ECON30024
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Tutorial 8 (for Week 9)

1. Review Quiz 8 questions.

2. The following table contains ten years of **excess return** data for the ordinary shares of company A and the market portfolio. Discuss how could you use this information to obtain an estimate of the beta-coefficient for company A's ordinary shares, run a regression to obtain such an estimate, and discuss whether your results support the CAPM or not.

Year	A's share (%)	Market Portfolio (%)
1	5.40	3.50
2	12.05	8.65
3	13.00	9.80
4	7.65	5.55
5	6.95	4.10
6	-2.65	-1.00
7	-3.25	-2.50
8	3.60	1.85
9	3.25	3.05
10	5.40	4.60

3. Consider a world with three assets for which time series estimations yield:

$$\begin{aligned}
\text{Asset 1}: \; & r_{1t} - r_{0t} = 0.09 + 1.50(r_{Mt} - r_{0t}) + \varepsilon_{1t} \\
\text{Asset 2}: \; & r_{2t} - r_{0t} = 1.05 + 0.40(r_{Mt} - r_{0t}) + \varepsilon_{2t} \\
\text{Asset 3}: \; & r_{3t} - r_{0t} = 0.10 + 1.20(r_{Mt} - r_{0t}) + \varepsilon_{3t}
\end{aligned}$$

   You also calculate that the average rates of return on the two assets are: $\bar{r}_1 = 0.20, \bar{r}_2 = 0.14$, and $\bar{r}_3 = 0.16$, respectively.

   (a) Explain how to estimate the Security Market Line from this information.

   (b) What inferences, if any, would you draw from the estimation about (i) the validity of CAPM; (ii) portfolio strategies with respect to the three assets.

   (c) Suppose that one of your friends claims that the Earnings/Price ratio, E/P, should also appear in the equation of the Security Market Line. As a result you collect data for each firm's average E/P. What is the appropriate regression which should be estimated? Suppose that you run the regression and find that the coefficient on E/P is not significantly different from zero? What inferences, if any, would you draw from this result?

4. The question raised in footnote 1 of the solution to Tutorial 7: Is it possible to construct an arbitrage portfolio of portfolio A and B? Why or why not?

5. Discussion: Recall that testing the EMH requires a model of asset prices and an information set to provide the criteria for efficiency. The CAPM often serves as the model for testing asset market efficiency. That is, if asset markets are efficient, asset prices or expected returns should behave as predicted by the CAPM. So if an empirical test rejects the CAPM, this is often interpretted as evidence against market efficiency.

   Why does the CAPM often serve as the benchmark for testing asset market efficiency? Does the CAPM implicitly assume market efficiency?