**Solutions to Quiz Problems – Chapters 10 and 11**

1.  = (.11 + .06 - .08 + .28 + .13) = .1 = 10%

5

 = (.36 - .07 + .21 - .12 + .43) = .1620 = 16.2%

5

sX2 = (.11 - .1)2 + (.06 - .1)2 + (-.08 - .1)2 + (.28 - .1)2 + (.13 - .1)2 = .01685

5-1

sY2 = (.36 - .162)2 + (-.07 - .162)2 + (.21 - .162)2 + (-.12 - .162)2 + (.43 - .162)2 = .06167

5-1

sX = = .1298 = 12.98%

sY = = .2483 = 24.83%

CovX,Y = [(.11 - .1) (.36 - .162) + (.06 - .1) (-.07 - .162) + (-.08 - .1) (.21 - .162) +

(.28 - .1) (-.12 - .162) + (.13 - .1) (.43 - .162)] / 5-1 = -.010025

ρX,Y  = -.010025 = -.311

(.1298)(.2483)

1. Arithmetic Mean = (.29 + .14 + .23 - .08 + .09 - .14) / 6 = .0883 = 8.83%

Geometric Mean = [(1.29) (1.14) (1.23) (.92) (1.09) (.86)]1/6 – 1 = .0769 = 7.69%

σ2 = (.29 - .0883)2+(.14 - .0883)2+(.23 - .0883)2+(-.08 - .0883)2+(.09 - .0883)2+(-.14 - .0883)2

6

= .023981

σ = = .15486 = 15.486%

1. Simple Return = 1,400 – 1,352 = 3.55%

1,352

Annualized Return with Semiannual Compounding = (1.0355)2 – 1 = 7.23%

Annualized Return with Continuous Compounding = (2) = 6.98%

1. The expected return on the market = 3.5% + 5.7% = 9.2%

The standard deviation for the market =  = 22%

Using the NORMDIST function in Excel, the probability of a return < 0 = .338 = 33.8%

1. Weight in KO = $6,000/$12,000 = .5

Weight in GE = $3,000/$12,000 = .25

Weight in MSFT = $3,000/$12,000 = .25

E(R) = (.5) (.16) + (.25) (.12) + (.25) (.14) = .145 = 14.5%

σ2 = (.5)2 (.05)2 + (.25)2 (.08)2 + (.25)2 (.07)2 + (2) (.5) (.25) (.5) (.05) (.08) +

(2) (.5) (.25) (.7) (.05) (.07) + (2) (.25) (.25) (.3) (.07) (.08) = .00265375

σ = = .0515 = 5.15%

1. βDisney = ρDisney, Market  x σDisney / σMarket = .6 x .3/.2 = .9

E(RDisney) = Rf + βDisney (RM – Rf) = 3% + .9(5.7%) = 8.13%

1. E(RP) = .4 (15%) + .6 (25%) = 21% with either correlation

σP2 = (.4)2 (.4)2 + (.6)2 (.65)2 + 2 (.4)(.6) (.5)(.4)(.65) = .2401

σP =  = 49% with ρ = 0.5

σP2 = (.4)2 (.4)2 + (.6)2 (.65)2 + 2 (.4)(.6) (-.5)(.4)(.65) = .1153 with ρ = -0.5

σP =  = 33.96% with ρ = -0.5

1. E(RJ) = .25 (-.020) + .60 (.092) + .15 (.154) = .0733 = 7.33%

E(RK) = .25 (.050) + .60 (.062) + .15 (.074) = .0608 = 6.08%

σ2J = .25(-.020 - .0733)2 + .60(.092 - .0733)2 + .15(.154 - .0733)2 = .00336

σJ =  = 5.80%

σ2K = .25(.050 - .0608)2 + .60(.062 - .0608)2 + .15(.074 - .0608)2 = .00006

σK =  = 0.75%

CovJ,K = .25(-.020 - .0733) (.050 - .0608) + .60(.092 - .0733) (.062 - .0608) +

.15(.154 - .0733) (.074 - .0608) = .000425

ρJ,K = .000425 = .9783

(.058) (.0075)

1. E(RP) = wA (10%) + wB (20%) = wA (10%) + (1-wA) (20%) = 25%

.1wA + .2 - .2wA = .25

-.1wA = .05

wA = -.5 → (1-wA) = wB = 1.5

If you have $100 to invest, you must short Asset A $50, and use the proceeds of the sale, along with your own money to invest $150 into Asset B.

1. σ2P = (20) (1/20)2 (.6)2 + (380) (1/20) (1/20) (.1) (.6) (.6) = .0522

σP  =  = .2285 = 22.85%