

## Numerical Problems

1. 課堂講解

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3. (a)  $\pi = 0.10 - 2(u - 0.06) = 0.22 - 2u$ . This is shown as the Phillips curve labeled  $PC^a$  in Figure 12.6. If the Fed keeps inflation at 0.10, then  $u = 0.06$ , the natural rate of unemployment.

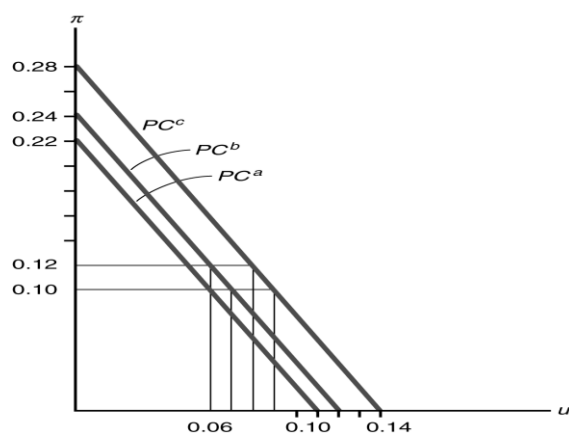


Figure 12.6

(b) With expected inflation rising to 12%, the Phillips curve is  $\pi = 0.12 - 2(u - 0.06) = 0.24 - 2u$ . This is the Phillips curve labeled  $PC^b$  in the figure. The higher rate of expected inflation has caused the curve to shift up relative to where it was in part (a). With the actual inflation rate at 10%, the Phillips curve equation is  $0.10 = 0.12 - 2(u - 0.06)$ , which has the solution  $u = 0.07$ . So if the Fed tries to maintain the existing rate of inflation after a shock has raised inflation expectations, the unemployment rate increases. However, if the Fed could convince people that the inflation rate really would not rise, so that  $\pi^e$  remains at 0.10, then the short-run Phillips curve would remain at  $PC^a$ , and the unemployment rate would not increase.

(c) With the natural rate of unemployment rising to 0.08 at the same time that expected inflation rises to 0.12, the Phillips curve equation is  $\pi = 0.12 - 2(u - 0.08) = 0.28 - 2u$ . This is the Phillips curve labeled  $PC^c$  in the figure. The new short-run Phillips curve is even higher than those for parts (a) and (b). With the actual inflation rate held to 10%, the equation becomes  $0.10 = 0.28 - 2u$ , which can be solved to get  $u = 0.09$ . The unemployment rate rises both because the Fed holds inflation below expected inflation and because the natural rate has increased. This time, even if the Fed convinced people that inflation would remain just 10%, the unemployment rate would still rise to 8%, since the natural rate has increased to that level.

4. (a) Beginning in long-run equilibrium, with  $M = 4000$ , output must be at its full-employment level of 6000 and the unemployment rate must be equal to the natural rate of .05. Using the values for  $Y$  and  $M$  in the  $AD$  curve,  $6000 = 4000 + 2(4000/P)$ , which gives  $P = 4$ . This is also the expected price level. Because  $M$  has been constant for a long time and is expected to remain constant,  $\pi^e = 0$ .

(b) With  $P^e = 4$ , the  $SRAS$  curve is  $Y = 6000 + 100(P - 4)$ . The  $AD$  curve is  $Y = 4000 + 2(4488/P)$ . The intersection of the two curves occurs when  $6000 + 100(P - 4) = 4000 + 2(4488/P)$ . Simplifying terms gives  $100P^2 + 1600P - 8976 = 0$ , which has the solution  $P = 4.4$ . Plugging this into the  $SRAS$  curve gives  $Y = 6040$ . From the Okun's Law equation we get  $(6040 - 6000)/6000 = -2(u - 0.05)$ , so  $-0.00333 = u - 0.05$ , so  $u = .0467$ . Cyclical unemployment is  $u - \bar{u} = -0.0033$ . Unanticipated inflation is  $(P - P^e)/P^e = 0.10 = 10\%$ .

(c) The Phillips curve equation is  $\pi = \pi^e - h(u - \bar{u})$ , which gives  $.10 = 0 - h(.0467 - 0.05)$ . This is solved to get  $h = 30$ . So the slope of the Phillips curve is  $-30$ .

### Analytical Problems

1. (a) The reduction in structural unemployment would reduce the natural rate of unemployment and thus would shift both the expectations-augmented Phillips curve and the long-run Phillips curve to the left.

(b) Despite the expense of the government program to reduce structural unemployment, it would have a permanent effect. Monetary expansion can work only temporarily—in the long run it has no effect.

2. The slope of the short-run aggregate supply curve will be much steeper in economy B, because producers increase their output only a small amount in response to an increase in price. But economy A's short-run aggregate supply curve will be flatter, as people are likely to perceive price changes as changes in relative price rather than the aggregate price level, and thus will respond more strongly to changes in prices. The short-run Phillips curve will also be steeper in economy B, since unemployment, like output, won't respond much to a change in inflation. But in economy A, unemployment and output will respond more strongly to price changes, and the short-run Phillips curve will be flatter.

3. 課堂講解.