14.127 Behavioral Economics. Lecture 12

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0.1 Twin stocks

- Shell and Royal Dutch — claims on the same company

- There is a difference between prices

- The difference is driven by the difference in aggrogate movements in London vs Dutch stock markets

- Sharpe ratio (expected return/standard deviation) of this aribtrage is not great

0.2 Are noise traders eliminated from the market?

- DSSW setup $E\left(R_{NT}-R_A\right)=$
  $E\left[\left(\lambda_t^{NT}-\lambda_t^{A}\right)\left(r+p_{t+1}-p_t\left(1+r\right)\right)\right]=\rho^*-\frac{(1+r)^2\left(\rho^{*2}+\sigma^{*2}\right)}{2\gamma\mu\sigma_\rho^2}$

- Might be both positive and negative

- If γ is large enough, then $E\left(R_{NT}-R_A\right)>0$ and noise traders prevail

- This is because noise traders are more optimistic and take more risk

- But by construction $EU^A>EU^{NT}$

- Stock returns look like a random walk [see slides]

- Evidence from stock splits — supports efficient market hypothesis [see slides]

- Event study methodology [see slides]

- Jensen: "The Efficient Market Hypothesis is the best established fact in all of social sciences"

- de Bondt and Thaler JoF 1985 [see slides]

- Value vs growth [see slides]: a recent attempt at explanation by consumption covariance — growth stocks have low covariance with consumption because most of risk is idiosyncratic; conversely GM has high covariance (Parker, Julliard, Barsal)

- Initial Public Offerings [see slides]

0.3 Campbell-Cochrane "By force of habit" JPE 1999

- Explains low equity premium in booms and high in recessions

- $U = \sum \delta^t \frac{(C_t - X_t)^{1-\gamma}}{1-\gamma}$ where X_t is your habit

- Denote $S_t = \frac{C_t - X_t}{C_t}$ surplus/consumption ratio, $s_t = \ln S_t < 0$.

- $U_c^t = (C_t - X_t)^{-\gamma}$ and $\frac{-CU_{cc}^t}{U_c^t} = \gamma \frac{C_t}{C_t - X_t} = \frac{\gamma}{S_t} > \gamma$.

- "Catching up with the Joneses economy" — what makes me happy is not my consumption compared to my past consumption (internal habit) but my consumption compared to past consumption in the economy (external habit).

- This is too simplify the problem: noone's current consumption impacts his or her future habit

- Representative consumer economy. Aggregate $s^a = \ln S^a < 0$, $S_t^a = \frac{C_t^a - X_t^a}{C_t^a}$

- Postulates

$$s_{t+1}^a = (1 - \phi)\,\bar{s} + \phi s_t^a + \lambda\,(s_t^a)\left(\ln C_{t+1}^a - \ln C_t^a - g\right)$$

where g is mean growth rate and $\phi \in (0, 1)$ determines mean reversion.

- Lucas economy $\Delta \ln C^a_{t+1} = g + v_{t+1}$

- Euler equation

$$1 = E\left(\frac{M_{t+1}}{1+r} R_{t+1}\right)$$

with

$$M_{t+1} = \delta \frac{U_c\left(C^a_{t+1}, X^a_{t+!}\right)}{U_c\left(C^a_t, X^a_t\right)} = \delta \frac{\left(C^a_{t+1} - X^a_{t+1}\right)^{-\gamma}}{\left(C^a_t - X^a_t\right)^{-\gamma}}$$

$$= \delta \left(\frac{S^a_{t+1}}{S^a_t}\right)^{-\gamma} \left(\frac{C^a_{t+1}}{C^a_t}\right)^{-\gamma} = \delta e^{-\gamma\left((1-\phi)(\bar{s}-s_t)+g\left(1+\lambda\left(s^a_t\right)\right)v_{t+1}\right)}$$

- They postulate $1 + r = E\left[M_{t+1}\right]$ is constant

$$1 + r = \delta e^{-\gamma\left((1-\phi)(\bar{s}-s_t)+g^2\left(1+\lambda\left(s_t^a\right)\right)^2\sigma_v^2\right)}$$

- Hence

$$\lambda\left(s_t\right) = \frac{1}{\bar{S}}\sqrt{1 + 2\left(\bar{s} - s_t\right)} - 1$$

- To price stocks, use

$$R_{t+1} = \frac{P_{t+1} + D_{t+1}}{P_t}$$

to write the Euler equation as

$$1 = \frac{1}{1+r} E\left[M_{t+1} \frac{P_{t+1} + D_{t+1}}{P_t}\right]$$

- Thus

$$\frac{P_t}{D_t} = \frac{1}{1+r} E\left[M_{t+1} \frac{D_{t+1}}{D_t}\left(1 + \frac{P_{t+1}}{P_t} s_{t+1}\right)\right]$$

- Postulate, $\frac{P_t}{D_t} = f(s_t)$, ln $\frac{D_{t+1}}{D_t} = g_D + w_{t+1}$ and solve for $f(s_t)$.