent trade-off.

Source: U.S. Bureau of Labor Statistics.



way to changes in the unemployment rate. Policy discussions in the 1960s often revolved around the Phillips Curve. The role of the policy maker, it was thought, was to choose a point on the curve. Conservatives usually argued for choosing a point with a low rate of inflation and were willing to accept a higher unemployment rate in exchange for this. Liberals usually argued for accepting more inflation to keep unemployment at a low level.

Life did not turn out to be quite so simple. The Phillips Curve broke down in the 1970s and 1980s. This change can be seen in Figure 13.7, which graphs the unemployment rate and inflation rate for the period from 1970 to 2014. The points in Figure 13.7 show no particular relationship between inflation and the unemployment rate.

Aggregate Supply and Aggregate Demand Analysis and the Phillips Curve

How can we explain the stability of the Phillips Curve in the 1950s and 1960s and the lack of stability after that? To answer, we need to return to AS/AD analysis.

If the AD curve shifts from year to year but the AS curve does not, the values of P and Y each year will lie along the AS curve [Figure 13.8(a)]. The shifting AD curve creates a set of AS/AD intersections that trace out the AS curve. (Try doing this yourself on a graph of the AS and AD curves.) The plot of the relationship between P and Y will be upward sloping in this case. Correspondingly,

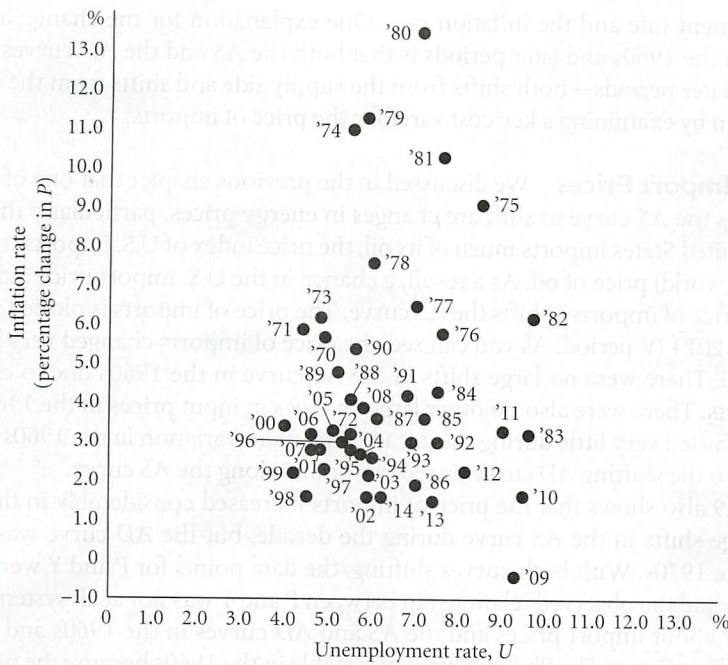


FIGURE 13.7
Unemployment and Inflation, 1970–2014

From the 1970s on, it became clear that the relationship between unemployment and inflation was anything but simple.

Source: U.S. Bureau of Labor Statistics.

MyEconLab Real-time data

the plot of the relationship between the unemployment rate (which decreases with increased output) and the rate of inflation will be a curve that slopes downward. In other words, if the new equilibrium data reflect a stable AS curve and a shifting AD curve, we would expect to see a negative relationship between the unemployment rate and the inflation rate, just as we see in Figure 13.6 for the 1960s.

However, the relationship between the unemployment rate and the inflation rate will look different if the AS curve shifts from year to year, perhaps from a change in oil prices, but the AD curve does not move. A leftward shift of the AS curve with the AD curve stable will cause an *increase* in the price level (P) and a *decrease* in aggregate output (Y) [Figure 13.8(b)]. When the AS curve shifts to the left, the economy experiences both inflation *and* an increase in the unemployment rate (because decreased output means increased unemployment). In other words, if the AS curve is shifting from year to year, we would expect to see a positive relationship between the unemployment rate and the inflation rate.

If both the AS and the AD curves are shifting simultaneously, however, there is no systematic relationship between P and Y [Figure 13.8(c)] and thus no systematic relationship between

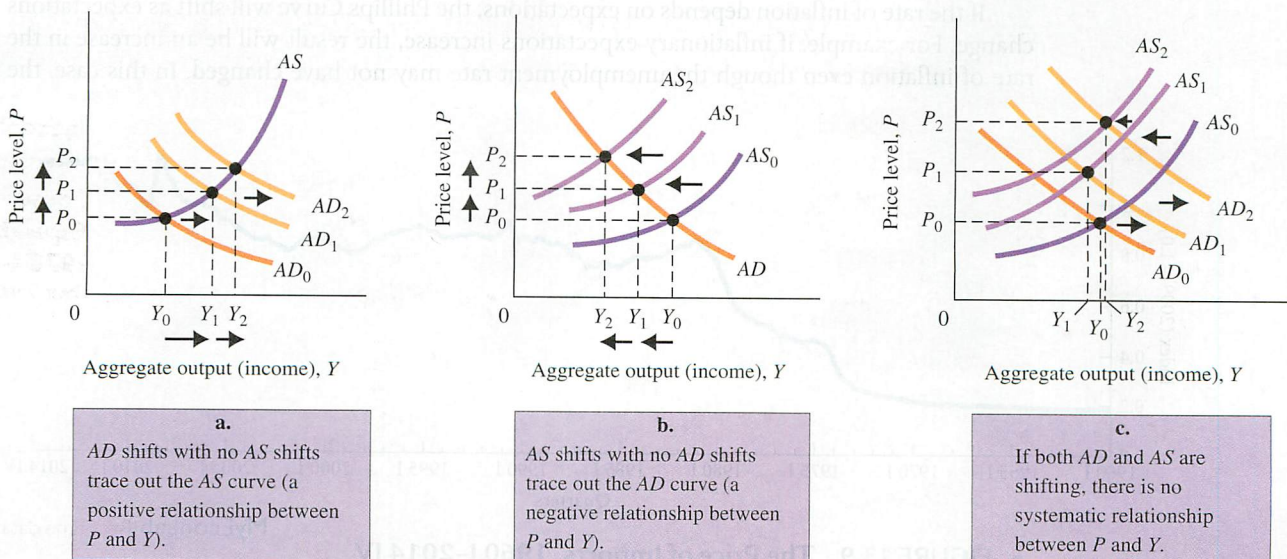


FIGURE 13.8 Changes in the Price Level and Aggregate Output Depend on Shifts in Both Aggregate Demand and Aggregate Supply

the unemployment rate and the inflation rate. One explanation for the change in the Phillips Curve between the 1960s and later periods is that both the AS and the AD curves appear to be shifting in the later periods—both shifts from the supply side and shifts from the demand side. This can be seen by examining a key cost variable: the price of imports.

The Role of Import Prices We discussed in the previous chapter that one of the main factors that causes the AS curve to shift are changes in energy prices, particularly the price of oil. Because the United States imports much of its oil, the price index of U.S. imports is highly correlated with the (world) price of oil. As a result, a change in the U.S. import price index, which we will call “the price of imports,” shifts the AS curve. The price of imports is plotted in Figure 13.9 for the 1960 I–2014 IV period. As you can see, the price of imports changed very little between 1960 and 1970. There were no large shifts in the AS curve in the 1960s due to changes in the price of imports. There were also no other large changes in input prices in the 1960s, so overall the AS curve shifted very little during the decade. The main variation in the 1960s was in aggregate demand, so the shifting AD curve traced out points along the AS curve.

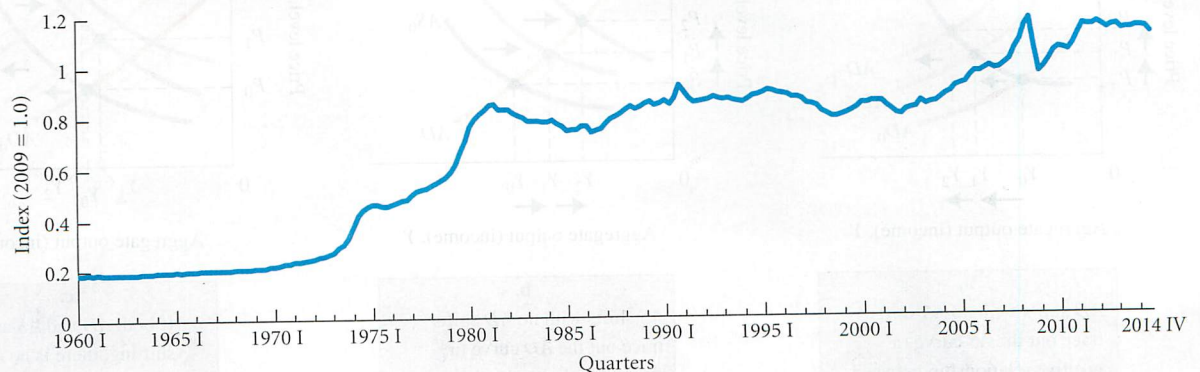
Figure 13.9 also shows that the price of imports increased considerably in the 1970s. This rise led to large shifts in the AS curve during the decade, but the AD curve was also shifting throughout the 1970s. With both curves shifting, the data points for P and Y were scattered all over the graph and the observed relationship between P and Y was not at all systematic.

This story about import prices and the AS and AD curves in the 1960s and 1970s carries over to the Phillips Curve. The Phillips Curve was stable in the 1960s because the primary source of variation in the economy was demand, not costs. In the 1970s, both demand *and* costs were varying so no obvious relationship between the unemployment rate and the inflation rate was apparent. To some extent, what is remarkable about the Phillips Curve is not that it was not smooth after the 1960s, but that it ever was smooth.

Expectations and the Phillips Curve

Another reason the Phillips Curve is not stable concerns expectations. We saw in Chapter 12 that if a firm expects other firms to raise their prices, the firm may raise the price of its own product. If all firms are behaving this way, prices will rise because they are expected to rise. In this sense, expectations are self-fulfilling. Similarly, if inflation is expected to be high in the future, negotiated wages are likely to be higher than if inflation is expected to be low. Wage inflation is thus affected by expectations of future price inflation. Because wages are input costs, prices rise as firms respond to the higher wage costs. Price expectations that affect wage contracts eventually affect prices themselves.

If the rate of inflation depends on expectations, the Phillips Curve will shift as expectations change. For example, if inflationary expectations increase, the result will be an increase in the rate of inflation even though the unemployment rate may not have changed. In this case, the



▲ **FIGURE 13.9** The Price of Imports, 1960 I–2014 IV

The price of imports changed very little in the 1960s and early 1970s. It increased substantially in 1974 and again in 1979–1980. Between 1981 and 2002, the price of imports changed very little. It generally rose between 2003 and 2008, fell somewhat in late 2008 and early 2009, rose slightly in 2011 and then remained flat.

NAIRU

$$\log P_t - \log P_{t-1} \approx \frac{P_t - P_{t-1}}{P_{t-1}} \equiv \dot{P}_t \equiv \pi_t$$

$$P_t = \log P_t$$

$$(1) Y_t = Y_t^* + \alpha(P_t - P_t^e), \quad \alpha > 0$$

so

$$P_t - P_{t-1} = P_t^e - P_{t-1} + \frac{1}{\alpha}(Y_t - Y_t^*)$$

or

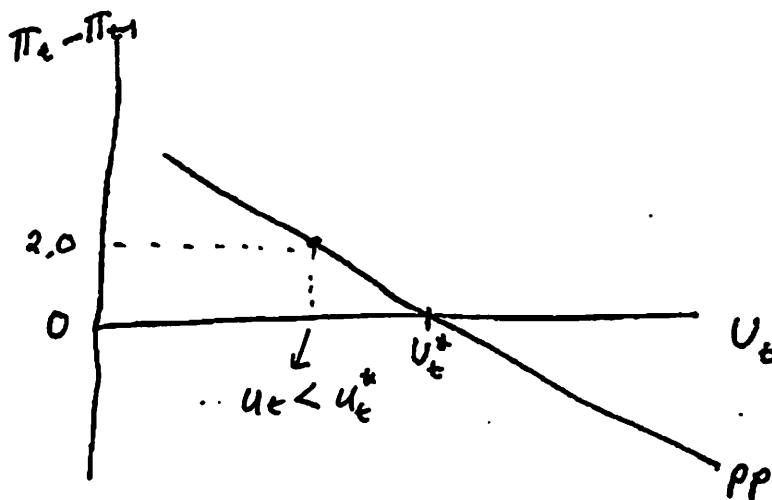
$$\pi_t = \pi_t^e - \beta(U_t - U_t^*), \quad \beta > 0$$

$$(2) \text{ If } \pi_t^e = \pi_{t-1}$$

$$\pi_t = \pi_{t-1} - \beta(U_t - U_t^*)$$

or

$$\pi_t - \pi_{t-1} = -\beta(U_t - U_t^*)$$



Period (t)	$\pi_t - \pi_{t-1}$	π_t
0		3
1	2	5
2	2	7
3	2	9