

Question 1

Solve the following equations:

$$1 = 0.25 + 0.2 + x + y$$

$$1 = 0.25*0.8 + 0.2*1.3 + x*1.5 + y*0$$

- (i) \$343,333
- (ii) \$206,667
- (iii) 0

Question 2

Expected Return A = 10.8%

Expected Return B = 9.33%

Standard Deviation A = 3.8%

Standard Deviation B = 12.02%

Covariance A and B = 45.39(%)²

Correlation Coefficient A and B = 0.993

Question 3

- a) This reaction is not an evidence that the Argentinean stock market is not semi-strong form efficient. By the contrary, the fact that the price of the stock adjusted quickly (only minutes after the announcement) suggests that the market is semi-strong form efficient. The fact that the price increased, rather than decreased would only mean that the investors considered this to be positive news to the firm.
- b) Being the market semi-strong form efficient, the price already incorporated the effects coming from the change in management of the company. Therefore, all the abnormal returns coming from this information have already been exploited. So future investors of this company will not benefit from this announcement. You should specially encourage or discourage investing in the firm on the basis of this announcement.

Question 4

- a) Expected Return of Portfolio = 22.5%
Standard Deviation of Portfolio = 39.78%
- b) MVportfolio weight of ABC = 0.848
This means that any portfolio in the efficient frontier has at most 84.8% of the money invested in ABC and at least 15.2% of the money invested in XYZ
So, a rational, risk averse investor would never invest in a portfolio with more than 84.8% of the money in ABC and less than 15.2% of the money in XYZ.
- c) You need to solve this equation: $19 = w \cdot 15 + (1-w) \cdot 25$
The result is $w = 0.6$
The standard deviation of this portfolio is 33.85%
- d) No. This portfolio is in the efficient frontier (given the limits already described in part (b)). So, there is no reason why you would discourage Mr. Grey from investing in this portfolio.

Question 5

- a) Expected Return of Market = 15%
Expected Return of Aggressive = 18%
Expected Return of Defensive = 9%
Standard Deviation of Market = 10%
Standard Deviation of Aggressive = 20%
Standard Deviation of Defensive = 3%
Covariance between Market and Aggressive = $200(\%)^2$
Covariance between Market and Defensive = $20(\%)^2$
- Beta of Aggressive = 2
Beta of Defensive = 0.3
- b) See answer in (a)
- c) SML: $E(R_i) = 6\% + 9\% \cdot \text{beta}_i$
- d) According to CAPM the return of Aggressive should be 24% and the return of Defensive should be 8.7%
So, aggressive is below the SML, which means you should sell it, and Defensive is above SML, which means you should buy.

- e) Since this will be an undiversified portfolio (only one stock), the correct measure to use is the Sharpe Ratio of the two stocks. Aggressive has a Sharpe Ratio of 0.6 and Defensive has a Sharpe Ratio of 1. So, you should use Defensive if you want to combine it with the Risk Free Asset.