

Tentin päivämäärä / Date of exam: May 8, 2012
Opintojakson koodi, nimi ja tentin numero / The code and the name of the course and number of the exam: 721383S, Asset Pricing 1/3
Tentaattori(t)/ Examiner(s): Hannu Kahra
Sallitut apuvälineet / The devices allowed in the exam: <input checked="" type="checkbox"/> Laskin (ei graafinen/ohjelmoitava)/Calculator (not graphic, programmable) <input checked="" type="checkbox"/> Sanakirja/Dictionary <input checked="" type="checkbox"/> Muu materiaali, tarkennettu alla/Other material, specified below Kaikki kirjallinen materiaali (kirja/kirjoja, artikkeleita, luentomateriaalia, jne.)
Tenttiin vastaaminen / Please answer the questions <input checked="" type="checkbox"/> suomeksi/ in Finnish <input checked="" type="checkbox"/> englanniksi/ in English
Kysymyspaperi on palautettava / Paper with exam questions must be returned: <input type="checkbox"/> Kyllä/Yes <input checked="" type="checkbox"/> Ei/No

Keep in the facts and try to avoid story-telling. Optimize your time.

1. Is it possible that an optimal portfolio has an asset whose expected risk premium is negative, i.e. whose mean return is less than the risk-free rate? Explain.
2. The key finding in modern finance (1980 – present) is that asset returns are predictable at long horizons. Is it evidence against market efficiency? Explain. Predictability gets even better when the horizon gets longer. Explain, why?
3. One of the Fama-French findings is that small cap value stocks have the highest mean return. Does the finding provide investment advice that people should buy small cap and value company stocks and avoid large and growth company stocks? Explain.
4. The typical portfolio allocation formula says stock allocation should depend on the ratio of mean to variance of total return:

$$\text{stock share} = \frac{1}{\text{risk aversion}} \times E(r) / \sigma^2(r).$$

$$R_{t+1} = a + b \times (D/P)_t + \varepsilon_{t+1}$$

Should an investor with a 10 horizon allocate more to stocks than an investor with a 1 year horizon because “stocks are safer in the long run” and he can “wait out market declines”? Hint: calculate the mean to variance ratios with iid returns (returns are independent over time) and compare.

5. You show a friend the following table (the numbers are slightly simplified)

$$R_{t+1} = a + b \times (D/P)_t + \varepsilon_{t+1}$$

	b	t	R-squared
Value	4.0	2.47	0.09

Your friend says “Come on now, that’s not important. Ok, you got a t statistic above two, but the R-squared is only 9%. That’s not important in economic or practical sense. It’s tiny.” What facts might you cite to defend the importance of this regression? Hint: What’s the definition of R-squared? Is there a better number? Use the numbers in the table where possible. Have a look at Problem 2.

6. Assume you have observed that stock returns depend on the first letter of the name of the company such that companies starting with the letter A (e.g. Acme Inc.) has the highest mean returns, companies starting with the letter B (e.g. Bust Inc.) have the second highest mean returns ... and companies starting with the letter Z (e.g. Zorro Inc.) have the lowest mean returns. How do you test your hypothesis of a new risk factor?
7. You estimate the CAPM for a set of assets, say 100 stocks. How do you test the hypothesis that the residual risk (variance of the unsystematic component) is also priced? How do you test the hypothesis that the higher order moments (skewness and kurtosis of the residual) are also priced along with the market portfolio return and the residual risk? What are the expected signs of the associated betas?
8. Factor mimicking portfolios. What are they? How do you construct one?