

FIN204-Week13-Ch14-12310903刘 华杰

3. An econo equation for the Phillips curve:

$$\pi = E\pi - .5(u - 6)$$

People form expectations of inflation by taking a weighted average of the previous two years of inflation:

$$E\pi = 0.7 \pi_{-1} + 0.3 \pi_{-2}$$

Okun's law for this economy is:

$$\frac{(Y - Y_{-1})}{Y_{-1}} = 3.0 - 2.0 (u - u_{-1})$$

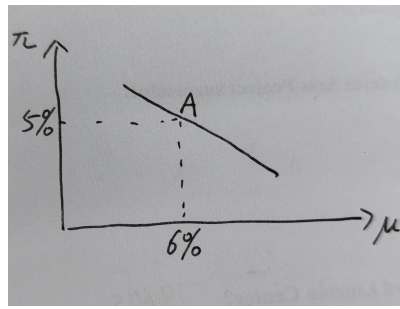
The economy begins at its natural rate of unemployment with a stable inflation rate of 5 percent.

a. What is the natural rate of unemployment this economy?

自然失业率对应着适应性通胀预期下不再改变的通胀率，即 $\pi = E\pi, u = 6$ ，即自然失业率为6%。

b. Graph the short-run tradeoff between inflation and unemployment that this economy faces. Label the point where the economy begins as point A. (Be sure to give numerical values for point A.)

在基期（点A），自然失业率为6%，通胀为5%



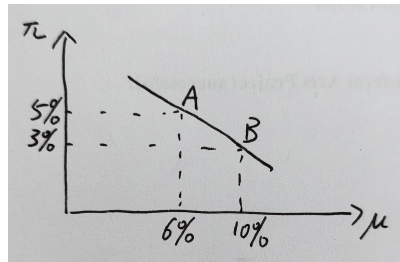
c. A fall in aggregate demand leads to a recession, causing the unemployment rate to rise 4 percentage points above its natural rate. On your graph in part (a), label the point the economy experiences that year as point B. (Once again, be sure to give numerical values.)

新的失业率为10%，预期通胀为之前的自然通胀率 $E\pi = \pi = 5$ ，新的通胀为：

$$\pi' = E\pi - .5(10 - 6) = 5 - 2 = 3$$

即新的通胀为3%.

B 点 $\pi = 3\%$, $u = 10\%$



d. Unemployment remains at this high level for two years (the initial year described in part (c) and one more), after which it returns to its natural rate. Create a table showing unemployment, inflation, expected inflation, and output growth for 10 years beginning two years before the recession. (These calculations are best done on a computer spreadsheet.)

$$E\pi = 0.7 \pi_{-1} + 0.3 \pi_{-2}$$

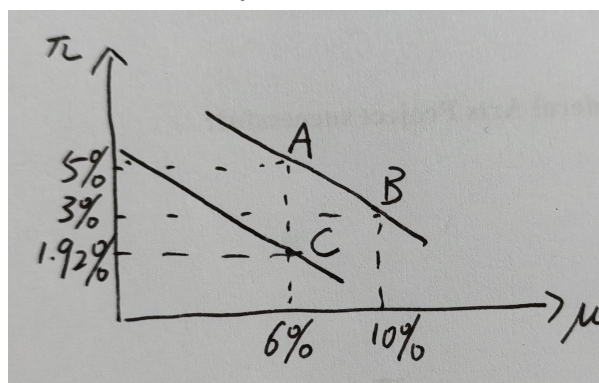
$$\pi = E\pi - .5(u - 6)$$

$$\frac{\Delta Y}{Y} = 3.0 - 2.0 (u - u_{-1})$$

Year 0 为基期，也就是自然状态。

Year	u	$E\pi$	π	$\frac{\Delta Y}{Y}$
0	6	5	5	3
1	10	5	3	-5
2	10	3.6	6	-5
3	6	2.02	2	3
4	6	1.89	1.89	3
5	6	1.93	1.93	3
6	6	1.92	1.92	3
7	6	1.92	1.92	3
8	6	1.92	1.92	3
9	6	1.92	1.92	3
10	6	1.92	1.92	3

e. On the same graph you used in part (b), graph the short-run trade-off the economy faces at the end of this 10-year period. Label the point where the economy finds itself as point C. (Again, use numerical values.)



f. Compare the equilibrium before the recession with the new long-run (period ten) equilibrium. How much does inflation change? How many percentage points of output are lost during the transition? What is this economy's sacrifice ratio?

十年间，通胀下降了3.08个百分点，GDP损失了10个百分点，牺牲率为 $\frac{10}{3.08} = 3.25$

7. Suppose that an economy has the Phillips curve

$$\pi = \pi_{-1} - 0.5(u - u^n)$$

and that the natural rate of unemployment is given by an average of the past two years' unemployment:

$$u^n = 0.5(u_{-1} + u_{-2}).$$

a. Why might the natural rate of unemployment depend on recent unemployment (as is assumed in the preceding equation)?

1. 失去了工作的工人随着失业时间增加，可能工作技能上丧失了竞争力、自己更加不适应工作，或者心态上失望不愿意找工作了。
2. 保住工作的人看到失业率很高，可能会更努力防止自己被裁，反而让企业少招一些人。

b. Suppose that the Fed follows a policy to permanently reduce the inflation rate by 1 percentage point. What effect will that policy have on the unemployment rate over time?

根据菲利普斯曲线：

$$\pi_1 - \pi_0 = -0.5(u_1 - u_1^n)$$

$$u_1 - u_1^n = -2(\pi_1 - \pi_0) = 2$$

失业率相对于自然失业率提高了两个百分点。

在下一段时间，自然失业率发生变化：

$$u_2^n = 0.5(u_1 + u_0) = 0.5(2 + u_1^n + u_1^n) = 1 + u_1^n$$

利用递推公式得：

$$\begin{aligned} u_n &= 0.5u_{n-1} + 0.5u_{n-2} \\ &= u_1^n + 1 + 0.5 + 0.5^2 + \dots \\ &= u_1^n + \frac{1 - \frac{1}{2}^n}{1 - \frac{1}{2}} \\ &= u_1^n + 2 - \frac{1}{2}^{n-1} \end{aligned}$$

c.What is the sacrifice ratio in this economy?Explain.

失业率单调递增，产出率总是低于自然产出率，没办法计算牺牲比（无限）。

d.What do these equations imply about the short-run and long-run tradeoffs between inflation and unemployment?

由于失业率和前两年的失业率正相关，我们发现无论长期来看还是短期来看，降低通货膨胀的努力将永久提高失业率水平。