Name:
Surname:
University ID:

Master in Economics and Finance

Portfolio Optimization – Project 1

Project rules:

Each student is supposed to solve this project individually. Cheating and not comply with this rule is a dishonest conduct. The due date is October 20th, 2017 and no extra extension will be granted. Please also provide the Lingo/Matlab code you use to solve the project. This project can provide up to a maximum of 10 points out of 30.

Project description:

An investor has \$100000 to invest in 6 different stocks. Let $S_1, S_2, \ldots, S_6$ be the (random) variables representing the annual return on \$1 invested in the i^{th} stock (i.e. if $S_1 = 0.12$, \$1 invested in stock i at the beginning of the year is worth \$1.12 at the end of the year). You are given the following information:

	S_1	S_2	S_3	S_4	S_5	S_6
2010	0.1	0.12	0.3	0.4	0.3	0.45
2011	0.11	0.15	0.4	0.3	0.2	0.5
2012	0.9	0.17	0.5	0.45	0.15	0.55
2013	0.86	0.19	0.34	0.3	0.2	0.6
2014	0.99	0.25	0.44	0.5	0.1	0.67

Then:

- determine the expected value and the variance for each stock S_i
- determine the covariance matrix
- formulate a mean-variance portfolio model and solve it using a goal programming model in Lingo or Matlab
- find the minimum risk (variance) portfolio that attains an expected return of at least 12%.