MA374 – Financial Engineering II

LAB 05 Report

-Aman Kumar (200123007)

Observations –

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Market portfolio for BSE using Index
Market return = 27.02%
Market risk = 1.02%


********************  Market portfolio for NSE using Index  ********************
Market return = 18.89%
Market risk = 0.99%


********************  10 stocks from the BSE Index  ********************
Market Portfolio Weights = [  22.84813033   51.13952485   64.41417039   78.59173356   46.06185776
   27.42494492   54.18398317   22.63775763    8.15919207   38.70046985
 -413.16176454]
Expected Return = 39.775888704883805
Risk = 145.9 %
The equation of the Capital Market Line is:
y = 27.2273 x + 0.0500

Equation of Security Market Line is: mu = 0.22beta + 0.05


********************  10 stocks from the NSE Index  ********************
Market Portfolio Weights = [ -3.53738898  -7.77055328  -8.96411993 -12.16090523  -5.27274219
  -3.20983415  -8.5675571   -3.16368821  -1.23203642  -7.00153382
  61.88035931]
Expected Return = -6.467756985740046
Risk = 24.08 %
The equation of the Capital Market Line is:
y = -27.0643 x + 0.0500

Equation of Security Market Line is: mu = 0.14beta + 0.05
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********************  10 stocks not from any Index  ********************
Market Portfolio Weights = [-0.14561167  0.41503586  0.12979529 -0.10925647  0.60380845  0.27598803
 -0.39644371  0.03097962  0.14024975  0.05545486]
Expected Return = 0.4351404916669727
Risk = 2.03 %
The equation of the Capital Market Line is:
y = 18.9613 x + 0.0500

Equation of Security Market Line is: mu = 0.39beta + 0.05
**********  Inference about stocks taken from BSE  **********
Market return = 27.02%
Market risk = 1.02%


Stocks Name                     Actual Return                   Expected Return

SBIN.BO                 0.20613689432198168             0.3422413999949377
TCS.BO                  0.21145427987740223             0.18244735162522552
INFY.BO                 0.25594103013447594             0.2006503955488269
RELIANCE.BO                     0.25281741682774694             0.28861302552260193
HDFCBANK.BO                     0.15163208082492746             0.28895264432605067
HDFC.BO                 0.14003767166944814             0.3231647731503112
ICICIBANK.BO                    0.27447466143741334             0.32055218894351784
KOTAKBANK.BO                    0.17183099338704957             0.288304796757676
AXISBANK.BO                     0.17605800510433947             0.3362590695108693
BAJFINANCE.BO                   0.3514369382211034              0.36481903504170105
BSESN                   0.137300843596737               0.2702319842525499
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**********  Inference about stocks taken from NSE  **********
Market return = 18.89%
Market risk = 0.99%


Stocks Name                     Actual Return                   Expected Return

SBIN.NS                 0.20705027317905503             0.23971774541423402
TCS.NS                  0.21206234017379977             0.13491263103227674
INFY.NS                 0.2575673011532821              0.14464290088490012
RELIANCE.NS                     0.2536221782413163              0.20710442819938052
HDFCBANK.NS                     0.1520511405834837              0.1974701140770151
HDFC.NS                 0.14045057339082725             0.22396159115202213
ICICIBANK.NS                    0.27217010641120576             0.23484281267371232
KOTAKBANK.NS                    0.16568595437512657             0.19838819111386158
AXISBANK.NS                     0.17591994481099252             0.23518383740182602
BAJFINANCE.NS                   0.3528181173669866              0.27002433082691385
NSEI                    0.13091731404009538             0.18889652768381082
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**********  Inference about stocks not taken from any index  with index taken from BSE values**********


Stocks Name                     Actual Return                   Expected Return

BEL.BO                  0.05594476374282925             0.23580313037997963
ASTRAL.NS                       0.35707857057067793             0.22806633366436718
BLUEDART.BO                     0.18074088211721634             0.12836451819058992
CROMPTON.NS                     0.09702803528381954             0.148330443169772
DIVISLAB.NS                     0.28014697680154105             0.18969920749700264
ESCORTS.BO                      0.282545442786649 5             0.294608363153134 4
GLENMARK.NS                     0.024185001252703085            0.22276072875970016
PAGEIND.BO                      0.17216807230987596             0.20601646048119193
TATACOMM.NS                     0.2447576841896666              0.1800272945401653
SVT1.SG                 0.09053725254087688             0.06809173944548307


**********  Inference about stocks not taken from any index  with index taken from NSE values**********


Stocks Name                     Actual Return                   Expected Return

BEL.BO                  0.05594476374282925             0.17648854364536315
ASTRAL.NS                       0.35707857057067793             0.16708549608049605
BLUEDART.BO                     0.18074088211721634             0.101709359661960 7
CROMPTON.NS                     0.09702803528381954             0.11633236209992222
DIVISLAB.NS                     0.28014697680154105             0.1510083688380936
ESCORTS.BO                      0.282545442786649 5             0.21333287421187414
GLENMARK.NS                     0.024185001252703085            0.17263406914357113
PAGEIND.BO                      0.17216807230987596             0.15309150685237233
TATACOMM.NS                     0.2447576841896666              0.14305407862142638
SVT1.SG                 0.09053725254087688             0.06124231414286696
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**********  Beta for securities in BSE  **********
SBIN.BO         =               1.3269707439942573
TCS.BO          =               0.6013992566735545
INFY.BO         =               0.684053208983802
RELIANCE.BO             =               1.0834621789039218
HDFCBANK.BO             =               1.085004274638115
HDFC.BO         =               1.240350142952265
ICICIBANK.BO            =               1.2284872692844808
KOTAKBANK.BO            =               1.082062614867063
AXISBANK.BO             =               1.2998069761865434
BAJFINANCE.BO           =               1.4294882558052235
BSESN           =               1.0


**********  Beta for securities in NSE  **********
SBIN.NS         =               1.3658926438111865
TCS.NS          =               0.611337320293384
INFY.NS         =               0.6813914103047175
RELIANCE.NS             =               1.131089673868729
HDFCBANK.NS             =               1.0617264271193407
HDFC.NS         =               1.252454572140455
ICICIBANK.NS            =               1.3307950584228807
KOTAKBANK.NS            =               1.068336218250595
AXISBANK.NS             =               1.3332503014285955
BAJFINANCE.NS           =               1.5840880581823136
NSEI            =               1.0
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**********  Beta for securities in non-index using BSE Index  **********
BEL.BO          =               0.8436700555125127
ASTRAL.NS               =               0.8085398416070688
BLUEDART.BO             =               0.3558271449832909
CROMPTON.NS             =               0.4464857523011374
DIVISLAB.NS             =               0.6343275159197733
ESCORTS.BO              =               1.1106850078262518
GLENMARK.NS             =               0.7844488589885639
PAGEIND.BO              =               0.708418720426552
TATACOMM.NS             =               0.5904105844637769
SVT1.SG         =               0.08214855579168036


**********  Beta for securities in non-index using NSE Index  **********
BEL.BO          =               0.9106674281541891
ASTRAL.NS               =               0.8429692090433952
BLUEDART.BO             =               0.3722869140377201
CROMPTON.NS             =               0.4775667412717735
DIVISLAB.NS             =               0.7272202590120379
ESCORTS.BO              =               1.1759320188600473
GLENMARK.NS             =               0.8829167380104694
PAGEIND.BO              =               0.7422180278477056
TATACOMM.NS             =               0.6699525191389818
SVT1.SG         =               0.0809402101718437
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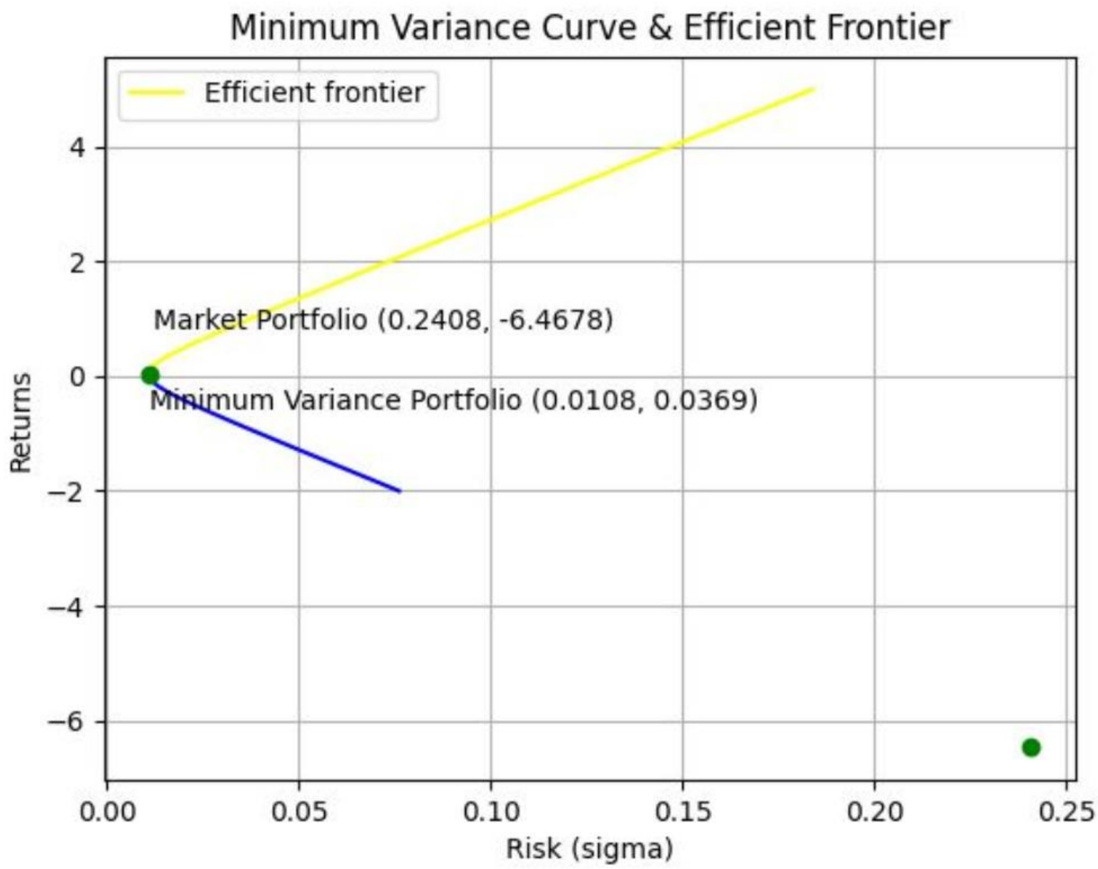
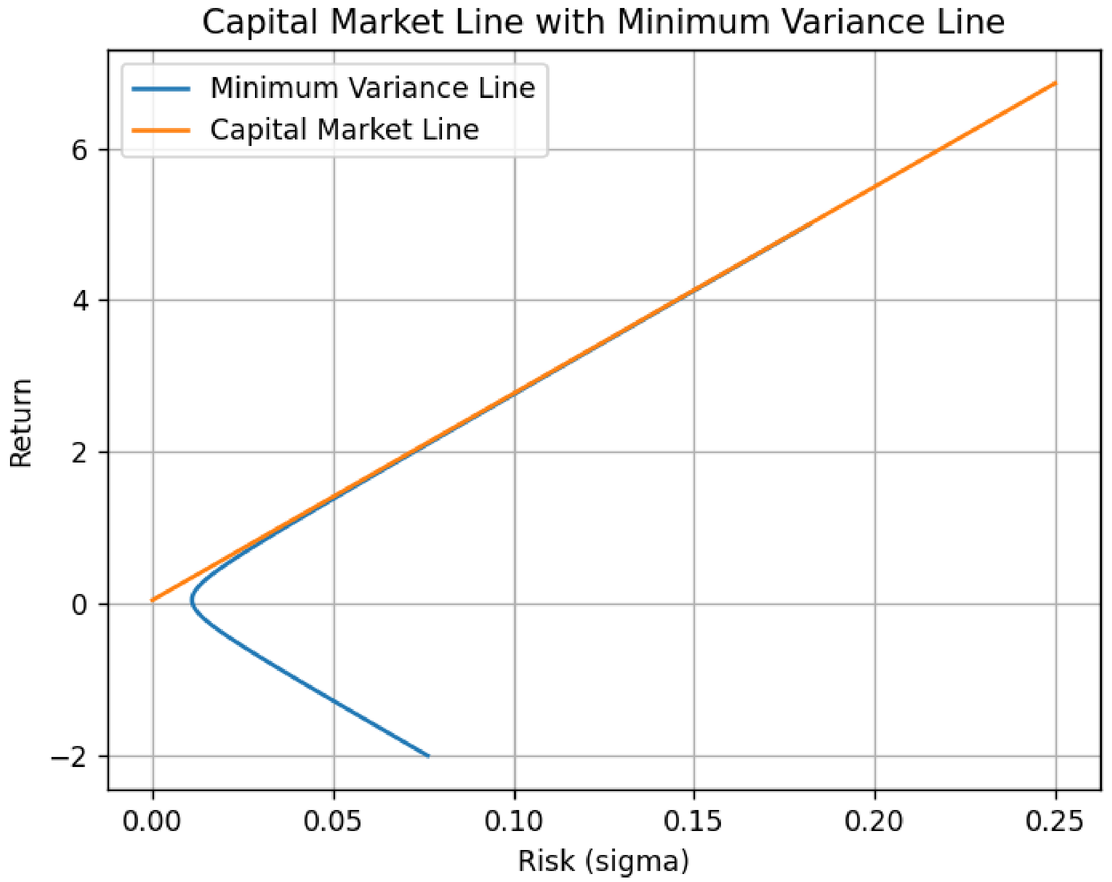
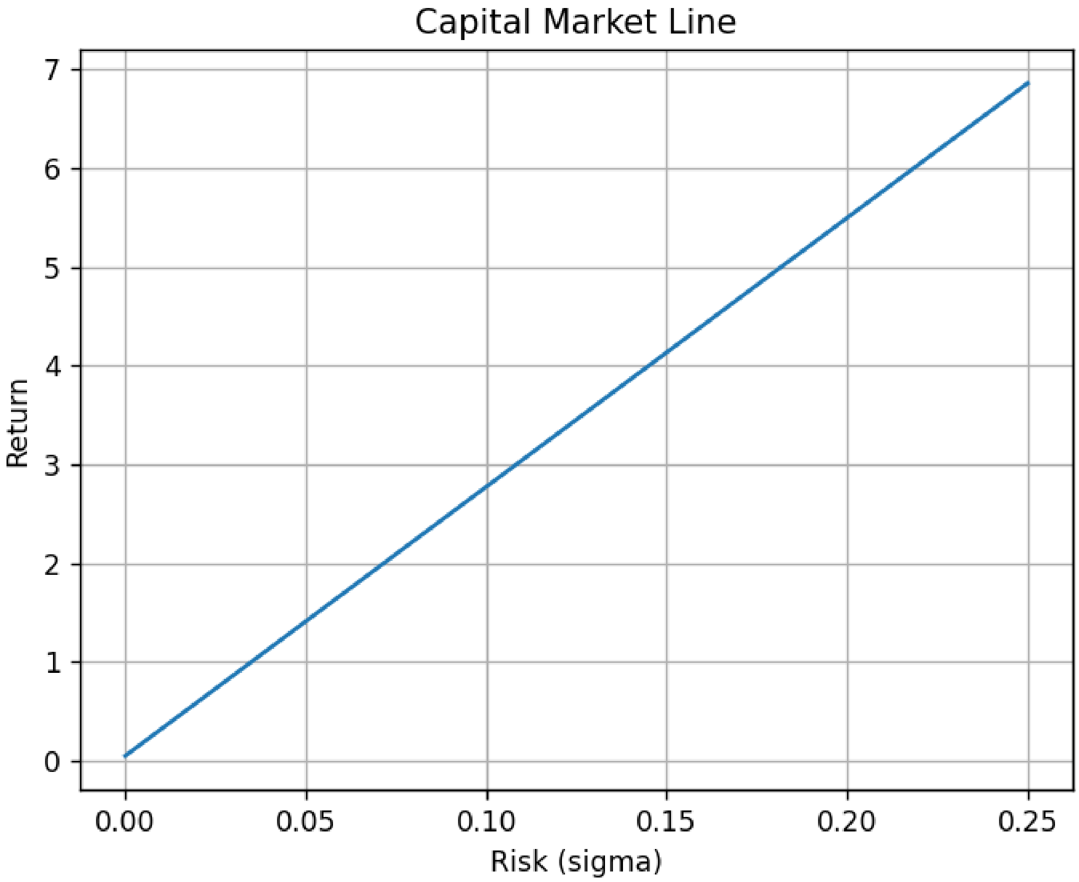
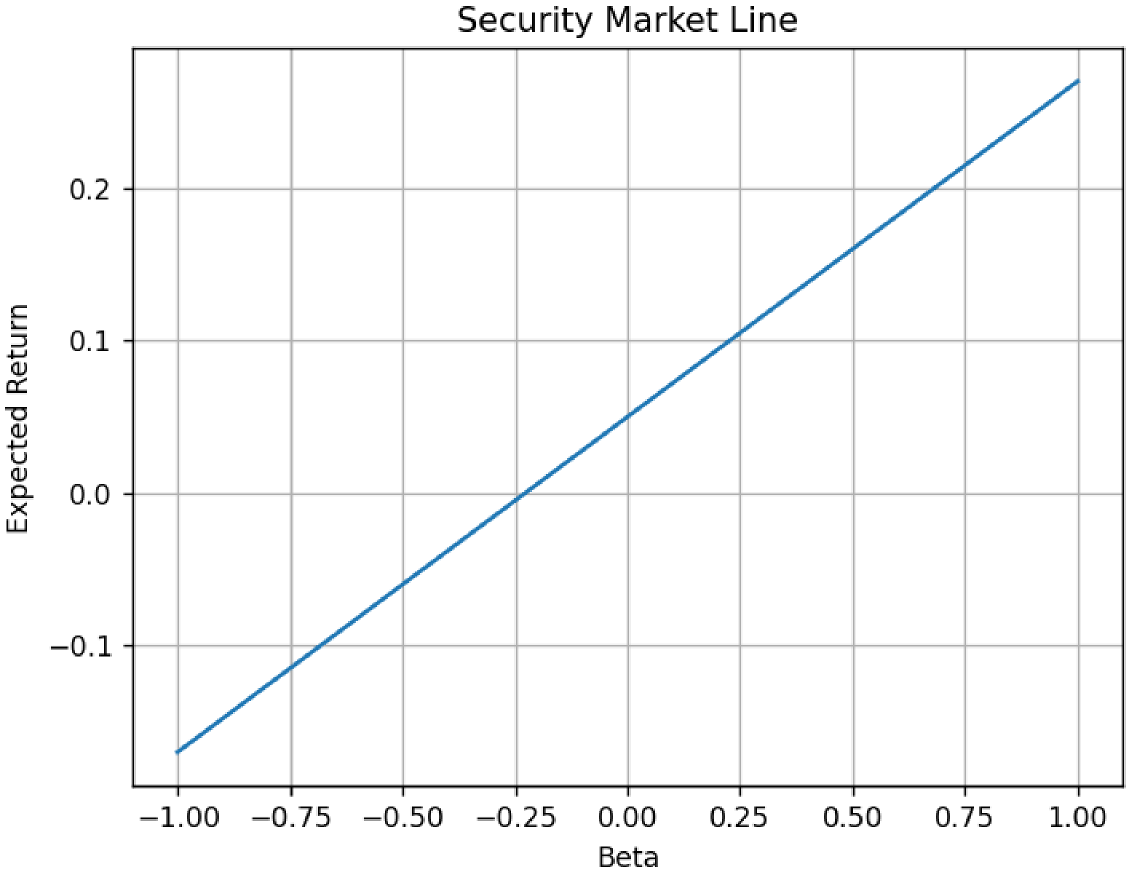
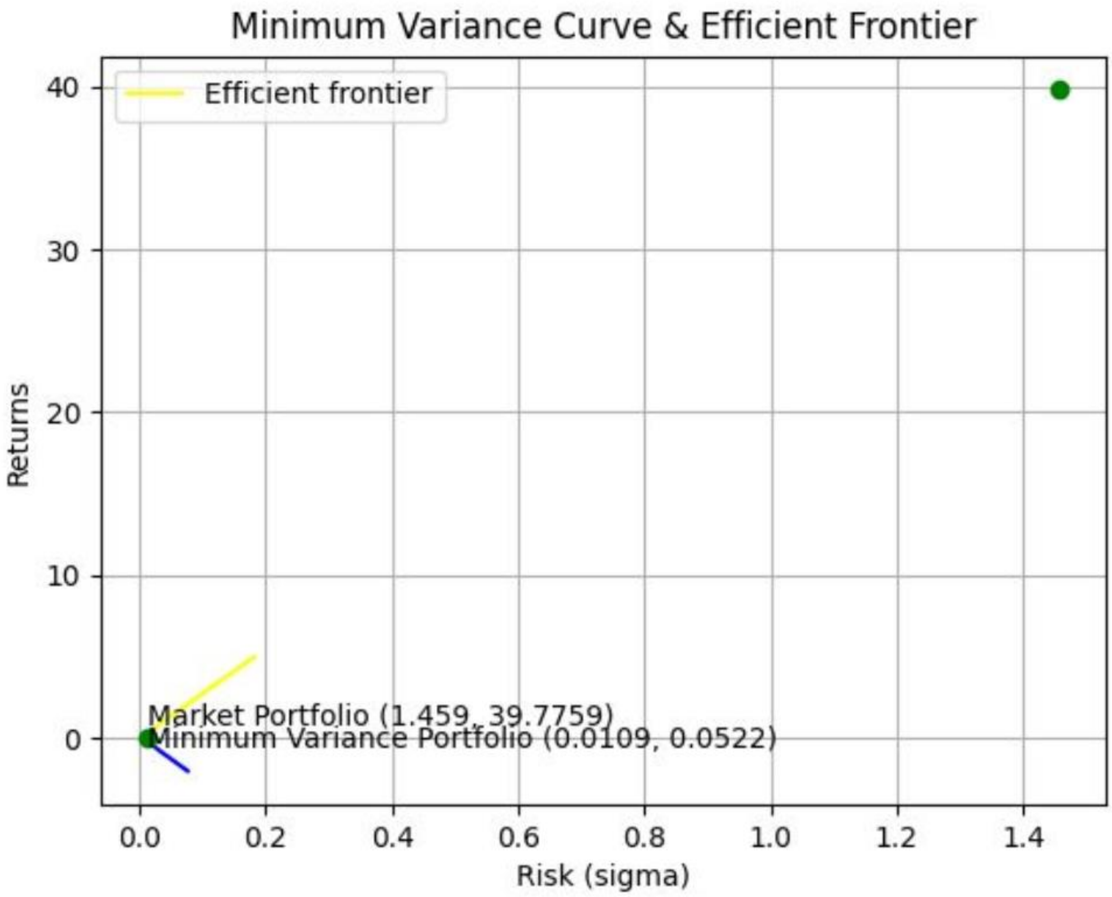


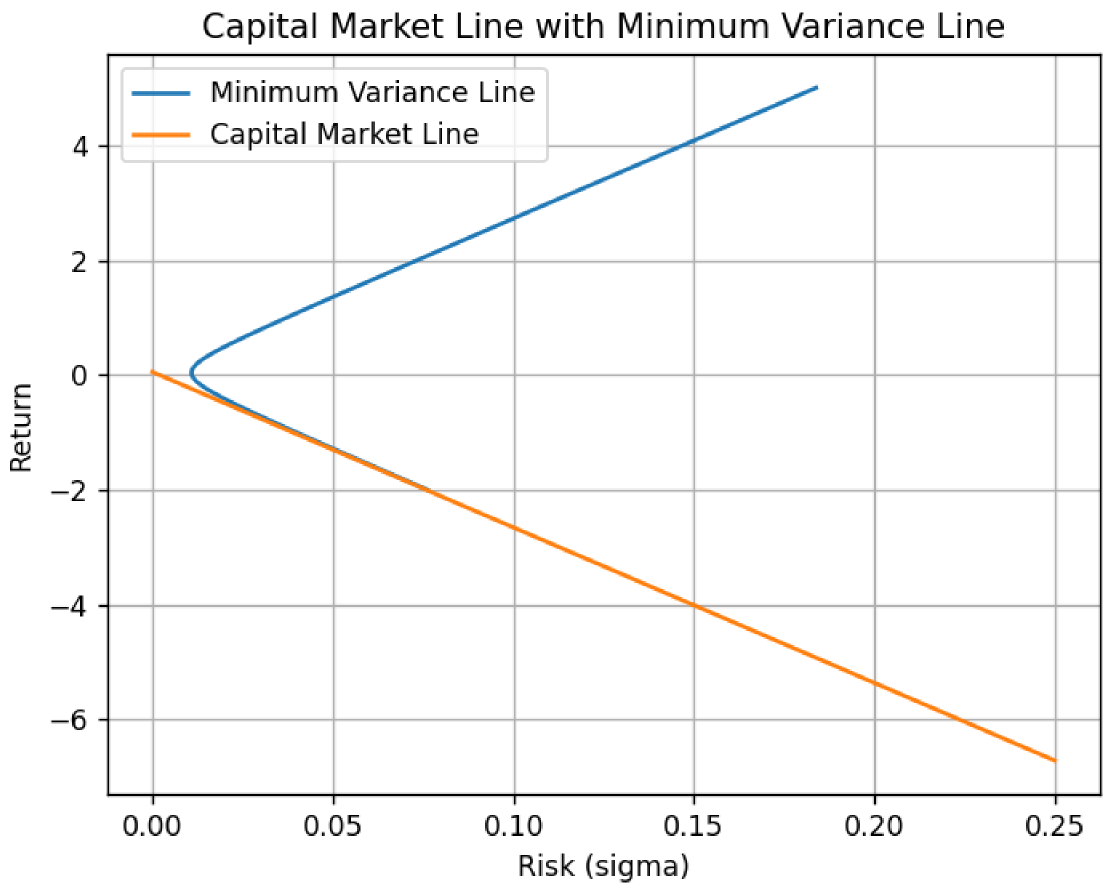

Capital Market Line with Minimum Variance Line
Minimum Variance Line
Capital Market Line
Return
Risk (sigma)
6
4
2
0
−2
0.00
0.05
0.10
0.15
0.20
0.25


Capital Market Line
Return
Risk (sigma)
0
1
2
3
4
5
6
7
0.00
0.05
0.10
0.15
0.20
0.25

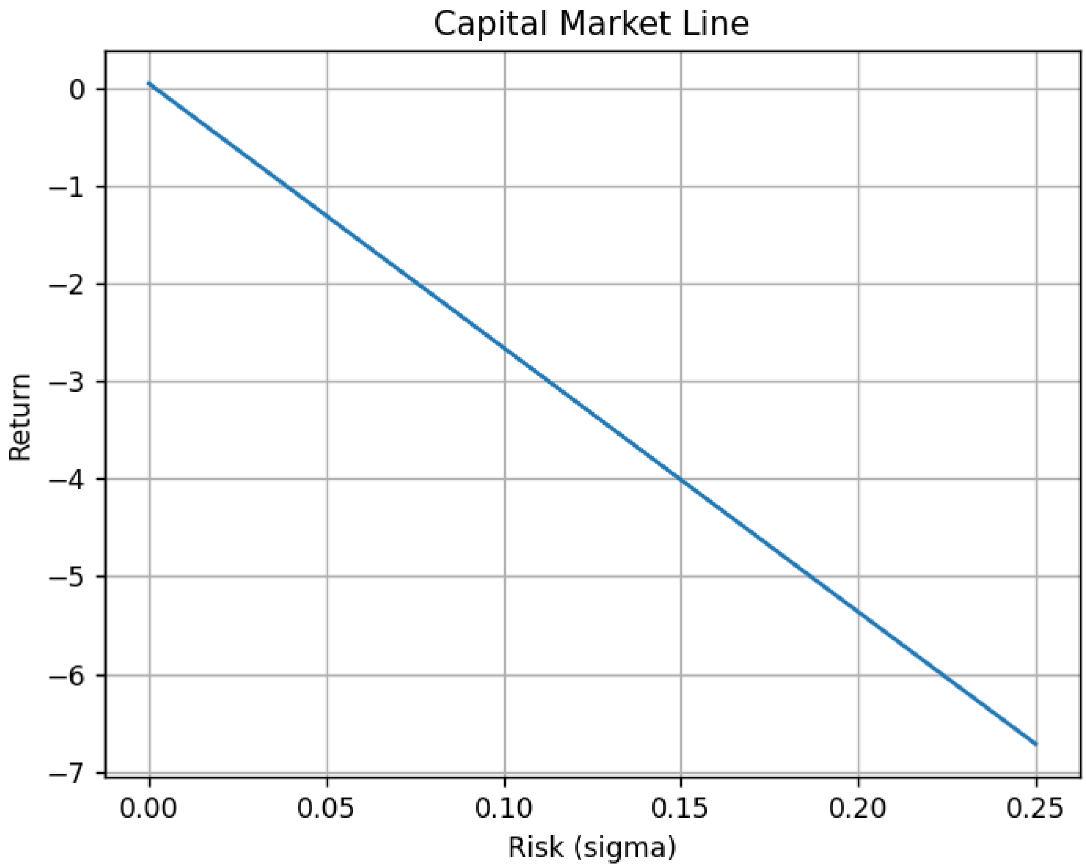

Security Market Line
Expected Return
Beta
0.2
0.1
0.0
−0.1
−1.00
−0.75
−0.50
−0.25
0.00
0.25
0.50
0.75
1.00



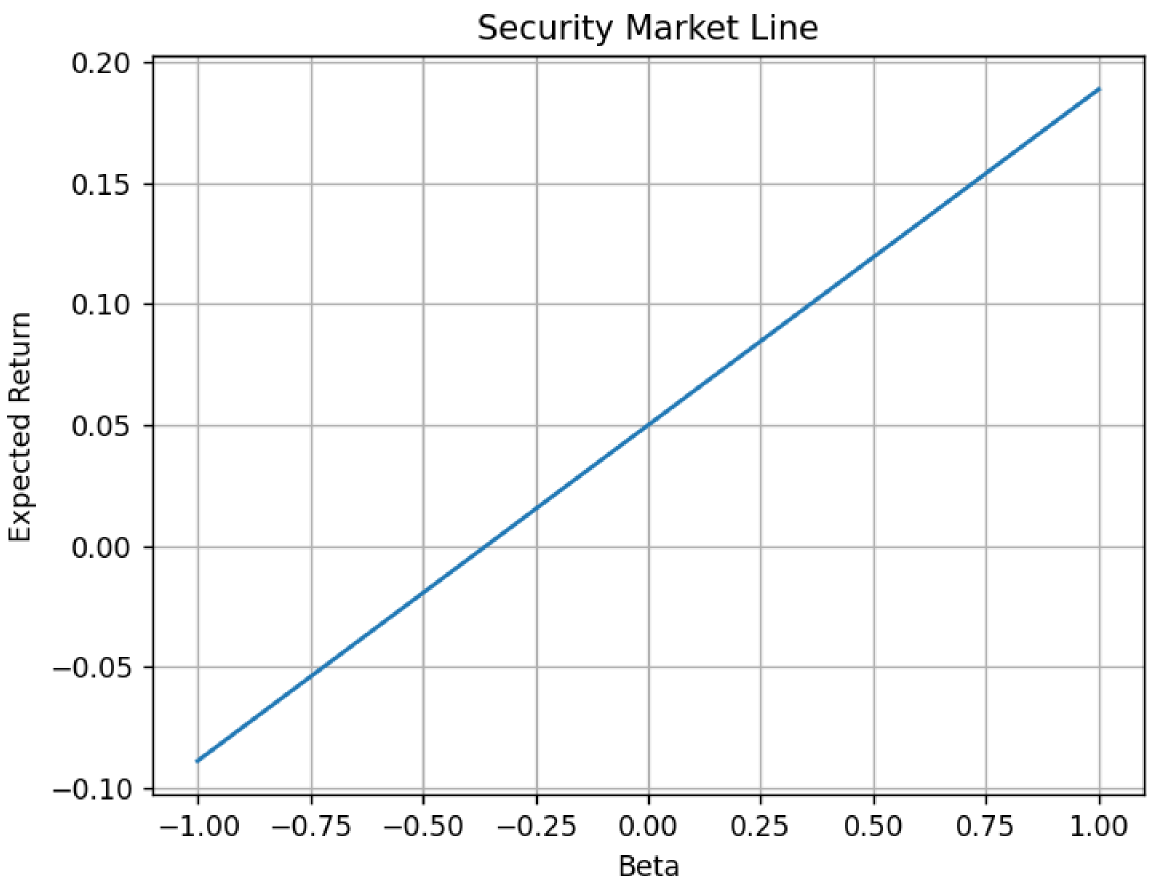
Minimum Variance Curve & Efficient Frontier
Efficient frontier
Market Portfolio (1.459, 39.7759)
Minimum Variance Portfolio (0.0109, 0.0522)
Returns
Risk (sigma)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
0
10
20
30
40



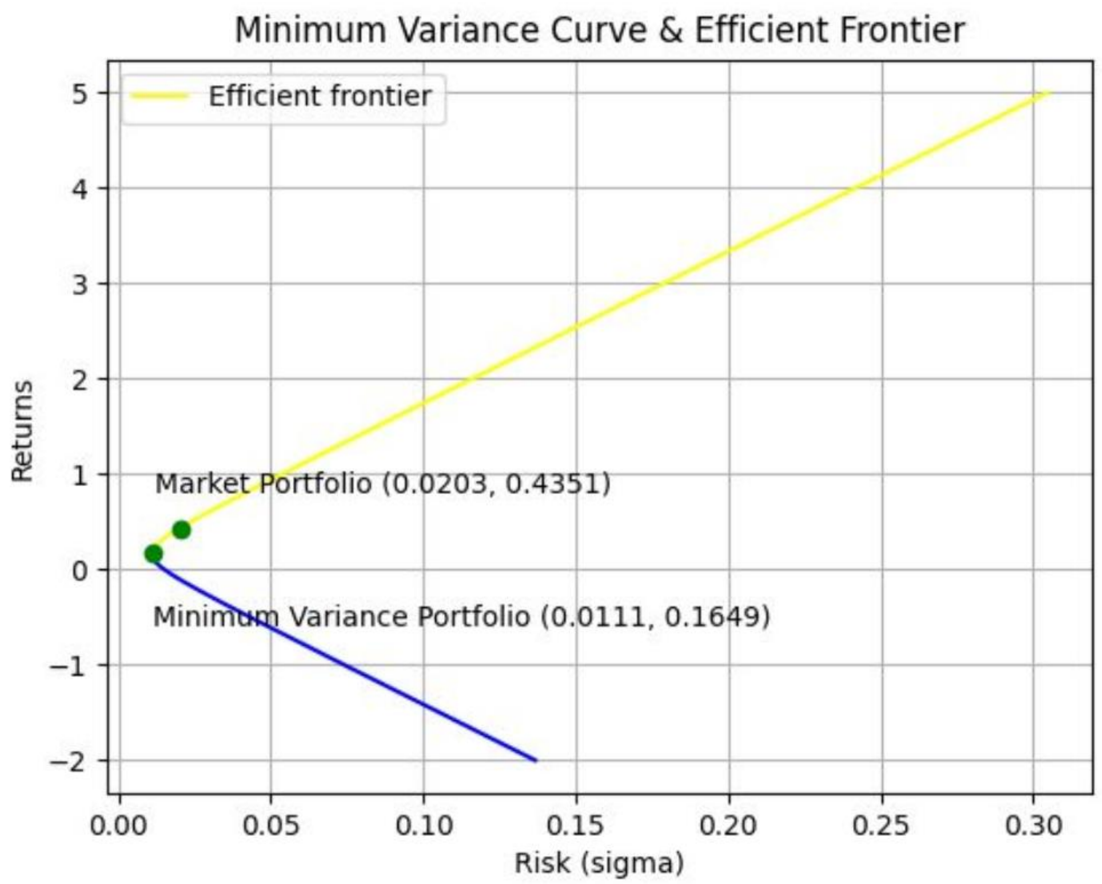
Capital Market Line with Minimum Variance Line
Minimum Variance Line
Capital Market Line
Return
Risk (sigma)
0.00
0.05
0.10
0.15
0.20
0.25
4
2
0
−2
−4
−6

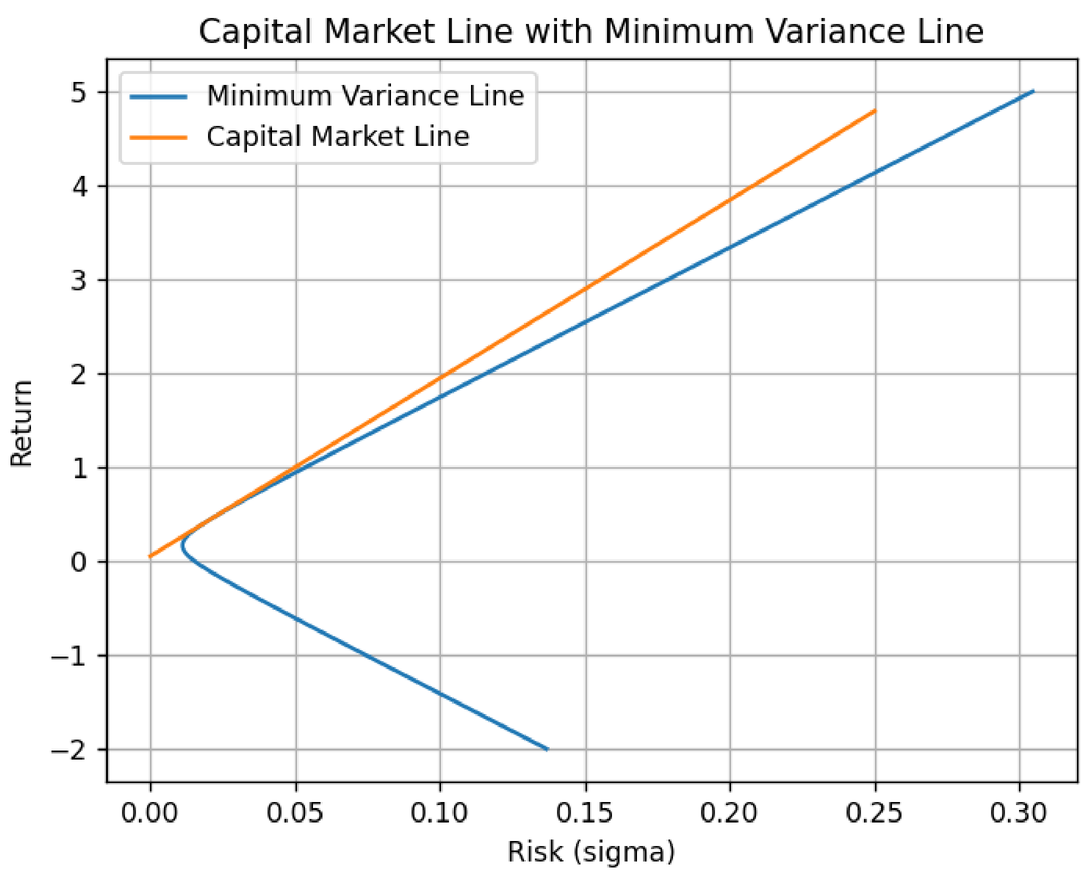


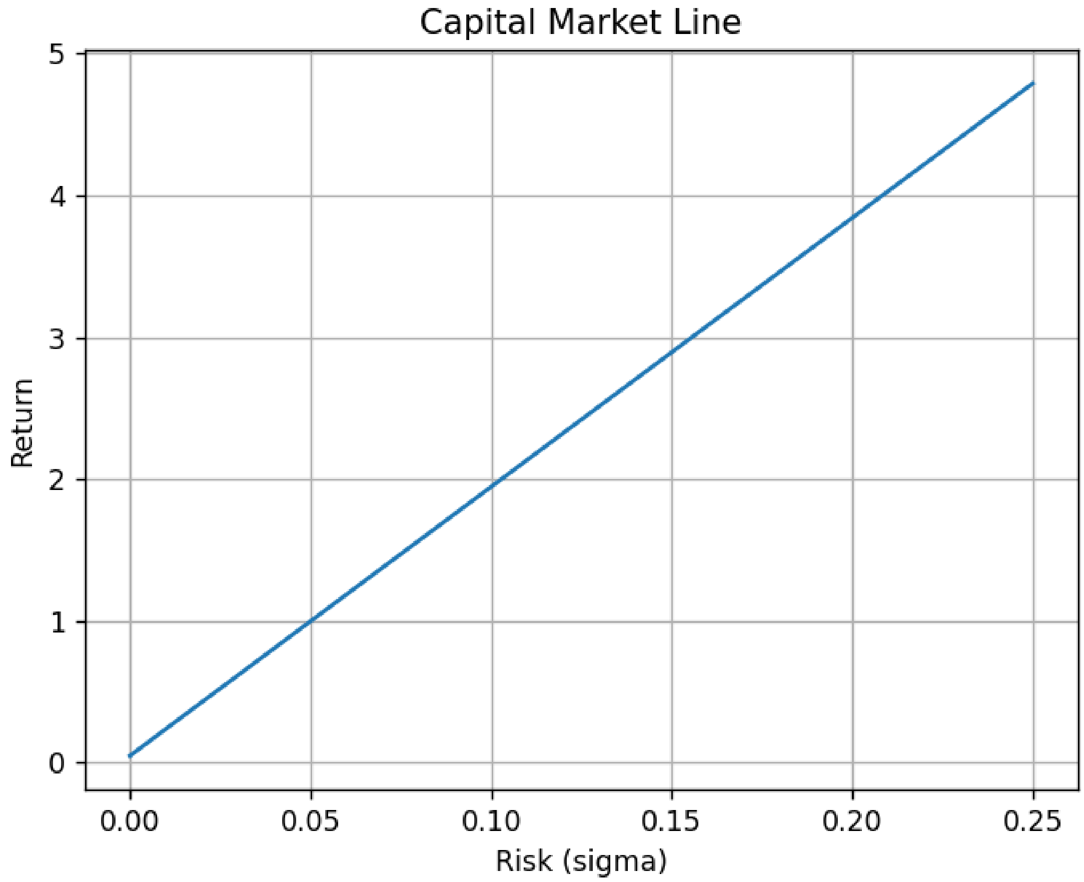
Capital Market Line
Return
0
−1
−2
−3
−4
−5
−6
−7
0.00
0.05
0.10
0.15
0.20
0.25
Risk (sigma)

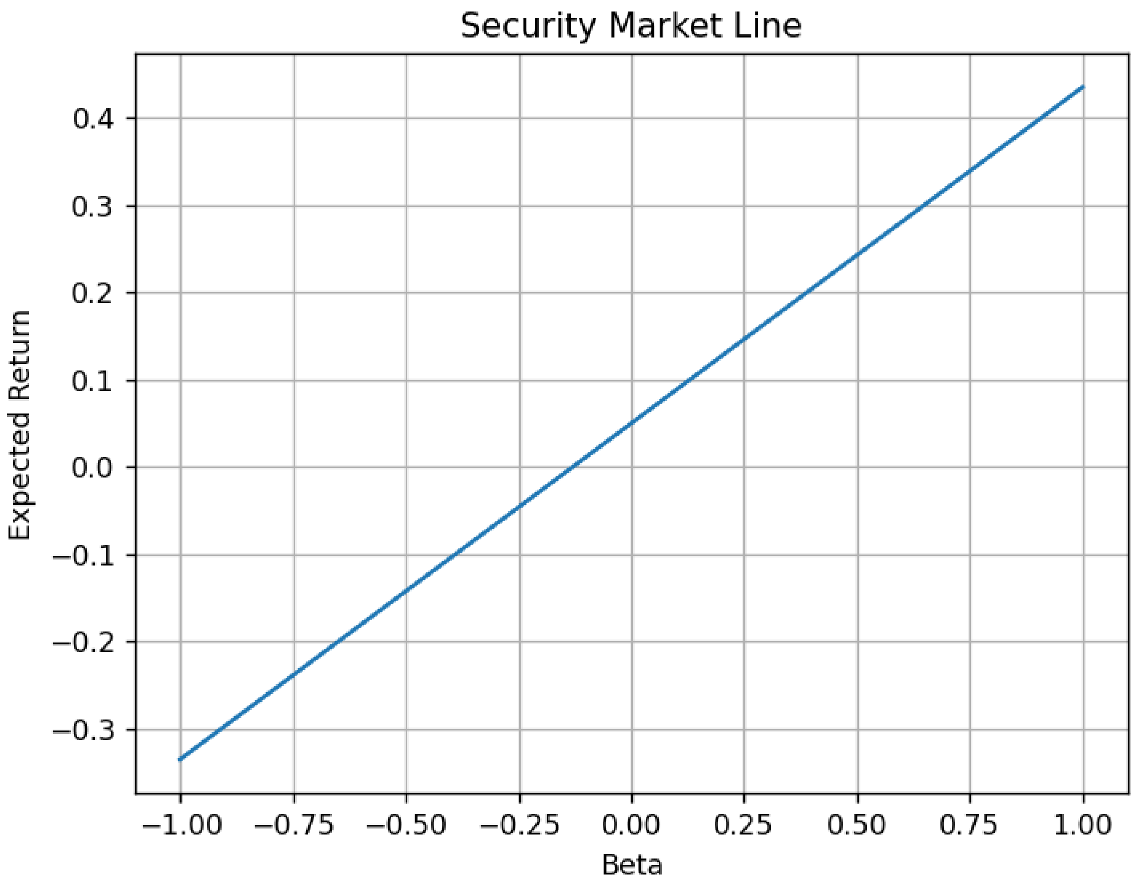


Security Market Line
Expected Return
0.20
0.15
0.10
0.05
0.00
−0.05
−0.10
−1.00
−0.75
−0.50
−0.25
0.00
0.25
0.50
0.75
1.00
Beta


Minimum Variance Curve & Efficient Frontier
Efficient frontier
Market Portfolio (0.0203, 0.4351)
Minimum Variance Portfolio (0.0111, 0.1649)
Returns
Risk (sigma)
5
4
3
2
1
0
−1
−2
0.00
0.05
0.10
0.15
0.20
0.25
0.30


Capital Market Line with Minimum Variance Line
Minimum Variance Line
Capital Market Line
Return
Risk (sigma)
5
4
3
2
1
0
−1
−2
0.00
0.05
0.10
0.15
0.20
0.25
0.30


Capital Market Line
Return
Risk (sigma)
0
1
2
3
4
5
0.00
0.05
0.10
0.15
0.20
0.25


Security Market Line
Expected Return
Beta
−0.3
−0.2
−0.1
0.0
0.1
0.2
0.3
0.4
−1.00
−0.75
−0.50
−0.25
0.00
0.25
0.50
0.75
1.00