

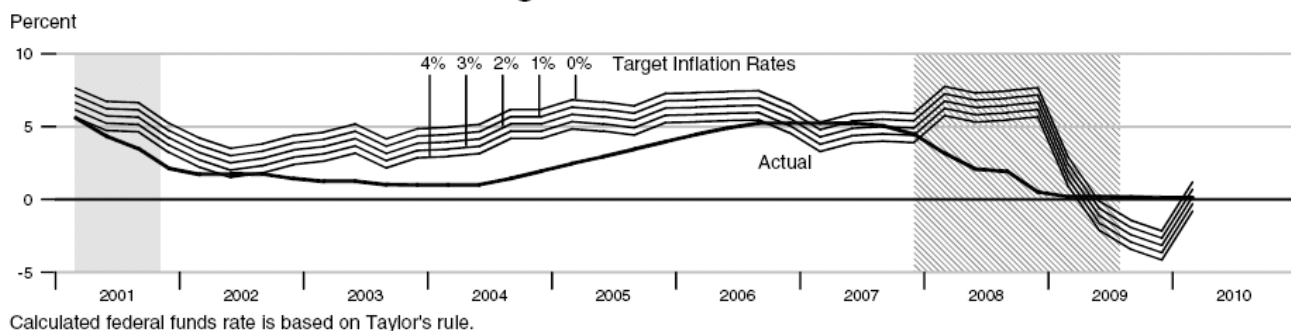
An Integrated Macro Model (updated)

Taylor Rule

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

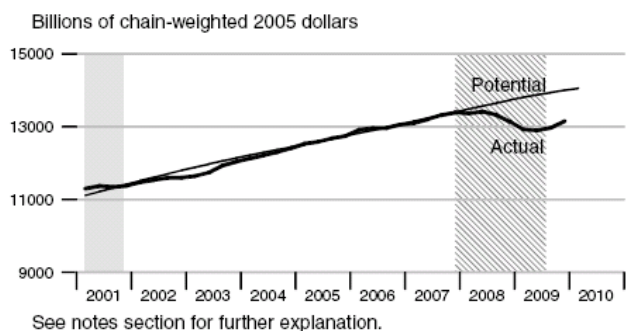
$$r_t = (1 + \delta)\pi_t + \beta \hat{Y}_t + R_t^* - \delta\pi_t^* \quad (16.2)$$

Federal Funds Rate and Inflation Targets

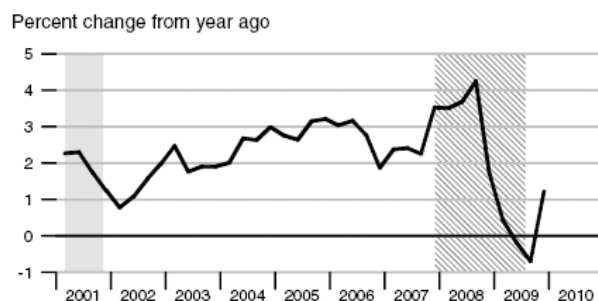


Components of Taylor's Rule

Actual and Potential Real GDP



PCE Inflation



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

IS Curve Revisited

$$R_t = s_0 - s_1 Y_t + s_2 G_t \quad (16.3), \text{ IS curve}$$

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

$$R_t - R_t^* = -s_1(Y_t - Y^*) \quad (16.5); \text{ divide and multiply by } Y^* \text{ to obtain}$$

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

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

Macro Policy Curve

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

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

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

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

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

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

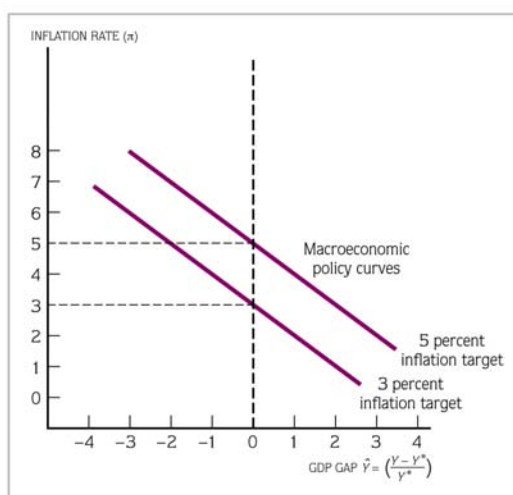


FIGURE 16.6 Shifts in the Macroeconomic Policy Curve

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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

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

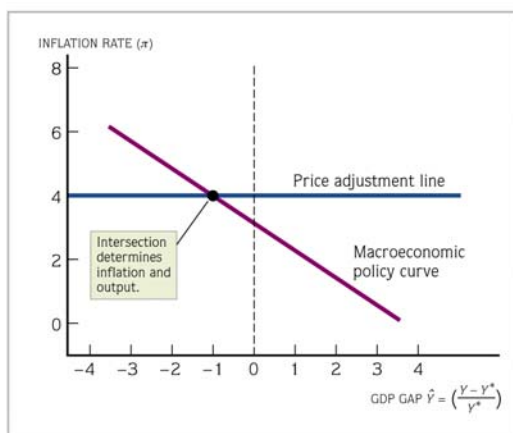


FIGURE 16.8 Simultaneously Determining Inflation and Output

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