



RESEARCH INVESTMENT SUITE

Efficient Frontier

WRDS Research Analytics
Analysis

Analytic Summary	Solution
INPUT PARAMETERS	
Analysis Start Date	2010/01
Analysis End Date	2015/12
Months Used	71
Annual Risk Free Rate	1.00%
Number of Stocks Used	5
Lowest Position of a Constituent	0.00%
Highest Position of a Constituent	90.00%
Degree of Risk Aversion	30.00
UNCONSTRAINED OPTIMIZATION RESULTS	
Global Minimum Variance Portfolio Return (Annualized)	10.58%
Global Minimum Variance Portfolio Sigma (Annualized)	13.66%
Tangency Portfolio Return (Annualized)	27.34%
Tangency Portfolio Sigma (Annualized)	22.65%
Unconstraint Sharpe Ratio	1.16
CONSTRAINED OPTIMIZATION RESULTS	
Constrained Minimum Variance Portfolio Return (Annualized)	10.19%
Constrained Minimum Variance Portfolio Sigma (Annualized)	13.79%
Constrained Tangency Portfolio Return (Annualized)	23.66%
Constrained Tangency Portfolio Sigma (Annualized)	20.32%
Constrained Sharpe Ratio	1.12
INDIFFERENCE CURVE ANALYSIS	
Risk Averse Optimal Weight - Risky Asset (Unconstrained)	17.11%
Optimized Utility Value (Unconstrained)	0.00271
Risk Averse Optimal Weight - Risky Asset (Constrained)	18.29%
Optimized Utility Value (Constrained)	0.00256



Figure I: Mean-Variance Efficient Frontier

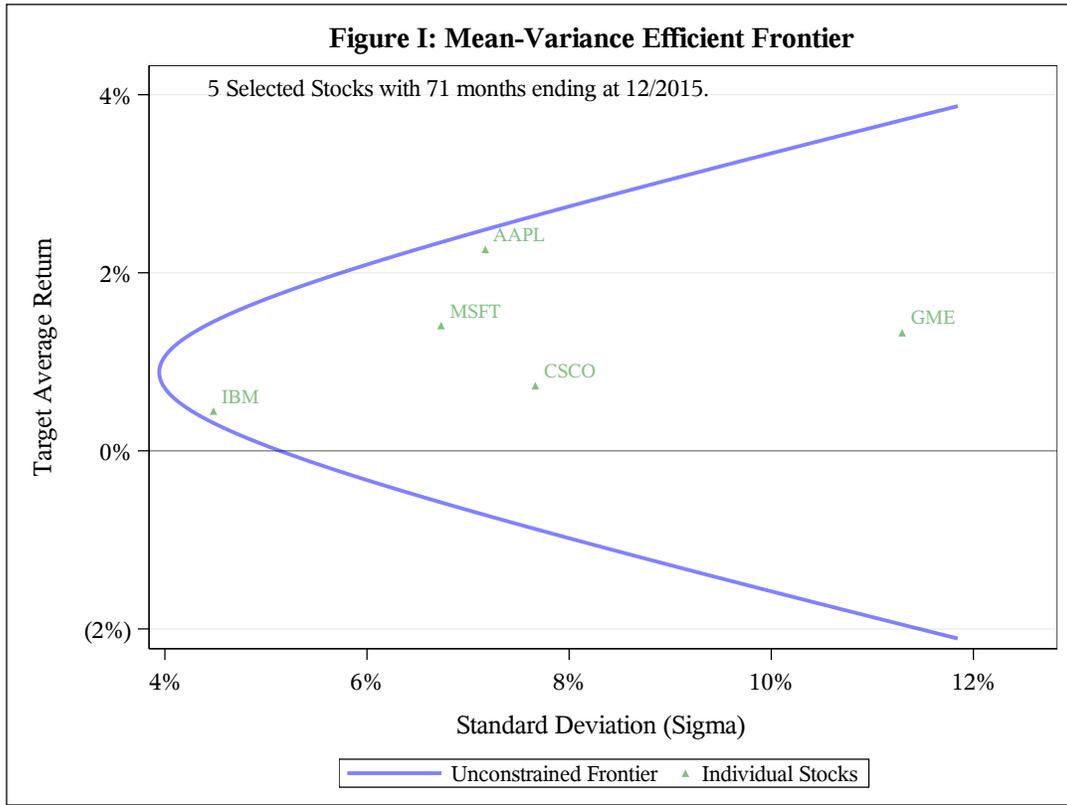
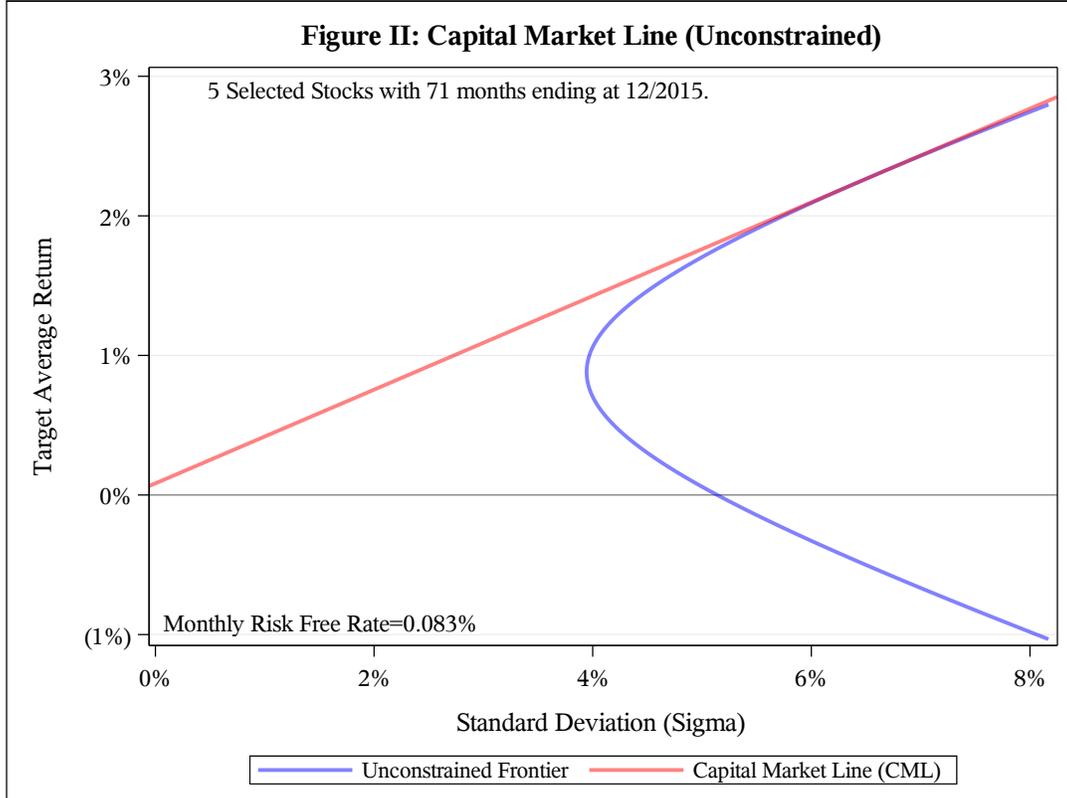
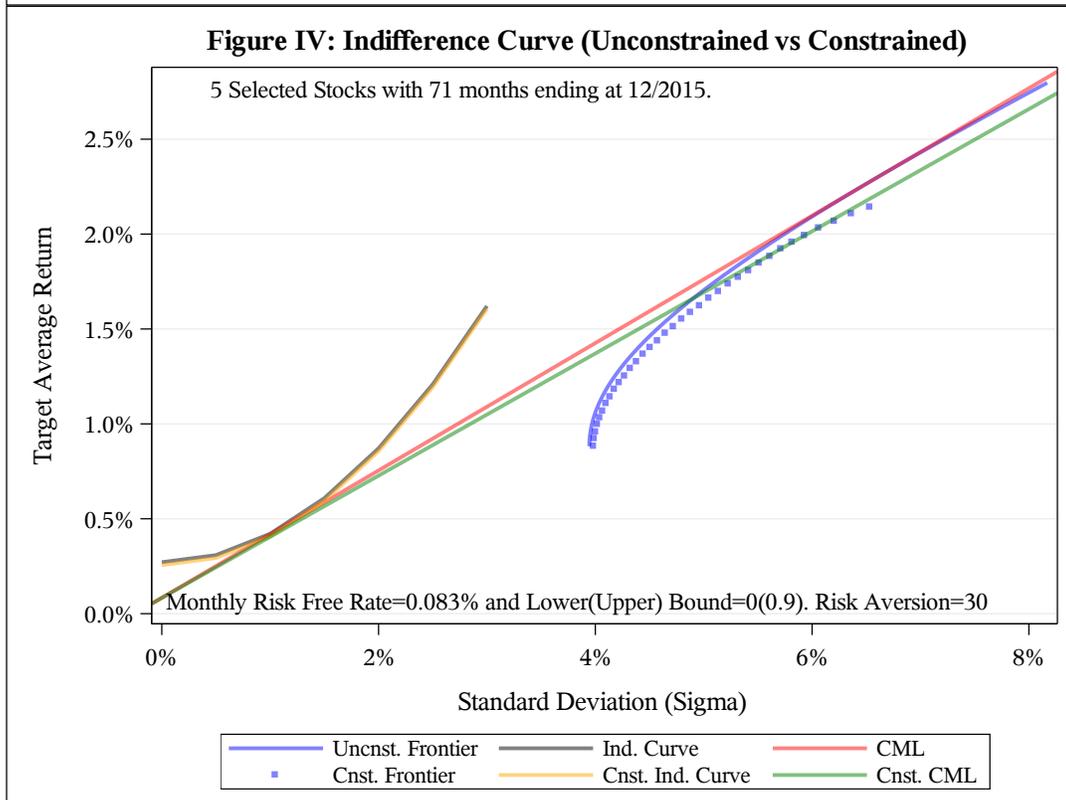
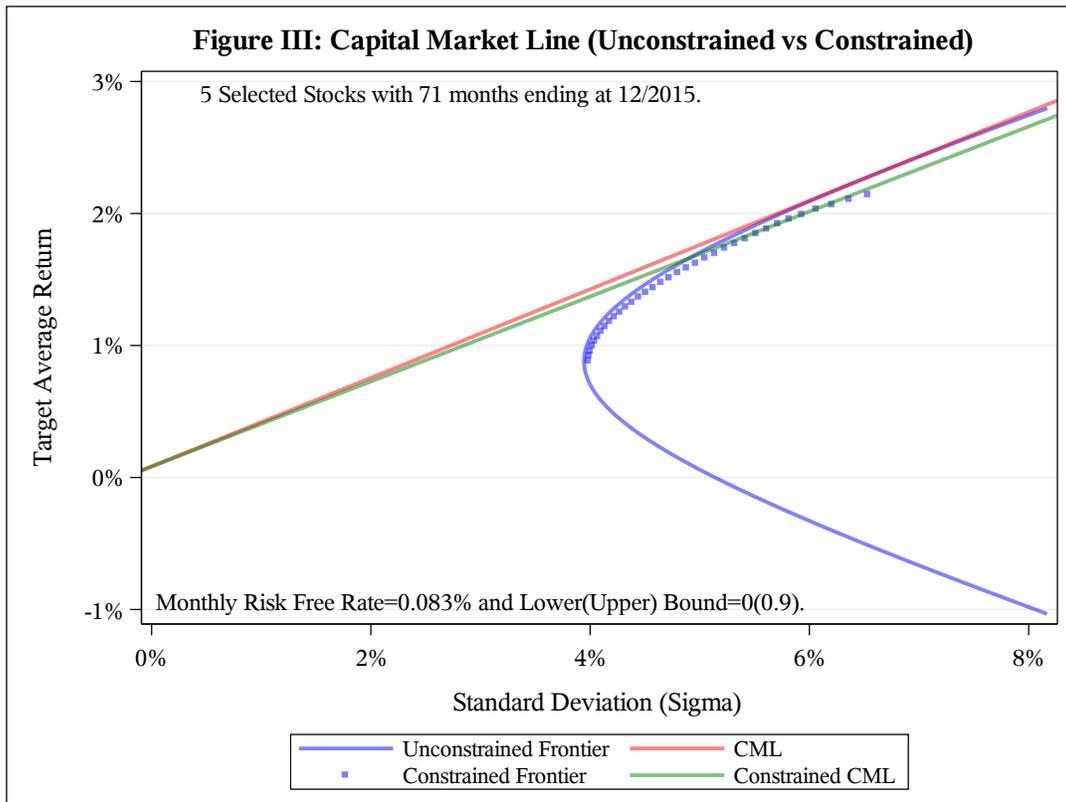


Figure II: Capital Market Line (Unconstrained)







Risky Portfolio Allocation:

Ticker	Global Minimum Variance Portfolio	Unconstrained Tangency Portfolio	Contrainted Minimum Variance Portfolio	Contrainted Tangency Portfolio
AAPL	11.10%	77.10%	10.40%	66.80%
MSFT	18.10%	46.00%	14.40%	28.40%
CSCO	(9.40%)	(29.70%)	0.00%	0.00%
IBM	70.20%	(2.20%)	66.47%	0.00%
GME	9.90%	8.80%	8.73%	4.80%