Lecture 4

$$\max_{P_t^*} \sum_{s=0}^{\infty} \theta^s E_t\left[M_{t,t+s}\left(P_t^* Y_{it+s|t} - \Psi(Y_{it+s|t})\right)\right]$$

$$\text{s.t.} \quad Y_{it+s} = \left(\frac{P_t^*}{P_{t+s}}\right)^{-\varepsilon} Y_{t+s}$$

F.O.C.

$$0 = \sum_{s=0}^{\infty} \theta^s E_t\left[M_{t,t+s}\underbrace{\left(Y_{it+s|t} + P_t^* \frac{\partial Y_{it+s|t}}{\partial P_t^*} - \psi(Y_{it+s|t})\frac{\partial Y_{it+s|t}}{\partial P_t^*}\right)}\right]$$

$$= Y_{it+s|t}\left(P_{it}^* - M\psi_t\right)$$

$$= \sum_{s=0}^{\infty} \theta^s E_t\left[M_{t,t+s} Y_{it+s|t}\left(P_t^* - M\psi(Y_{it+s|t})\right)\right]$$