

! Keywords: Accounting / Banking / Break Even Point / Downside Risk / Financial / Forecasting / Marketing / Markowitz / Portfolio / Stocks / Uncertainty;

MIN Y1 + Y2 + Y3 + Y4 + ATT + GMC + USX + MEAN
+ PS1 + PS2 + PS3 + PS4 + PBUD + PDEF + PRET

SUBJECT TO

! The first order conditions on the Y's

FY1) 0.5 Y1 + PS1 = 0

FY2) 0.5 Y2 + PS2 = 0

FY3) 0.5 Y3 + PS3 = 0

FY4) 0.5 Y4 + PS4 = 0

! First order conditions on the investments

FATT) - 0.9851237 PS1 - 1.193042 PS2 - 0.9851237 PS3

- 1.193042 PS4 + PBUD + 1.089083 PDEF >= 0

FGMC) - 1.304437 PS1 - 1.543131 PS2 - 0.8842088 PS3

- 1.122902 PS4 + PBUD + 1.213667 PDEF >= 0

FUSX) - 1.097669 PS1 - 1.756196 PS2 - 1.119948 PS3

- 0.9645076 PS4 + PBUD + 1.234583 PDEF >= 0

! First order conditions on the mean;

FMEAN) PS1 + PS2 + PS3 + PS4 - PDEF - PRET >= 0

! Here are the real constraints;

! Compute the return under each of 4 scenarios;

S1) Y1 - 0.9851237 ATT - 1.304437 GMC - 1.097669 USX
+ MEAN = 0

S2) Y2 - 1.193042 ATT - 1.543131 GMC - 1.756196 USX
+ MEAN = 0

S3) Y3 - 0.9851237 ATT - 0.8842088 GMC - 1.119948 USX
+ MEAN = 0

S4) Y4 - 1.193042 ATT - 1.122902 GMC - 0.9645076 USX
+ MEAN = 0

! The Budget constraint;

BUD) ATT + GMC + USX = 1

! Define or compute the mean;

DEF) 1.089083 ATT + 1.213667 GMC + 1.234583 USX
- MEAN = 0

! Target return;

RET) MEAN >= 1.15

END

! The first real constraint starts with row 10;

QCP= 10