The Macroeconomic Policy Model

Chapter 16.2 – 16.5

Outline

- The macroeconomic policy model
- Macroeconomic policy scenarios
- Experience with inflation and output in US
- Macroeconomic performance of the US

16.2 THE MACROECONOMIC POLICY MODEL

- Understanding macroeconomic policy requires us to incorporate monetary policy rules.
  - We derive the macroeconomic policy curve by combining the IS curve and the Taylor rule.
  - We then incorporate price adjustment to construct the macroeconomic policy model.

The IS Curve Revisited

- We need to rewrite the IS curve as a relation between the output gap and the difference between the actual and equilibrium real interest rates.
  - $R = s_o - s_1 Y + s_2 G$ (16.3)
  - We define R^* as the real interest rate at the full-employment point and call it the **equilibrium real interest rate.** It is
  - $R^* = s_o - s_1 Y^* + s_2 G$ (16.4)

The IS Curve Revisited

- Now we can subtract Equation 16.4 from Equation 16.3 to get a relationship between the difference between the actual real interest rate and the equilibrium real interest rate, on the one hand, and the gap between actual and potential output, on the other hand:
  - $R - R^* = -s_1(Y - Y^*)$ (16.5)
  - Or

$$R - R^* = -(s_1 Y^*)\left(\frac{Y - Y^*}{Y^*}\right) \quad (16.6)$$

The IS Curve Revisited

- We let $\sigma = s_1 Y^*$, it is the slope of the IS curve, and we use the variable we defined earlier

$$\hat{Y} = (Y - Y^*) / Y^*$$

- Then the IS curve is:

$$R - R^* = -\sigma \hat{Y} \qquad (16.7)$$

The Macroeconomic Policy Curve

- Take the Taylor rule from Equation 16.1 and subtract inflation π and the equilibrium real interest rate R^* from both sides:

$$r - \pi - R^* = B\hat{Y} + \delta(\pi - \pi^*) \qquad (16.8)$$

- Since the real interest rate R equals the nominal interest rate minus the expected rate of inflation, we can write Equation 16.8 as

$$R - R^* = B\hat{Y} + \delta(\pi - \pi^*) \qquad (16.9)$$

The Macroeconomic Policy Curve

- Combining the IS curve, Equation 16.7, with the Taylor rule, Equation 16.8, we get

$$\hat{Y} = \frac{-\delta}{(B+\sigma)}(\pi - \pi^*) \qquad (16.11)$$

- We call Equation 16.11 the **macroeconomic policy curve.**

Price Adjustment Revisited

$$\pi = \pi_{-1} + f\,\hat{Y}_{-1} + Z \qquad (16.12)$$

- Where π is inflation, π_{-1} is expected inflation (measured by lagged inflation)

$$\hat{Y}_{-1} = (Y_{-1} - Y^{*}) / Y^{*}$$

- Is the lagged GDP gap, and Z is a price shock.

16.3 MACROECONOMIC POLICY SCENARIOS

- The macroeconomic policy model combines the IS curve, Taylor rule, and price adjustment.
  - We use the macroeconomic policy model to examine four important types of macroeconomic experiences: a boom, disinflation, boom-bust cycle, and an oil price shock.

16.4 EXPERIENCE WITH INFLATION AND OUTPUT IN THE UNITED STATES

- How well does this model work as an explanation of the record of inflation and output fluctuations in modern economies?
  - Overall, the model is consistent with the dynamic movements of inflation and output.

16.5 MACROECONOMIC PERFORMANCE OF THE UNITED STATES

- The inflation–GDP gaps for the United States from 1971 to 2002, as depicted in Figure 16.13, present evidence of a striking improvement in macroeconomic performance between the 1970s and today.
  - We then relate the improvement in macroeconomic performance to changes in the Taylor rule from the 1970s to the 1980s and beyond.

16.5 MACROECONOMIC PERFORMANCE OF THE UNITED STATES

- The macroeconomic performance for the United States has improved greatly since the 1970s.
  - This can be seen in both much lower inflation and much smaller GDP fluctuations since 1984.
  - Changes in the conduct of monetary policy are the most probable cause of the improvement in macroeconomic performance.