Economics 302
Fall 2010
University of Wisconsin-Madison

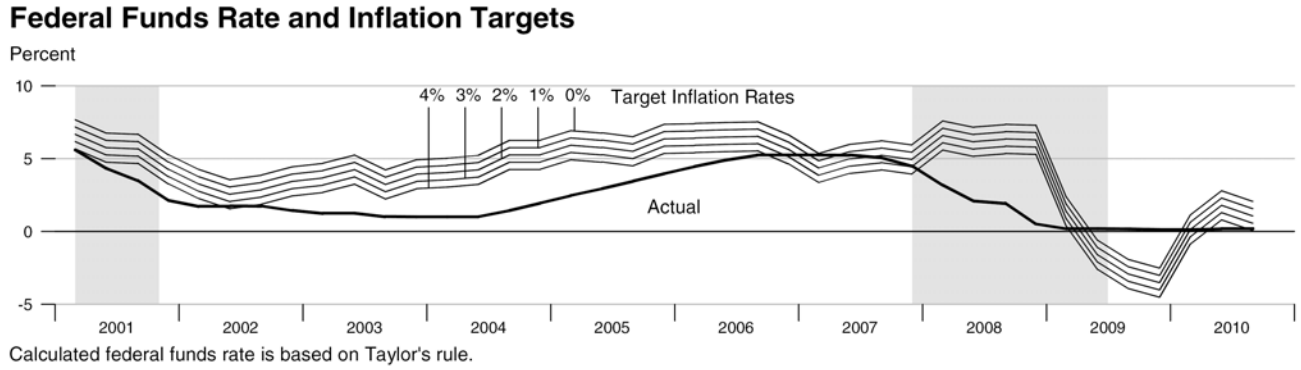
Menzie D. Chinn
Social Sciences 7418

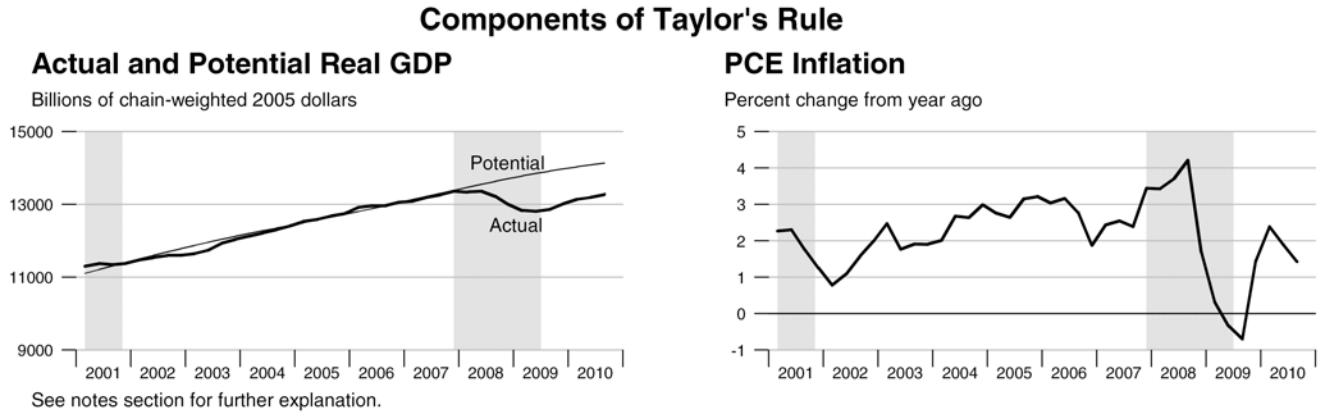
An Integrated Macro Model

Taylor Rule

$$r_t = \pi_t + \beta\hat{Y}_t + \delta(\pi_t - \pi_t^*) + R_t^* \quad (16.1)$$

$$r_t = (1+\delta)\pi_t + \beta\hat{Y}_t + R_t^* - \delta\pi_t^* \quad (16.2)$$





Source: St. Louis Fed, *Monetary Trends*, Dec. 2010 http://research.stlouisfed.org/publications/mt/page10.pdf

IS Curve Revisited

$R_t = s_0 - s_1 Y_t + s_2 G_t$ (16.3), IS curve

$R_t^* = s_0 - s_1 Y^* + s_2 G_t$ (16.4); equilibrium real interest rate. Subtract (16.4) from (16.3) to get

$R_t - R_t^* = -s_1(Y_t - Y^*)$ (16.5); divide and multiply by Y^* to obtain

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

$$R_t - R_t^* = -\sigma\hat{Y}_t \quad (16.7)$$

Macro Policy Curve

Subtract inflation and equilibrium real interest rate R* from Taylor rule (16.1) :

$$r_t = \pi_t + \beta\hat{Y}_t + \delta(\pi_t - \pi_t^*) + R^* \qquad (16.1)$$

$$r_t - \pi_t - R_t^* = \beta\hat{Y}_t + \delta(\pi_t - \pi_t^*) \qquad (16.8);\ \text{recall definition of } R$$

$$R_t - R_t^* = \beta\hat{Y}_t + \delta(\pi_t - \pi_t^*) \qquad (16.9);\ \text{combine with IS curve (16.7)}$$

$$-\sigma\hat{Y}_t = \beta\hat{Y}_t + \delta(\pi_t - \pi_t^*) \qquad (16.10)\ \text{which can also be written:}$$

$$\hat{Y}_t = \frac{-\delta}{(\beta+\sigma)}(\pi_t - \pi_t^*) \qquad (16.11)$$

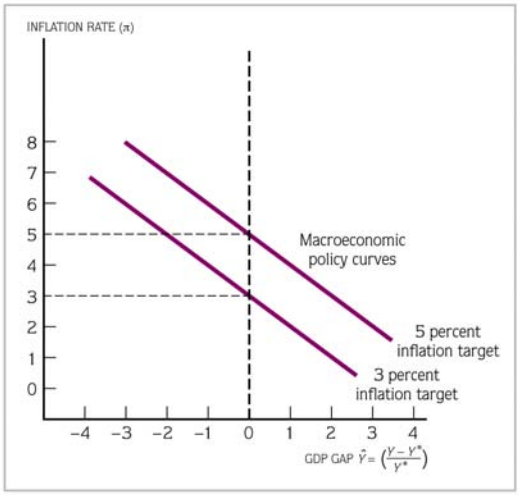


FIGURE 16.6 Shifts in the Macroeconomic Policy Curve

Macroeconomics, 6th Edition

Notice when δ increases (i.e., the weight on inflation increases), the slope of the Macro Policy curve becomes *flatter* (when drawn in a graph with inflation on the vertical axis and the output gap on the horizontal).

Price Adjustment Revisited

$$\pi_t = \pi_{t-1} + f\hat{Y}_{t-1} + Z_t \qquad (16.12)$$

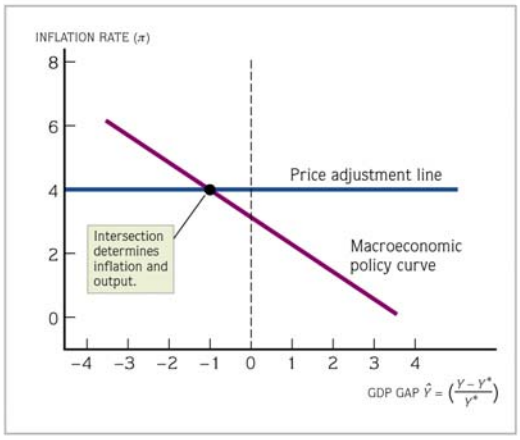


FIGURE 16.8 Simultaneously Determining Inflation and Output

Macroeconomics, 6th Edition