

Extra test, 23.3.2012

PART 1 (corresponding Test 1)

1. You are given the following end-of-period prices with their respective probabilities for shares of XYZ Company: (4p)

Probability	0.10	0.15	0.25	0.30	0.20
End-of period price per share	28	36	45	56	63

Assume the current stock price is 48 per share. Calculate

- The rate of return for each of the five possible end-of-period prices per share,
 - The expected return,
 - The variance of the end-of-period returns, and
 - The semivariance of the end-of-period returns. Why might some investors be concerned with semivariance as a measure of risk?
2. In the following table you are presented with five years of return data for the stock of Baker Hughes Inc. and for the MSCI World index: (4p)

Year	MSCI World	Baker Hughes
2007	4.9%	8.6%
2008	-41.6%	-63.4%
2009	27.7%	35.0%
2010	8.8%	38.9%
2011	-5.0%	-10.4%

The risk free return is 1% and is expected to remain at this point for the foreseeable future. Calculate:

- the average index return,
 - the variance of the index return,
 - the average return of the stock of Baker Hughes Inc.
 - the covariance between the return of the stock and the return of the index.
 - Write the equation of the ex-post security market line.
 - Using these data, what would be the required rate of return for the stocks of Baker Hughes Inc?
3. True or false? (2p)
- The Capital Asset Pricing Model implies that, if you could find an investment with a negative beta, its expected return would be less than the interest rate.
 - The expected return on an investment with a beta of 2.0 is twice as high as the expected return on the market.
 - If stocks were perfectly positively correlated, diversification would not reduce risk.
 - The contribution of a stock to the risk of a well-diversified portfolio depends on its market risk.

PART 2 (corresponding Test 2)

4. Assume that the CAPM holds and that returns are generated by a two-factor model. You are given the following information:

Security	b_{11}	b_{12}
A	0.80	1.10
B	1.00	0.70

$$\sigma_M^2 = 324, \text{COV}(F_1, r_M) = 156, \text{COV}(F_2, r_M) = 500.$$

Calculate the CAPM beta coefficients of securities A and B.

(4p)

5. Consider the following investment:

- Two years ago, you bought stocks for EUR 100,000.
- One year ago, the value of your portfolio was EUR 115,000. Then you invested EUR 50,000 more into the stocks of the same company.
- Today, the value of your portfolio is EUR 204,000.

(3 p)

Compute the return using the formula for

- the internal rate of return (yield, a “dollar weighted return”),
- geometric mean return (a time weighted return)
- Why do the results differ, and which one would you prefer in general if you worked as a fund manager for a client putting randomly money in and out of the fund?

6. As an analyst you have been asked to analyze the relationship between the return on Coca-Cola Enterprises (CCE) common stock and the return on the market using the Standard & Poor’s 500 Stock Index as a proxy for the market. The data include monthly returns for both CCE and S&P 500 over a recent five-year period. The results of the regression are indicated below:

$$R_{CCE,t} = 0.59 + 0.94R_{S\&P,t} + e_{CCE,t},$$

(0.81) (3.10)

where

$R_{CCE,t}$ = return on CCE common stock in month t ,

$R_{S\&P,t}$ = return on S&P 500 stock index in month t ,

$e_{CCE,t}$ = residual error in month t .

The numbers in parentheses are the t -statistics (the 0.01 critical value is 2.66). The coefficient of determination R^2 for the regression is 0.215. Identify which of the following statements are incorrect and justify your answers. (3p)

- The regression statistics indicate that during the five-year period under study, when the annual return on the S&P was zero, CCE had an average annual return of 0.59%.
- The beta value of 0.94 is a measure of the variability of the return on the market.
- The coefficient of 0.94 indicates CCE’s sensitivity to the return on the S&P 500 and suggests that the return on CCE’s common stock is less sensitive to market movements than the average stock.

- d) The R^2 for the regression of 0.215 indicates that the average estimate deviates from the actual observation by an average of 21.5%.
- e) The regression should be rerun using ten years of data. This would improve the reliability of the estimated coefficients while not sacrificing anything.

GOOD LUCK !!!