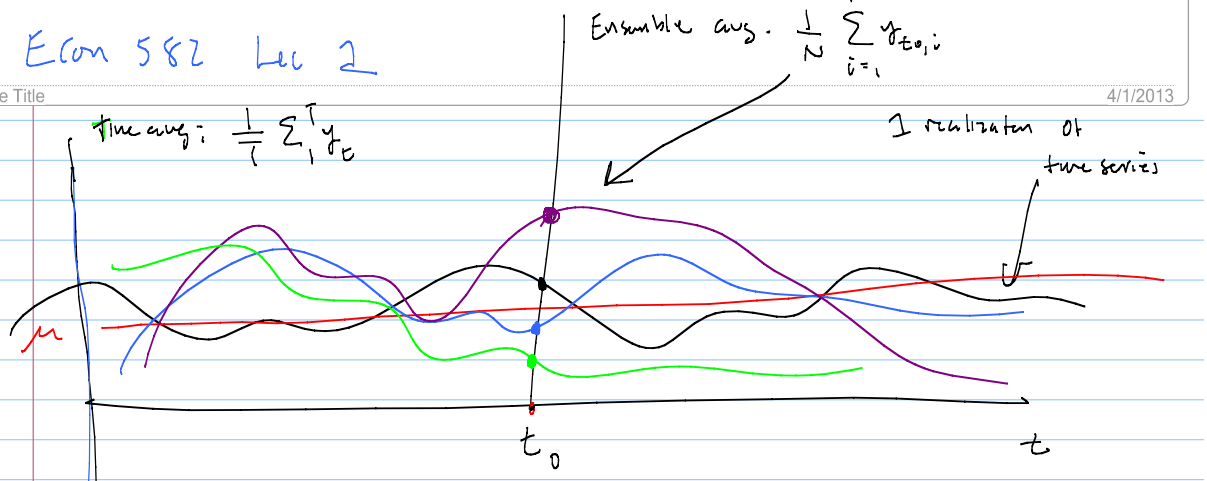
Econ 582 Lec 2

Note Title 4/1/2013



$\{ Y_1 = y_{1,1} \; , \quad Y_{t_0} = y_{t_0,1} \; , \; - \; - \; \}$

$\{ \ldots Y_1, Y_2, \ldots \ldots (Y_{t_0}) \ldots \}$

$\{ \; Y_1 = y_1, Y_2 = y_2, \ldots, Y_{t_0} = y_{t_0} \; \}$

Digression on Lag operators

$$L y_t = y_{t-1} \quad ; \quad L^2 y_t = L(L y_t)$$

$$= L(y_{t-1})$$

$$= y_{t-2}$$

$$L^{-1} y_t = y_{t+1}$$

$$L^{-1} L = I$$

$$L^{-1} L y_t = y_t$$

$$y_t = \epsilon_t + \psi_1 \epsilon_{t-1}$$

$$= \epsilon_t + \psi_1 \cdot L \epsilon_t$$

$$= (1 + \psi_1 L) \epsilon_t$$

$$\Rightarrow \quad y_t = \psi(L)\,\varepsilon_t$$

$$\psi(L) = 1 + \psi_1 L$$

$$y_t = \mu + \varepsilon_t + \psi_1 \varepsilon_{t-1} + \psi_2 \varepsilon_{t-2} + \cdots$$

$$= \mu + \sum_{j=0}^{\infty} \psi_j \varepsilon_{t-j}, \quad \psi_0 = 1$$

$$= \mu + \psi(L)\,\varepsilon_t$$

$$\psi(L) = 1 + \psi_1 L + \psi_2 L^2 + \cdots$$