Module 2.3 Exercises VaR

1. Using real data, make a spreadsheet that calculates an exponentially weighted moving average volatility (with arbitrary input weighting factor).

2. Assuming a Normal distribution, what percentage of returns are outside the negative two standard deviations from the mean? What is the mean of returns falling in this tail?

3. What criticisms of Value at Risk (discussed in the lecture) can you think of? Consider distributions other than Normal and discontinuous paths.

4. Consider a portfolio consisting of a £5 million position in XYZ, and suppose the daily volatility of XYZ is 1% (approximately 16% per year). Calculate the standard deviation of the change in portfolio value per 10 days.

   Assuming the change is normally distributed, what is the 10 day 99% VaR?

5. Consider a position consisting of a £100,000 investment in asset X and another similar investment in asset Y. Assume that the daily volatilities of both assets are 1% and that the correlation between their returns is 0.3. What is the 5-day 99% value at risk for the portfolio?