LSE Summer School
FM250 – Finance

Classwork 4: Portfolio Theory

Question 1
A fund manager invests 60% of her funds in stock I and the rest in stock J. the standard deviation of returns on I is 10%, and on J it is 20%. Calculate the variance of portfolio returns, assuming:

(a) the correlation between the returns is 1.0
(b) the correlation is 0.5
(c) the correlation is 0.

Question 2
Suppose that Treasury bills offer a return of 6% and the expected market risk premium is 8.5%. The standard deviation of Treasury bill returns is zero and the standard deviation of market returns is 20%. Use the formula for portfolio risk to calculate the standard deviation of portfolios with different proportions in Treasury bills and the market (what is the covariance of the two rates of returns?). Graph the expected returns and standard deviations.

Question 3
Stocks offer an expected rate of return of 18%, with a standard deviation of 22%. Gold offers an expected return of 10% with a standard deviation of 30%.
Given the apparent inferiority of gold with respect to both mean return and volatility, would anyone hold gold? If so, demonstrate graphically why an investor would hold any gold.

Question 4
True or false?
(a) The measure of risk for a security held in a diversified portfolio is the standard deviation of returns.
(b) Proper diversification can reduce or eliminate systematic risk.
(c) Stocks A, B, and C have the same expected return and standard deviation. The following table shows the correlations between the returns on these stocks:

	Stock A	Stock B	Stock C
Stock A	1.0		
Stock B	0.9	1.0	
Stock C	0.1	-0.4	1.0

The portfolio having the lowest risk is a portfolio is invested in stocks B and C.