

Material 5

1. Taylor rule

The central bank sets a target for the nominal interest rate i_t by

$$i_t = \pi_t + \rho + \theta_\pi(\pi_t - \pi_t^*) + \theta_Y(Y_t - \bar{Y}_t)$$

In this equation, π_t^* is the central bank's target for the inflation rate. \bar{Y}_t is the natural level of output. ρ is the natural rate of interest (the real interest rate at which, in the absence of any shock, the demand for goods and services equals the natural level of output).

θ_π measures how much the central bank adjusts the interest rate when inflation deviates from its target.

θ_Y measures how much the central bank adjusts the interest rate when output deviates from its natural level.

John Taylor's estimation:

Nominal Federal Funds Rate = Inflation + 2.0 + 0.5(Inflation - 2.0) + 0.5(GDP gap)

where GDP gap = $100 \times \frac{\bar{Y} - Y}{\bar{Y}}$.

So the estimation of natural rate of interest rate is 2%. The estimation of the Fed's inflation target is 2%. The estimations of θ_π and θ_Y are 0.5 and 0.5.