ECONOMICS 7344, Spring 2005
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April 8, 2005

Midterm Exam 2, April 13 — 4 questions. All sub-questions carry equal weight.

1. (30%) Consider the PIH model. Assume that a consumer's income follows the AR(1) process

$$y_t = 2 + 0.5 y_{t-1} + e_t \quad (*)$$

where e_t is white noise with variance 3.

Assume that the rate of interest is 10 percent and that the consumer have assets $A_t = 100$.
a) Find the *level* of consumption in period t, under the assumption that $y_t = 4$.
b) If $y_{t-1} = 2$ what is $c_t - c_{t-1}$?

2. (40%) Assume that 2 agents (or countries) live for 2 periods in an economy with perfect Arrow-Debreu markets and no storage. Assume that the endowment of the first agent is $y_0 = 3, y_1 = 2$ and that the endowment of the second agent in period 0 is $y_0^* = 2$ and in period 1 his or her endowment is $y_1^* = 3$ in state "A" In the state "B" b the endowment of the second agent is $y_1^* = 1$. Assume that the good state happens with probability 1/2.
a) Find the period 0 prices of the Arrow securities paying off in state A and B, respectively.
b) Explain in words (i.e., give the intuition) why one of the Arrow securities have a higher price than the other.
c) Find the safe rate of interest.
d) Give one (intuitive) reason for why the interest rate is positive or negative (whatever you found in part c)?

3. (15%) *Derive* the consumption CAPM.

4. (15%) *Explain* what is meant by the equity premium puzzle.