

Unit 15 - Week 12: Applications with market data

Course outline

How does an NPTEL online course work?

MATLAB

Week 0: Prerequisite

Week 1: Basics of Probability Theory

Week 2: Basics of Financial Markets

Week 3: Mean-Variance Portfolio Theory

Week 4: Mean-Variance Portfolio Theory- II

Week 5: Non-Mean-Variance Portfolio Theory

Week 6: Non-Mean-Variance Portfolio Theory- II

Week 7: Non-Mean-Variance Portfolio Theory- III

Week 8: Optimal Portfolio and Consumption

Week 9: Optimal Portfolio and Consumption- II

Week 10: Bond Portfolio Management

Week 11: Risk Management

Week 12: Applications with market data

Lec 1: Asset allocation

Lec 2: Portfolio optimization

Lec 3: Portfolio optimization with constraints, Value-at-Risk: Estimation and backtesting

Quiz : Assignment 12

Feedback form

Assignment Solution

Live Session: Mathematical Portfolio Theory

Text Transcripts

Assignment 12

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-12-09, 23:59 IST.

1) Refer to: <https://in.mathworks.com/help/finance/asset-allocation-case-study.html> 1 point

Consider the following data for a fund:

Asset	Bonds	Large-Cap Equities (Eq.)	Small-Cap Eq.	Emerging Eq. 1	Emerging Eq. 2
Price	48.5	115.7	35.2	40.9	29.6
Holding	42938	24449	42612	15991	14701
UnitCost	0.001	0.001	0.001	0.004	0.004

The fund is long-only with no borrowing or leverage, with the condition that the investment in bonds should be at least 15% and the total investment in the Emerging Equities 1 and Emerging Equities 2 should not exceed 25%.

The asset mean vector is $(0.05 \ 0.1 \ 0.12 \ 0.18 \ 0.2)$ and the asset covariance matrix is,

$$\begin{pmatrix} 0.0064 & 0.00408 & 0.00192 & 0 & 0.001 \\ 0.00408 & 0.0289 & 0.0204 & 0.0119 & 0.03 \\ 0.00192 & 0.0204 & 0.0576 & 0.0336 & 0.012 \\ 0 & 0.0119 & 0.0336 & 0.1225 & 0.004 \\ 0.001 & 0.03 & 0.012 & 0.004 & 0.1324 \end{pmatrix}$$

Then the Maximum Efficient Portfolio **Net** Return (in percentage) equals:

- 12.95
 12.75
 10.80
 10.95

No, the answer is incorrect.

Score: 0

Accepted Answers:
12.75

2) Refer to the information given in Question No. 1: 1 point

If the target risk is 8%, then the weight assigned to the bonds equals:

- 0.7761
 0.7263
 0.7879
 0.8131

No, the answer is incorrect.

Score: 0

Accepted Answers:
0.7879

3) Refer to the information given in Question No. 1: 1 point

The return of a portfolio at 30% of the range from the minimum to maximum equals:

- 7.97
 7.86
 8.42
 8.09

No, the answer is incorrect.

Score: 0

Accepted Answers:
8.09

4) Refer to: <https://in.mathworks.com/help/finance/portfolio-optimization-examples.html> 1 point

In the 130-30 Fund Structure, if the leverage is changed from 30% to 50%, then the portfolio based on the Maximization of the Sharpe Ratio, has the maximum weight assigned to XOM. This maximum weight (in terms of percentage) assigned to XOM equals

- 39.663
 41.322
 42.943
 44.478

No, the answer is incorrect.

Score: 0

Accepted Answers:
42.943

5) Refer to: <https://in.mathworks.com/help/finance/portfolio-optimization-examples.html> 1 point

Using "BlueChipStockMoments" datafile, if the target annual return is 18%, then the maximum monthly risk (in percentage) on the efficient frontier equals:

- 9.033
 9.141
 8.963
 8.747

No, the answer is incorrect.

Score: 0

Accepted Answers:
9.033

6) Refer to: <https://in.mathworks.com/help/finance/portfolio-optimization-with-semicontinuous-and-ca.html> 1 point

Using "BlueChipStockMoments" datafile, if the constraint is to confine the allocated positions to be no less than 5%, and the target return is set to 0.014, then company with the highest weight allocation in the optimized portfolio is

- MO
 UTX
 WMT
 MMM

No, the answer is incorrect.

Score: 0

Accepted Answers:
WMT

7) Refer to: <https://in.mathworks.com/help/risk/value-at-risk-estimation-and-backtesting.html> 1 point

Using the normal distribution method for 90% VaR, the number of instances of failure of the method equals:

Hint

No, the answer is incorrect.

Score: 0

Accepted Answers:
(Type: Numeric) 193

8) Refer to: <https://in.mathworks.com/help/risk/value-at-risk-estimation-and-backtesting.html> 1 point

Using the EWMA method for 90% VaR and $\lambda = 0.97$, the number of instances of failure of the method using cci(vbt2002) equals:

Hint

No, the answer is incorrect.

Score: 0

Accepted Answers:
(Type: Numeric) 31

1 point