**Finance**

1. Assume that the single index model is valid. Stock A has a beta of 0.9 and a standard deviation of returns of 0.4. The standard deviation of returns on the market portfolio is 0.2. What proportion of the total risk is due to firm-specific factors?
2. You have $10,000 to invest. You've done some security analysis and generated the following data for three stocks and Treasury bills, including weights in the optimal risky portfolio (ORP) from doing Markowitz portfolio optimization:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Security | Stock A | Stock B | Stock C | T-bills |
| Expected Return (%) | 12 | 11 | 5 | 3 |
| Variance | 0.04 | 0.03 | 0.02 | 0 |
| Beta | 1.2 | 1.5 | 0.8 | 0 |
| Weight in ORP (%) | 47 | 18 | 35 | 0 |

a) If you want to achieve an expected return of 11% for the complete portfolio, how much money should you invest in stock B (in $)?

b) What is the ratio of the Sharpe ratio of the complete portfolio to the Sharpe ratio of the ORP?

1. A bond with a coupon rate of 7% makes semiannual coupon payments on January 15 and July 15 of each year. *The Wall Street Journal* reports the ask price for the bond on January 30 at 100.125. What is the invoice price of the bond? The coupon period has 182 days.