

Question for seminar 6

11th November 2009

1 Risky assets

We are looking at a consumer who lives for two periods. He starts life with no assets and leaves no bequests. His consumption in the two periods is C_0 and C_1 . His earned income is Y_0 in the first period and Y_1 in the second period. In the first period he has the opportunity to invest in two assets which yield gross returns in the second period $1 + r_a$ and $1 + r_b$. The amount he invests in the first asset is A_a , in the second A_b . Y_1 , r_a and r_b are stochastic.

- 1 Write down the budget equations for the consumer for the two periods.
- 2 The consumer's utility function is

$$U = E[u(C_0) + (1/(1 + \rho))u(c_1)], \quad \rho > 0 \quad (1)$$

where

$$u(C) = \frac{1}{1 - \theta} C^{1 - \theta}, \quad \theta > 0$$

Derive the first-order conditions for maximum utility and give a verbal interpretation of them.

- 3 Assume (for this question only) that the two assets have the same expected return. Show that the first-order conditions in this case imply that

$$\text{Cov}(u'(C_1), 1 + r_a) = \text{Cov}(u'(C_1), 1 + r_b) \quad (2)$$

Which asset will be most in demand, a or b ?

- 4 Suppose the consumer earns his income from farming and that one of the assets is shares in a food-processing firm that buys its raw materials from his and similar farms. Should he buy shares in this firm and how much?
- 5 Assume now that asset a is risk-free. How does this change the first-order conditions?
- 6 Now, assume that the economy is inhabited by a large number of consumers identical to the one we have studied. Explain how the first-order conditions from question 5 can then be used to determine the expected excess return on the risky asset.

2 Ricardian equivalence

Explain what is meant by Ricardian equivalence and discuss the conditions for Ricardian equivalence to apply.

3 A real-business cycle model

Do problem 4.11 p. 219 in Romer's book.