Advanced Financial Theory
Fall 2014

Exam date: 17.12.2014 Time allowed: 4 hours

Examiner: Syed Mujahid Hussain

Please attempt all five (05) questions as they carry equal marks. **Good Luck!**

Question 1: Please clearly mark whether each of the following is true or false.

1. If asset A is stochastically dominant over asset B according to the second order criterion, it is also dominant according to the first order criterion.
2. A second order stochastic dominance criterion is consistent with utility functions that have positive marginal utility and risk aversion.
3. A risk neutral investor will choose a second order stochastic dominance as a decision criterion only if the returns of the underlying assets are normally distributed.
4. The Arbitrage Pricing Theory (APT) factors represent diversifiable risks.
5. There is no theory that specifically identifies the APT factors.
6. Growth stocks usually have fast growing dividends.
7. If asset A has a higher mean and higher variance then asset B, it is stochastically dominant, according to the first order criterion.

Question 2:

a. Please define the concept of a "complete market"? (2 points)
b. What are the consequences of complete markets? (2 points)
c. What are primitive assets and why they are important? (2 points)
d. What are the price determinants of primitive assets (2 points)? Derive the equation for the price determinants of primitive assets (4 points). What would be the risk premium under the condition of risk neutrality (2 points)?

Question 3:

Please derive the Black - Zero Beta Capital Asset Pricing Model (CAPM) assuming no risk-free asset. Also assume that

a. The investors identify the market portfolio M which lies on the efficient frontier.

b. The investors identify all portfolios which are uncorrelated with M (with $\beta zm = 0$).
   - Zero beta portfolios with Cov (R_z,R_m) = 0 for all z.
   - Same systematic risk for every z.
   - Same expected return K, i.e. E (R_z) = K for all z.

Question 4:

a. Given a return on investment of 100 million Euros of either 10% or 20%, with 50%-50% probabilities, and the interest rate on debt is 12%. Assume that company A is unlevered and company B is financed with 50% equity and 50% debt. (6 Points)
   - Please show that the Modigliani-Miller's proposition II holds

b. Describe the pecking order of financing choices, and provide some explanations for the observed pecking order behaviour. (4 points)

c. Given a world with corporate taxes, what would be the effect of a decrease in the corporate tax rate, ceteris paribus, on the aggregate amount of debt in the economy? (4 points)

Question 5:

a. The parameter, γ_2 in the following cross-sectional regression measures the effect of dividend yields on required returns.

$$R_j = a + \gamma_1 \beta_j + \gamma_2 Divyld_j + \varepsilon_j$$

   i. Some empirical studies have found γ_2 to be significantly positive, how would you argue against it? (4 points)

b. What factors induce firms to pay out dividends? (4 points)

c. Some recent empirical evidence suggests that dividend payout ratios over the years have declined worldwide. Please describe the factors that may be responsible for this phenomenon. (6 points)