Financial Markets II, Spring 2009
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HOMEWORK ASSIGNMENT FOUR

1. [1 point] **GMM**

This question follows Hansen and Singleton (1982). You will need the data from St Louis FED web page for the period January, 1959-December, 2007 in monthly frequency. The data in the wk1 format are in the file HW4_Pr1_data.wk1 and can be open in TSP through the Looking Glass program. The data set consists of the following series: real personal consumption expenditures on services (cs), non-durables (cnd), 1-year treasury bond interest rate (rf,risk free rate), the return on a value-weighted portfolios of the S&P 500 Universe ($vwretd$, includes the dividend distribution), and a population pop. As a consumption measure, use per capita consumption of non-durables and services. As a return on equity re use $vwretd$.

a. Follow the GMM_manual.pdf to estimate β and γ by GMM in the the Euler equation $E_t\left[(1+re_t)\beta(c_t/c_{t-1})^{-\gamma}\right]=1$ using heteroskedasticity and autocorrelation consistent options with instruments consisting of a constant, c_{t-1}/c_{t-2}, c_{t-2}/c_{t-3},re_{t-1}, re_{t-2}. Report parameter estimates with corresponding standard errors and p-values plus the Hansen J-statistic.

b. Estimate a two-return model using a mask option in TSP. The system of equations in this case is $E_t\left[(1+re_t)\beta(c_t/c_{t-1})^{-\gamma}\right]=1$ and $E_t\left[(1+rf_t)\beta(c_t/c_{t-1})^{-\gamma}\right]=1$ with instruments consisting of a constant, c_{t-1}/c_{t-2}, c_{t-2}/c_{t-3},re_{t-1}, re_{t-2},rf_{t-1},rf_{t-2}. Report parameter estimates with corresponding standard errors and p-values plus the Hansen J-statistic.

c. Compare results from a and b. How do they differ and why? Considering your results from b, is there is still an equity premium puzzle?

2. [0.5 point] **Bubbles**

Problem 7.8. in *Advanced Macroeconomics* by Romer (2002, 2nd edition).

3. [0.5 point] **The Lucas Asset Pricing Model**

Problem 7.9. in *Advanced Macroeconomics* by Romer (2002, 2nd edition).

4. [1 point] **Log-Linearization in Models with Human Capital**

Use the book *Strategic Asset Allocation* by Campbell and Viceira (2002). Demonstrate the derivation of (6.22) from (6.21).

5. [1 point] **Testing for Bubbles in the Real Estate Markets using Panel Data**

Use the data us23.txt, which are described in the paper Mikhed_Zemcik_JREFE.pdf in detail. They are semi-annual, for the period from 1978:1-2006:2. Real rents and real house prices for 23 US regions, normalized to be 1 in 1995:1.

Use the IPS test (see the paper for details) to find if the price to rent ratio is stationary. Use Stata and the stata do-file template IPS.do. Was there a bubble on the US market using this dataset?

6. [1 point] **Behavioral Finance**

a. *Conservatism* Consider the following experiment. There are two urns, one containing 2 blue balls and 8 red ones, and the other containing 8 blue balls and 2 red ones. A random draw of 12 balls, with replacement, from one of the urns yields 8 reds and 4 blues. What is the probability that the draw was made from the first urn? Use this experiment as an example and illustrate the principle of conservatism (i.e. over-emphasizing the base rates).

b. *Nonlinear Probability Transformation* Let $\pi(p)$ is a nonlinear probability transformation in the context of the prospect theory (see p. 18, Barberis and Thaler, A Survey of Behavioral Finance 2002, NBER WP 9222). Consider the following pair of choices:

$$(3000, 1) \succ (4000, 0.8; 0, 0.2) \tag{1}$$

and

$$(4000, 0.8; 0, 0.2) \succ (3000, 0.25). \tag{2}$$

Show that these choices imply

$$\frac{\pi(0.25)}{\pi(0.2)} < \frac{\pi(1)}{\pi(0.8)}. \tag{3}$$