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Intermediate Macroeconomic Theory
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Problem Set 5

Answer each of the following two problems:

Problem 1:

Let Q_t be the price of a stock, D_t the dividend payment and R the required gross rate of return on the stock. It follows that the stock must be priced to satisfy:

$$\frac{E_t(D_{t+1} + Q_{t+1})}{Q_t} = R$$

where the left side of the equation is the expected rate of return from holding the stock.

Use forward iteration to solve for Q_t. Show that Q_t equals the expected discounted stream of dividends.

Problem 2:

Let m_t be the log of the money supply and p_t the log of the price level. Then suppose money demand is given by

$$m_t - p_t = k - \alpha E_t(p_{t+1} - p_t)$$

with $0 < \alpha < 1$.

How can one motivate this specification for money demand? Assuming perfect foresight, derive a solution for inflation ($\pi_t = p_t - p_{t-1}$) as a function of current and expected future money growth ($\mu_{t+i} = m_{t+i} - m_{t+i-1}$).

Now suppose money growth is initially constant at the value μ. What is the inflation rate?

Finally suppose that the central bank reduces money growth to $\underline{\mu}$ What is the effect on inflation if the cut in money growth is expected to be permanent? What is the effect if money growth is eexpected to revert back to μ after T periods? What will the path of infation look like from time t to $t + T$? Explain.