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International Finance

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1 Interest Rate

$$\begin{aligned} i_t^\star &= \bar{i} + \pi_{t-1}\alpha + g_{t-1}\beta \\ i_t &= \rho i_{t-1} + (1-\rho) i_t^\star + e_t \end{aligned} \tag{1.1}$$

where $i_t^\star$ is the optimal interest rate, π_{t-1} is the inflation rate of the previous term, and g_{t-1} is the growth rate of the previous term. If we assume normal distribution for the error term,

$$i_t \,|\, \Theta, F_{t-1} \sim N\left(\rho i_{t-1} + (1-\rho)\bar{i} + (1-\rho)\pi_{t-1}\alpha + (1-\rho) g_{t-1}\beta, \sigma^2\right) \tag{1.2}$$

where $\Theta = (\bar{i}, \alpha, \beta, \sigma^2, \rho)$. There are several theoretical constraints to this model.

- The interest rate should rise if the inflation rate is too large; hence, α should be positive.
- The interest rate should rise if the growth rate is too large (the economy is overheated); hence, β should be positive as well.
- ρ should be $0 < \rho < 1$.

References