# Port.docx Risk, Return, and Diversification Principles

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## Part ER Measuring risk and return

### ER11 Dominance or tradeoff with 1 risk source

Suppose that you are able to perfectly measure risk and expected return, and the bigger the number the bigger the risk or return. Measurements of (*risk, return*) for three possible asset investments, call them *X*, *Y*, and *Z*, are as follows: *X*: (15,10); *Y*: (30,12); *Z*: (30,27). Compare the three with regards to dominance or tradeoff.

{ANSWER: E ; xlADDRESS: PortTheory!$B$531 }

/\a. Y dominates X

/\b. Y and Z coexist as tradeoffs

/\c. X dominates Z

/\d. Two choices, A and B, are correct

/\e. None of the A-B-C choices are correct

### ER10 Dominance or tradeoff with 2 types of risk

Suppose that you are able to perfectly measure expected return. Also, suppose that there exist two different kinds of risk that you can measure, call them *Risk1* and *Risk2*. The amount of *Risk1* an investment possesses is totally unrelated to the amount of *Risk2* that it possesses. Three possible asset investments, call them *X*, *Y*, and *Z*, have measurements for (*Risk1*, *Risk2*, *return*) as follows: *X*: (10,30,15); *Y*: (10,10,24); *Z*: (30,15,34). Compare the three with regards to dominance or tradeoff.

{ANSWER: B ; xlADDRESS: PortTheory!$B$517 }

/\a. X and Y coexist as tradeoffs

/\b. Y and Z coexist as tradeoffs

/\c. X dominates Z

/\d. Two choices, A and B, are correct

/\e. None of the A-B-C choices are correct

### ER4 Find expected ROR given probabilities and component payoffs

You invest $1,200 . The odds are 65% you will get back $1,500 . Otherwise, you lose everything. What is the expected rate of return on this brilliant financial investment?

{ANSWER: C ; xlADDRESS: PortTheory!$B$59 }

/\a. -22.7% b. -25.0% c. -18.8% d. -20.6% e. -17.0%

*ER16 eExam.rtf*

*#big companies probability resultant intrinsic value*

*adopting product for stock price*

1 25% $15

2 5% $28

### ER16 Find E(ROR) and σ after computing periodic ror

Your analysis of a small company convinces you that future movements in their stock price depend on how many big clients adopt the small company’s product innovations. Today’s price for this non-dividend-paying small company stock is $9 . Your beliefs about future outcomes include:

*--- The probability is* 25% *that one big client adopts the product in which case the resultant intrinsic value for the company stock price likely will be* $15 *.*

*--- The probability is* 5% *that two big clients adopt the product in which case the resultant intrinsic value for the company stock price likely will be* $28 *.*

If no big clients adopt the product then the small company goes bankrupt and the stock is worthless. Compute this small company stock’s measurements for risk [= σ] and return [= *E(ROR)*].

{ANSWER: E ; xlADDRESS: PortTheory!$B$632; CLUES: ror1= 67%, ror2= 211% , ror0= -100%}

/\a. *E(ROR)* equals -49.2% and σ equals 92%

/\b. *E(ROR)* equals -42.8% and σ equals 106%

/\c. *E(ROR)* equals -56.6% and σ equals 106%

/\d. *E(ROR)* equals -56.6% and σ equals 92%

/\e. *E(ROR)* equals -42.8% and σ equals 92%

*weak moderate strong*

*probability* 35% 25% 40%

*%ROR for X* -3.4% 7.1% 13.6%

*%ROR for Y* 5.3% 12.0% 27.7%

### ER5 Find OR(E(r),σ) and dominance or trade-off given probabilities and outcomes

Your analysis of common stocks for companies X and Y lead you to believe rates of return depend as follows on the future strength of the economy:

*--- The probability for declining GNP is 35% in which case RORx = -3.4% and RORY = 5.3%.*

*--- The probability for flat GNP is 25% in which case RORx = 7.1% and RORY = 12.0%.*

*--- The probability for rising GNP is 40% in which case RORx = 13.6% and RORY = 27.7%.*

Which statement is most accurate?

{ANSWER: D ; xlADDRESS: PortTheory!$B$73 }

/\a. The expected return is 6.03% for X, 13.28% for Y, and X is dominant .

/\b. The expected return is 6.03% for X, 15.94% for Y, and X is dominant .

/\c. The expected return is 6.03% for X, 13.28% for Y, and Y is dominant .

/\d. The expected return is 6.03% for X, 15.94% for Y, and there is a trade-off .

/\e. The expected return is 6.03% for X, 13.28% for Y, and there is a trade-off .

### ER6 Find dominance or trade-off given risk and return

Your analysis of common stocks for companies X and Y lead you to believe their expected rates of return and standard deviation of returns are as follows:

*E(ROR) σ*

*security X* 12.3%13.1%

*security Y* 8.7%10.9%

Which statement is most accurate?

{ANSWER: C ; xlADDRESS: PortTheory!R383C2 }

/\a. X is dominant b. Y is dominant c. there is a trade-off

*Multiple setup (ER1m)*

Business economists for Company X predict the following outcomes for their *Sales* and the associated rate of return on their common shares:

*declining flat rising*

probability 35% 40% 25%

*%ROR* 2.4%4.3%15.0%

{xlADDRESS: PortTheory!$B$87 }

### ER1am Find expected return given probabilities

What is the expected rate of return return for the shares?

{ANSWER: E ; xlADDRESS: PortTheory!$B$87 }

/\a. 5.7% b. 5.2% c. 6.9% d. 4.7% e. 6.3%

### ER1bm Find stddev given probabilities

What is the standard deviation of returns for the shares?

{ANSWER: C ; xlADDRESS: PortTheory!$F$87 }

/\a. 5.6% b. 4.2% c. 5.1% d. 3.8% e. 4.6%

### ER1cm Find AND(return, stddev ) given probabilities

What is the expected return and standard deviation of returns for the shares?

{ANSWER: A ; xlADDRESS: PortTheory!$J$87 }

/\a. the expected return is 6.3% and the standard deviation is 5.1%

/\b. the expected return is 8.3% and the standard deviation is 5.8%

/\c. the expected return is 6.3% and the standard deviation is 5.8%

/\d. the expected return is 8.3% and the standard deviation is 5.1%

/\e. the expected return is 7.3% and the standard deviation is 5.8%

### ER13 Find portfolio avg ror from component ror

At the beginning of last month about 30% of your $3,750 portfolio was in stock *X;* stock *Y* accounted for 25% and stock *Z* for the rest. Monthly rates of return equaled 12% for stock *X,*  -20% for *Y,* and -32% for *Z*. Find last month’s percentage change in total portfolio wealth.

{ANSWER: D ; xlADDRESS: PortTheory!$B$566 }

/\a. -17.4% b. -13.1% c. -19.1% d. -15.8% e. -14.4%

*ER12 eExam.rtf*

X: 1.8% 4.0% 25.5% 16.9%

Y: 18.2% 10.0% 9.5% -4.2%

### ER12 Equal probability security risk, return, and dominance

The rates of return listed below for securities X and Y are equally likely. Find the standard deviation and expected rates of return for securities X and Y, and also compare the two regarding dominance or tradeoff.

*ROR for X*: 1.8%, 4.0%, 25.5%, 16.9%

*ROR for* Y: 18.2%, 10.0%, 9.5%, -4.2%

{ANSWER: D ; xlADDRESS: PortTheory!$B$549 }

/\a. (Risk, return) equals (9.67%,12.05%) for X and (8.04%,8.38%) for Y; also Y dominates X

/\b. (Risk, return) equals (8.04%,8.38%) for X and (10.45%,9.05%) for Y; also Y dominates X

/\c. (Risk, return) equals (10.45%,9.05%) for X and (10.45%,12.05%) for Y; also X and Y coexist as tradeoffs

/\d. (Risk, return) equals (9.67%,12.05%) for X and (8.04%,8.38%) for Y; also X and Y coexist as tradeoffs

/\e. (Risk, return) equals (10.45%,9.05%) for X and (10.45%,12.05%) for Y; also Y dominates X

*ER2 eExam.rtf*

*declining flat rising*

*probability* 25%30%45%

*ROR for X* 1.8%7.0%19.6%

*ROR for Y* 4.6%13.4%4.4%

*Multiple setup (ER2m)*

Your analysis of outcomes for sales and the associated rate of return on common stocks for companies X and Y are shown below. You intend to form a portfolio by allocating 55% of your funds in Company X, and the remainder in Company Y.

*--- The probability for declining Sales is* 25% *in which case RORx =* 1.8% *and RORY =* 4.6%*.*

*--- The probability for flat Sales is* 30% *in which case RORx =* 7.0% *and RORY =* 13.4%*.*

*--- The probability for rising Sales is* 45% *in which case RORx =* 19.6% *and RORY =* 4.4%*.*

{xlADDRESS: PortTheory!$B$105 }

### ER2am Find portfolio expected return given probabilities

What is the expected return for the portfolio?

{ANSWER: E ; xlADDRESS: PortTheory!$B$105 }

/\a. 7.8% b. 7.1% c. 6.5% d. 8.6% e. 9.5%

### ER2bm Find portfolio stddev given probabilities

What is the standard deviation of portfolio returns?

{ANSWER: A ; xlADDRESS: PortTheory!$F$105 }

/\a. 3.9% b. 5.2% c. 4.7% d. 4.3% e. 5.7%

### ER2cm Find portfolio AND(return,stddev) given probabilities

What is the expected return and standard deviation of portfolio returns?

{ANSWER: C ; xlADDRESS: PortTheory!$J$105 }

/\a. the expected return is 9.5% and the standard deviation is 3.4%

/\b. the expected return is 10.9% and the standard deviation is 3.9%

/\c. the expected return is 9.5% and the standard deviation is 3.9%

/\d. the expected return is 12.5% and the standard deviation is 3.9%

/\e. the expected return is 12.5% and the standard deviation is 3.4%

### ER2d Find target weight given desired portfolio return and probabilities

Your analysis of outcomes for sales and the associated rate of return on common stocks for companies X and Y are shown below. You intend to form a portfolio by allocating some of your funds in Company X and the remainder in Company Y.

*declining flat rising*

*probability* 25%30%45%

*ROR for X* 1.8%7.0%19.6%

*ROR for Y* 4.6%13.4%4.4%

In order to form a portfolio whose expected return equals 8.3%, what proportion of funds should be invested in Company X?

{ANSWER: D ; xlADDRESS: PortTheory!$N$105 }

/\a. 29.6% b. 32.6% c. 24.5% d. 26.9% e. 35.8%

*ER9m Multipart single-setup*

You form a portfolio that invests 40% of total funds in stock X and 60% in stock Z. Two possible outcomes exist. The probability is 35% that the first outcome occurs, in which case the rates of return equal 10% for X and 28% for Z. The probability is 65% that the second outcome occurs, in which case the rates of return equal 35% for X and 9% for Z.

{xlADDRESS: PortTheory!$B$33 CLUES: σX= 11.9% σZ= 9.1% }

### ER9am Unequal probabilities, find portfolio E(ROR)

Find the expected rate of return for the portfolio.

{ANSWER: B ; xlADDRESS: PortTheory!$B$33 }

/\a. 18.1% b. 19.9% c. 24.1% d. 26.5% e. 21.9%

### ER9bm Unequal probabilities, find portfolio stddev

Find the standard deviation of expected returns for the portfolio.

{ANSWER: A ; xlADDRESS: PortTheory!$F$33 }

/\a. 0.67% b. 0.38% c. 0.58% d. 0.44% e. 0.50%

### ER9cm diversification benefits

Find the diversification benefit, measured as the standard deviation reduction in basis points (BP), that the portfolio provides.

{ANSWER: C ; xlADDRESS: PortTheory!$J$33 }

/\a. 1,097 BP b. 721 BP c. 954 BP d. 627 BP e. 830 BP

### ER3 Find target weight given desired portfolio return and component returns

The expected rate of return on common stock for company X equals 10.1%. For Company Y, the expected rate of return is 18.8%. You wish to form a portfolio by allocating some of your funds in Company X and the remainder in Company Y. In order to form a portfolio whose expected return equals 15.70%, what proportion of funds should be invested in Company X?

{ANSWER: D ; xlADDRESS: PortTheory!$B$119 }

/\a. 39.2% b. 43.1% c. 52.2% d. 35.6% e. 47.4%

### ER14 Find portfolio risk/return given equally likely outcomes and allocation

The paired outcomes and rates of return listed below for securities X and Y are equally likely. You wish to form a portfolio by allocating 40% of funds in Company X and the remainder in Company Y. Find the expected rate of return and standard deviation for the portfolio.

X: -1.1% 11.8% 19.2% 15.2%

Y: 22.6% 23.1% 15.1% -6.8%

{ANSWER: E ; xlADDRESS: PortTheory!$B$582; CLUES: σx= 7.61%; σy= 12.14%; ρ= -0.4724}

/\a. The expected return is 16.7% and standard deviation is 7.4%

/\b. The expected return is 16.7% and standard deviation is 6.4%

/\c. The expected return is 14.5% and standard deviation is 7.4%

/\d. The expected return is 14.5% and standard deviation is 6.4%

/\e. The expected return is 12.6% and standard deviation is 6.4%

### ER15 Find DB with forced weight and equally likely outcomes

The paired outcomes and rates of return listed below for securities X and Y are equally likely. You wish to form a portfolio by allocating 30% of funds in Company X and the remainder in Company Y. Find the diversification benefit, measured as the standard deviation reduction in basis points (BP), that the portfolio provides.

X: 3.0% 11.2% 21.2% 12.2%

Y: 19.3% 28.9% 15.0% 6.0%

{ANSWER: E ; xlADDRESS: PortTheory!$B$598; CLUES: σx= 6.45%; σy= 8.24% ; ρ= -0.2386; σavg= 7.70% }

/\a. 228 BP b. 251 BP c. 171 BP d. 188 BP e. 207 BP

### ER7 Given the weight find the diversification benefit

The standard deviation of returns equals 18.0% for stock X and 10.5% for stock Z. The correlation between the two stocks equals 0.10. You make a portfolio that allocates 75% of funds to stock X. The remainder is put in stock Z. Which statement correctly describes the risk of the resultant portfolio?

{ANSWER: B ; xlADDRESS: PortTheory!$B$133 }

/\a. the portfolio standard deviation is 16.1% and represents diversification benefits of 243 basis points relative to average component risk

/\b. the portfolio standard deviation is 14.0% and represents diversification benefits of 212 basis points relative to average component risk

/\c. the portfolio standard deviation is 18.5% and represents diversification benefits of 212 basis points relative to average component risk

/\d. the portfolio standard deviation is 18.5% and represents diversification benefits of 243 basis points relative to average component risk

/\e. the portfolio standard deviation is 16.1% and represents diversification benefits of 212 basis points relative to average component risk

*ER8m Multiple setup*

Investment risk, as measured by the standard deviation of returns, equals 17.5% for stock X and 11.8% for stock Y. The correlation between the securities is zero. You form a portfolio allocated 75% in X and 25% in Y.

{xlADDRESS: PortTheory!$A$10 ; CLUES: average risk= 16.1% ; actual risk= 13.5% }

### ER8am Find actual portfolio risk for zero correlation case

Find the actual risk for the portfolio.

{ANSWER: D ; xlADDRESS: PortTheory!$F$16 }

/\a. 14.8% b. 11.1% c. 16.3% d. 13.5% e. 12.2%

### ER8bm Find diversification benefit for zero correlation case

Find the diversification benefit, measured as percent reduction in risk, for the portfolio.

{ANSWER: A ; xlADDRESS: PortTheory!$B$16 ; CLUES: average risk= 16.1% ; actual risk= 13.5% }

/\a. 2.6% b. 3.2% c. 2.9% d. 3.8% e. 3.5%

## Part MR Inferences about feasible sets based on the minimum risk portfolio

*MR1 eExam.rtf*

*Outcome 1: RORAlpha =* 1.7% *and RORZed =* 12.3%*.*

*Outcome 2: RORAlpha =* 6.0% *and RORZed =* 9.2%*.*

*Outcome 3: RORAlpha =* 21.0% *and RORZed = .*15.1%

*Outcome 4: RORAlpha =* 13.3% *and RORZed = .* 5.6%

*%ROR Alpha* 1.7% 6.0% 21.0% 13.3%

*%ROR Zed* 12.3% 9.2% 15.1% 5.6%

*Multiple setup (MR1m)*

Find the combination of Alpha and Zed that yield the minimum risk portfolio given that each of the paired-outcomes is equally likely:

*Outcome 1: RORAlpha =* 1.7% *and RORZed =* 12.3%*.*

*Outcome 2: RORAlpha =* 6.0% *and RORZed =* 9.2%*.*

*Outcome 3: RORAlpha =* 21.0% *and RORZed =* 15.1%

*Outcome 4: RORAlpha =* 13.3% *and RORZed =* 5.6%

{xlADDRESS: PortTheory!R141C1 ; CLUES: w(alpha)= 11.8%, RORmin σ = 10.5%; σmin σ = 3.4% }

### MR1am Find weight for minimum risk portfolio given equally weighted outcomes

What percentage of funds for this minimum risk portfolio is invested in Zed?

{ANSWER: A ; xlADDRESS: PortTheory!$B$150 }

/\a. 88.2% b. 117.4% c. 97.1% d. 129.2% e. 106.8%

### MR1bm Find expected return for minimum risk portfolio given equally weighted outcomes

What is the expected rate of return for this minimum risk portfolio?

{ANSWER: B ; xlADDRESS: PortTheory!$F$150 }

/\a. 14.0% b. 10.5% c. 9.6% d. 12.8% e. 11.6%

### MR1cm Find stddev for minimum risk portfolio given equally weighted outcomes

What is the standard deviation of returns for this minimum risk portfolio?

{ANSWER: D ; xlADDRESS: PortTheory!$J$150 }

/\a. 2.6% b. 3.1% c. 3.8% d. 3.4% e. 2.8%

### MR1dm Find AND(return,stddev) for minimum risk portfolio given equally weighted outcomes

Which of the following statements about the minimum risk portfolio is most accurate?

{ANSWER: C ; xlADDRESS: PortTheory!$N$150 }

/\a. the expected return is 12.1% and the standard deviation is 3.0%

/\b. the expected return is 13.9% and the standard deviation is 3.4%

/\c. the expected return is 10.5% and the standard deviation is 3.4%

/\d. the expected return is 13.9% and the standard deviation is 3.0%

/\e. the expected return is 10.5% and the standard deviation is 3.0%

### MR1fm Find DB@ minrisk given equal probs

What is the standard deviation of returns for this minimum risk portfolio and how much diversification benefit (“DB”), measured as risk reduction in basis points (“BP”), does the portfolio offer?

{ANSWER: C ; xlADDRESS: PortTheory!$V$150; CLUES: *σaverage* = 3.99% }

/\a. the standard deviation is 3.4% and the DB is 64 BP

/\b. the standard deviation is 2.6% and the DB is 56 BP

/\c. the standard deviation is 3.4% and the DB is 56 BP

/\d. the standard deviation is 2.6% and the DB is 64 BP

/\e. the standard deviation is 3.0% and the DB is 64 BP

### MR1em Find investment advice given equally weighted outcomes

If your objective is to form a portfolio with these two securities that is not dominated by any other combination, which statement most generally describes these non-dominated portfolios?

{ANSWER: B ; xlADDRESS: PortTheory!$R$150 }

/\a. they allocate between 76.7% and 0% in Alpha

/\b. they allocate between 88.2% and 100% in Zed

/\c. they allocate between 88.2% and 0% in Alpha

/\d. they allocate between 101.5% and 0% in Alpha

/\e. they allocate between 101.5% and 100% in Zed

### MR5 Find feasible allocation set from summary stats

Throughout the past, the return for type *X* stocks has averaged 13.7% and the standard deviation has been 27.2%. For type *Y* stocks the return has averaged 9.8% and the standard deviation 34.8%. The correlation between the returns for these two assets has been 0.00. You expect these tendencies to persist into the future. What is the most comprehensive allocation rule that correctly describes all portfolios in the feasible allocation set?

{ANSWER: B ; xlADDRESS: PortTheory!$B$617 }

/\a. Always invest 48.3% or less in asset Y

/\b. Always invest 62.1% or more in asset X

/\c. Always invest 48.3% or more in asset Y

/\d. Always invest 51.7% or more in asset Y

/\e. Always invest 51.7% or less in asset X

### MR7 Find min-risk allocation and average risk from higher stats

Throughout the past, the return for type *X* stocks has averaged 11.9% and the standard deviation has been 37.3%. For type *Y* stocks the return has averaged 8.8% and the standard deviation 28.9%. The correlation between the returns for these two assets has been 0.32. You expect these tendencies to persist into the future. For the minimum risk portfolio comprising *X* and *Y* what is the allocation and average portfolio risk?

{ANSWER: E ; xlADDRESS: PortTheory!$B$792 }

/\a. The minimum risk portfolio allocates 27.8% to X; average component risk is 31.6% .

/\b. The minimum risk portfolio allocates 27.8% to X; average component risk is 23.9% .

/\c. The minimum risk portfolio allocates 31.9% to X; average component risk is 27.5% .

/\d. The minimum risk portfolio allocates 31.9% to X; average component risk is 23.9% .

/\e. The minimum risk portfolio allocates 31.9% to X; average component risk is 31.6% .

*Multiple setup (MR2m)*

Throughout the past, the return for Large Cap Stocks has averaged 11.7% and the standard deviation has been 26.4%. For International Stocks, the return has averaged 20.0% and the standard deviation 28.7%. The correlation between the returns for these two assets has been 0.29.

{xlADDRESS: Port!R156C1 ; CLUES: weight in first asset for min σ = 56% }

### MR2am Find weight for minimum risk portfolio given returns, risks and correlation

What is the percentage allocation of funds in Large Cap Stocks that results in a portfolio with the lowest possible risk; the remaining funds are to be invested in the other asset.

{ANSWER: D ; xlADDRESS: PortTheory!$B$168 }

/\a. 67.6% b. 50.8% c. 61.4% d. 55.9% e. 46.2%

### MR2bm Find return for minimum risk portfolio given returns, risks and correlation

Suppose you combine these two assets into a portfolio that has the lowest possible risk. What is the expected return for the resultant portfolio?

{ANSWER: A ; xlADDRESS: PortTheory!$F$168 }

/\a. 15.4% b. 16.9% c. 14.0% d. 18.6% e. 20.4%

### MR2cm Find stddev for minimum risk portfolio given returns, risks and correlation

Suppose you combine these two assets into a portfolio that has the lowest possible risk. What is the standard deviation of the resultant portfolio?

{ANSWER: D ; xlADDRESS: PortTheory!$J$168 }

/\a. 24.3% b. 26.7% c. 32.3% d. 22.1% e. 29.4%

### MR2dm Find AND(return,stddev) for minimum risk portfolio given returns, risks and correlation

Suppose you combine these two assets into a portfolio that has the lowest possible risk. Which statement about the resultant portfolio is most accurate?

{ANSWER: C ; xlADDRESS: PortTheory!$N$168 }

/\a. the expected return is 15.4% and the standard deviation is 25.4%

/\b. the expected return is 17.7% and the standard deviation is 22.1%

/\c. the expected return is 15.4% and the standard deviation is 22.1%

/\d. the expected return is 17.7% and the standard deviation is 25.4%

/\e. the expected return is 13.4% and the standard deviation is 25.4%

*Multiple setup (MR3m)*

The standard deviation of expected returns for investments X and Y equal 15.0% and 16.5% , respectively. The correlation between returns for X and Y is -0.30 .

{xlADDRESS: PortTheory!$B$183 }

### MR3am Find attributes of a fixed weight portfolio given risks and correlation

If you allocate 60% of your funds to X, and the remainder to Y, what is the portfolio’s standard deviation of expected returns?

{ANSWER: E ; xlADDRESS: PortTheory!$B$183 }

/\a. 7.1% b. 6.4% c. 7.8% d. 8.6% e. 9.4%

### MR3bm Find risk minimizing weight given risks and correlation

What is the percentage allocation of funds in X that results in a portfolio with the lowest possible risk; the remaining funds are to be invested in the other asset.

{ANSWER: A ; xlADDRESS: PortTheory!$F$183 }

/\a. 53.7% b. 71.4% c. 64.9% d. 78.6% e. 59.0%

### MR3cm Find feasible set of portfolios given risks and correlation

Find the combination of X and Y that yield the minimum risk portfolio. If your objective is to form a portfolio with these two securities that is not dominated by any other combination, which one statement is supported best by your finding?

{ANSWER: D ; xlADDRESS: PortTheory!$J$183 }

/\a. If the expected return is less for Y than for X, then dominant portfolios comprise exclusively positions that allocate between 46.3% and 100% in X

/\b. If the expected return is greater for Y than for X, then dominant portfolios comprise exclusively positions that allocate between 46.3% and 0% in X

/\c. If the expected return is greater for Y than for X, then dominant portfolios comprise exclusively positions that allocate between 53.7% and 100% in X

/\d. If the expected return is greater for X than for Y, then dominant portfolios comprise exclusively positions that allocate between 53.7% and 100% in X

/\e. If the expected return is less for Y than for X, then dominant portfolios comprise exclusively positions that allocate between 46.3% and 100% in Y

*Multiple setup (MR4m)*

The standard deviation of expected returns for investments X and Y equal 15.0% and 9.0%, respectively. The correlation between returns for X and Y is 0.20.

{xlADDRESS: PortTheory!$B$200}

### MR4am Find diversification benefits from minimum risk portfolio

How much risk reduction, that is diversification benefit in basis points, does the minimum risk portfolio provide?

{ANSWER: A ; xlADDRESS: PortTheory!$B$200 CLUES: wx at min = 21.4% ; σ at min = 8.3%}

/\a. 195 b. 161 c. 147 d. 215 e. 178

### MR4bm Find diversification benefits for forced weight portfolio

How much risk reduction, that is diversification benefit in basis points, is provided by the portfolio allocated 80% in X, remainder in Y?

{ANSWER: A ; xlADDRESS: PortTheory!$F$200 }

/\a. 131 b. 145 c. 175 d. 159 e. 120

### MR6 Find minrisk weight and implication for DB and rho

Throughout the past, the standard deviation for type *X* stocks has averaged 20.5%. For type *Y* stocks the standard deviation has averaged 15.5%. These two asset return series also always seem to be in uncorrelated parts of the business cycle - the correlation coefficient for returns is indistinguishable from zero. You expect these tendencies to persist into the future. You also expect that Y is so different from X that X correlates more positively with almost every other stock. What is the most likely statement that correctly compares the minimum risk portfolio containing *X* and *Y* with the portfolio containing *X* and any other stock?

{ANSWER: D ; xlADDRESS: PortTheory!$B$777 }

/\a. Allocating 41.8% of a portfolio to type X stocks and the rest in almost any other stock besides Y will result in a portfolio with fewer diversification benefits.

/\b. Allocating 41.8% of a portfolio to type X stocks and the rest in almost any other stock besides Y will result in a portfolio with greater diversification benefits.

/\c. Allocating 48.1% of a portfolio to type X stocks and the rest in almost any other stock besides Y will result in a portfolio with greater diversification benefits.

/\d. Allocating 36.4% of a portfolio to type X stocks and the rest in almost any other stock besides Y will result in a portfolio with fewer diversification benefits.

/\e. Allocating 48.1% of a portfolio to type X stocks and the rest in almost any other stock besides Y will result in a portfolio with fewer diversification benefits.

## Part AP Equilibrium asset pricing models

### AP11a Capital market line price of risk

Analysts tell you that the risk-free rate of return equals 6.5% and the market portfolio’s required rate of return and risk (standard deviation) equal 10.5% and 18.5%, respectively. Compute according to the *Capital market line* the equilibrium price for risk. For an increase in personal portfolio risk of one percentage point (and no extra diversification benefit) how much is the increase in required risk premium.

{ANSWER: E ; xlADDRESS: PortTheory!$B$46 }

/\a. 12 basis points b. 16 BP c. 19 BP d. 14 BP e. 22 BP

### AP11b Capital market line price of risk and incremental risk premium

Analysts tell you that the risk-free rate of return equals 6.5% and the market portfolio’s required rate of return and risk (standard deviation) equal 10.5% and 18.5%, respectively. Compute according to the *Capital market line* the equilibrium price for risk. For an increase in personal portfolio risk of 7 percentage points (and no extra diversification benefit) how much is the increase in required risk premium.

{ANSWER: C ; xlADDRESS: PortTheory!$F$46 }

/\a. 1.03% b. 1.25% c. 1.51% d. 1.14% e. 1.38%

### AP12 Find allocation in OR(risk-free asset, market portfolio) providing target return

The risk-free rate of return equals 5.5% and the market portfolio’s required rate of return and risk (standard deviation) equal 14.5% and 16.0%, respectively. Suppose that the equilibrium price for risk computes according to the *Capital market line*. Your objective is to combine the risk-free asset with the market portfolio in order to create a portfolio with required return equal to 12.7%. Find the allocation that satisfies your objective.

{ANSWER: A ; xlADDRESS: PortTheory!$B$646 }

/\a. Allocate 20.0% in the risk-free asset and you achieve the objective

/\b. Allocate 20.0% in the market portfolio and you achieve the objective

/\c. Allocate 23.0% in the risk-free asset and you achieve the objective

/\d. Allocate 26.5% in the risk-free asset and you achieve the objective

/\e. Allocate 26.5% in the market portfolio and you achieve the objective

### AP13 Find allocation in OR(risk-free asset, market portfolio) providing target σ

The risk-free rate of return equals 3.5% and the market portfolio’s required rate of return and risk (standard deviation) equal 11.0% and 13.0%, respectively. Suppose that the equilibrium price for risk computes according to the *Capital market line*. Your objective is to combine the risk-free asset with the market portfolio in order to create a portfolio with standard deviation of returns equal to 10.4%. Find the allocation that satisfies your objective.

{ANSWER: A ; xlADDRESS: PortTheory!$B$661 }

/\a. Allocate 20.0% in the risk-free asset and you achieve the objective

/\b. Allocate 23.0% in the risk-free asset and you achieve the objective

/\c. Allocate 23.0% in the market portfolio and you achieve the objective

/\d. Allocate 20.0% in the market portfolio and you achieve the objective

/\e. Allocate 26.5% in the risk-free asset and you achieve the objective

### AP14 Find allocation in OR(risk-free asset, market portfolio) providing target risk premium

The risk-free rate of return equals 5.5% and the market portfolio’s required rate of return and risk (standard deviation) equal 13.0% and 20.0%, respectively. Suppose that the equilibrium price for risk computes according to the *Capital market line*. Your objective is to combine the risk-free asset with the market portfolio in order to create a portfolio that earns a risk premium of 1.5%. Find the allocation that satisfies your objective.

{ANSWER: C ; xlADDRESS: PortTheory!$B$676 }

/\a. Allocate 105.8% in the market portfolio and you achieve the objective

/\b. Allocate 92.0% in the market portfolio and you achieve the objective

/\c. Allocate 80.0% in the risk-free asset and you achieve the objective

/\d. Allocate 105.8% in the risk-free asset and you achieve the objective

/\e. Allocate 92.0% in the risk-free asset and you achieve the objective

### AP15 Find nominal interest rate given real rate and periodic inflation

The short-term real risk-free interest rate averages 4.4%. Suppose that expected inflation is 4.9% over the next year, 3.1% during the second year, and 4.4% thereafter perpetually. Inflation is the only component of the term premium for risk-free securities. Find today’s interest rates for risk-free securities with terms of 2 years, 4 years and 20-years.

{ANSWER: A ; xlADDRESS: PortTheory!$B$690 }

/\a. The interest rate for a 2-year risk-free security equals 8.40%

/\b. The interest rate for a 4-year risk-free security equals 7.17%

/\c. The interest rate for a 20-year risk-free security equals 7.30%

/\d. Two choices, B and C, are correct

/\e. None of the A-B-C choices are correct

### AP16a Find security risk premium given correlation and market measures

Suppose the risk-free rate on T-bills is 7.0% and the required return on the market portfolio is 11.5%. Suppose also that *σm* = 19.8% and that idiosyncratic risk for security *X* is *σx* = 13.5%. Correlation *ρX,Market* between *X* and the market portfolio is 0.64. Find the required risk premium for security *X.*

{ANSWER: A ; xlADDRESS: PortTheory!$B$758 }

/\a. 2.0% b. 1.4% c. 0.9% d. 1.1% e. 1.6%

### AP16b Find security AND(return,risk premium) given correlation and market measures

Suppose the risk-free rate on T-bills is 7.0% and the required return on the market portfolio is 11.5%. Suppose also that *σm* = 19.8% and that idiosyncratic risk for security *X* is *σx* = 13.5%. Correlation *ρX,Market* between *X* and the market portfolio is 0.64. Find the required rate of return and risk premium for security *X.*

{ANSWER: C ; xlADDRESS: PortTheory!$F$758 }

/\a. The required return is 7.8% and the risk premium is 2.0%

/\b. The required return is 9.0% and the risk premium is 2.3%

/\c. The required return is 9.0% and the risk premium is 2.0%

/\d. The required return is 10.3% and the risk premium is 2.0%

/\e. The required return is 7.8% and the risk premium is 2.3%

### AP7 Find security risk premium given beta and market risk premium

The company’s beta is 0.90 and the expected risk premium for the market portfolio is 8.5%. What equilibrium risk premium for the company’s stock is implied by the Capital Asset Pricing Model?

{ANSWER: B ; xlADDRESS: PortTheory!$B$212 }

/\a. 10.2% b. 7.7% c. 8.4% d. 9.3% e. 7.0%

### AP1a Find required returns given CAPM parameters (given market return)

You want to add an additional stock to your portfolio and are considering two alternatives. For stock A, the expected return is 13.40% and the beta is 1.39. For stock B, the expected return is 10.20% and the beta is 0.55. The risk-free rate is 5.6% and the expected return on the market portfolio is 11.4%. According to the Capital Asset Pricing Model, which statement about adding these securities to your portfolio is most accurate?

{ANSWER: B ; xlADDRESS: PortTheory!$B$230 ; CLUES: required returns for A, B = 13.66% , 8.79% }

/\a. Add either one, since for both the expected returns exceed required returns.

/\b. Add only stock B since its expected return is the only one to exceed its required return.

/\c. Add only stock A since its expected return is the only one to exceed its required return.

/\d. Add neither, since both have expected returns less than required returns.

/\e. Add only A because its beta is larger than Bs beta.

### AP1b Find required returns given CAPM parameters (given market risk premium)

You want to add an additional stock to your portfolio and are considering two alternatives. For stock A, the expected return is 13.40% and the beta is 1.39. For stock B, the expected return is 10.20% and the beta is 0.55. The risk-free rate is 5.6% and the risk premium for the market portfolio is 5.8%. According to the Capital Asset Pricing Model, which statement about adding these securities to your portfolio is most accurate?

{ANSWER: B ; xlADDRESS: PortTheory!$B$230 ; CLUES: required returns for A, B = 13.66% , 8.79% }

/\a. Add either one, since for both the expected returns exceed required returns.

/\b. Add only stock B since its expected return is the only one to exceed its required return.

/\c. Add only stock A since its expected return is the only one to exceed its required return.

/\d. Add neither, since both have expected returns less than required returns.

/\e. Add only A because its beta is larger than Bs beta.

### AP1c Find required returns given CAPM parameters OR(market return, market risk premium)

You want to add an additional stock to your portfolio and are considering two alternatives. For stock A, the expected return is 13.40% and the beta is 1.39. For stock B, the expected return is 10.20% and the beta is 0.55. The risk-free rate is 5.6% and the expected return on the market portfolio is 11.4%. According to the Capital Asset Pricing Model, which statement about adding these securities to your portfolio is most accurate?

{ANSWER: B ; xlADDRESS: PortTheory!$B$230 ; CLUES: required returns for A, B = 13.66% , 8.79% }

/\a. Add either one, since for both the expected returns exceed required returns.

/\b. Add only stock B since its expected return is the only one to exceed its required return.

/\c. Add only stock A since its expected return is the only one to exceed its required return.

/\d. Add neither, since both have expected returns less than required returns.

/\e. Add only A because its beta is larger than Bs beta.

### AP4a Find beta given rf, and risk premia

The economy wide risk free interest rate is 6.0% and the expected risk premium for the market portfolio is 8.5%. At the same time, the company’s expected risk premium according to the Capital Asset Pricing Model is 7.5%. What is the company’s β?

{ANSWER: E ; xlADDRESS: PortTheory!$B$245 }

/\a. 0.60 b. 0.80 c. 0.73 d. 0.66 e. 0.88

### AP4b Find beta and OR(conservative,aggressive) given rf, and risk premia

The economy wide risk free interest rate is 6.0% and the expected risk premium for the market portfolio is 8.5%. At the same time, the company’s expected risk premium according to the Capital Asset Pricing Model is 7.5%. Which statement about the company’s β is most accurate?

{ANSWER: B ; xlADDRESS: PortTheory!$F$245 }

/\a. The beta equals 1.01 and the stock is an aggressive security

/\b. The beta equals 0.88 and the stock is a conservative security

/\c. The beta equals 0.88 and the stock is an aggressive security

/\d. The beta equals 1.17 and the stock is an aggressive security

/\e. The beta equals 1.17 and the stock is a conservative security

### AP4c Find beta given rf, rmkt, rsec

The economy wide risk free interest rate is 6.0% and the expected return on the market portfolio is 14.5%. At the same time, the company’s expected return according to the Capital Asset Pricing Model is 13.5%. What is the company’s β?

{ANSWER: E ; xlADDRESS: PortTheory!$B$245 }

/\a. 0.60 b. 0.80 c. 0.73 d. 0.66 e. 0.88

### AP4d Find beta and OR(conservative,aggressive) given rf, rmkt, rsec

The economy wide risk free interest rate is 6.0% and the expected return on the market portfolio is 14.5%. At the same time, the company’s expected return according to the Capital Asset Pricing Model is 13.5%. Which statement about the company’s β is most accurate?

{ANSWER: B ; xlADDRESS: PortTheory!$F$245 }

/\a. The beta equals 1.01 and the stock is an aggressive security

/\b. The beta equals 0.88 and the stock is a conservative security

/\c. The beta equals 0.88 and the stock is an aggressive security

/\d. The beta equals 1.17 and the stock is an aggressive security

/\e. The beta equals 1.17 and the stock is a conservative security

### AP4e Find beta given rf, and OR(rmkt, risk premium) and OR(rsec,risk premium)

The economy wide risk free interest rate is 6.0% and the expected risk premium for the market portfolio is 8.5%. At the same time, the company's expected risk premium according to the Capital Asset Pricing Model is 7.5%. What is the company’s β?

{ANSWER: E ; xlADDRESS: PortTheory!$B$245 }

/\a. 0.60 b. 0.80 c. 0.73 d. 0.66 e. 0.88

### AP4f Find beta and OR(conservative,aggressive) given rf, and OR(rmkt,risk premium) and OR(rsec,risk premium)

The economy wide risk free interest rate is 6.0% and the expected risk premium for the market portfolio is 8.5%. At the same time, the company's expected risk premium according to the Capital Asset Pricing Model is 7.5%. Which statement about the company’s β is most accurate?

{ANSWER: B ; xlADDRESS: PortTheory!$F$245 }

/\a. The beta equals 1.01 and the stock is an aggressive security

/\b. The beta equals 0.88 and the stock is a conservative security

/\c. The beta equals 0.88 and the stock is an aggressive security

/\d. The beta equals 1.17 and the stock is an aggressive security

/\e. The beta equals 1.17 and the stock is a conservative security

### AP3a Find beta given market model observations

You have the following information about equity rates of returns for the past 5 periods.

obs 1 obs 2 obs 3 obs 4 obs 5

*company ROR* 22% 15% -10% 14% 8%

*market ROR* 16% 10% -9% 16% 10%

Use the above observations to estimate the *market model*. Find the company’s β.

{ANSWER: D ; xlADDRESS: PortTheory!$B$264 }

/\a. 1.23 b. 1.36 c. 1.64 d. 1.12 e. 1.49

### AP3b Find beta and OR(conservative,aggressive) given market model observations

You have the following information about equity rates of returns for the past 5 periods.

obs 1 obs 2 obs 3 obs 4 obs 5

*company ROR* 22% 15% -10% 14% 8%

*market ROR* 16% 10% -9% 16% 10%

Use the above observations to estimate the *market model*. Which statement about the company’s β is most accurate?

{ANSWER: E ; xlADDRESS: PortTheory!$F$264 }

/\a. The beta equals 1.12 and the stock is a conservative security

/\b. The beta equals 1.48 and the stock is an aggressive security

/\c. The beta equals 1.29 and the stock is an aggressive security

/\d. The beta equals 1.29 and the stock is a conservative security

/\e. The beta equals 1.12 and the stock is an aggressive security

*AP2 eExam.rtf*

*For observation 1 RORcompany =* 19% *and RORmarket =* 15%*.*

*For observation 2 RORcompany =* 12% *and RORmarket =* 11%*.*

*For observation 3 RORcompany =* 1% *and RORmarket =* -9%*.*

*For observation 4 RORcompany =* 16% *and RORmarket =* 18%*.*

*For observation 5 RORcompany =* 10% *and RORmarket =* 8%*.*

*Multiple setup (AP2m)*

You have the following information about equity rates of returns for the past 5 periods.

obs 1 obs 2 obs 3 obs 4 obs 5

*For observation 1 RORcompany =* 18% *and RORmarket =* 18%*.*

*For observation 2 RORcompany =* 10% *and RORmarket =* 15%*.*

*For observation 3 RORcompany =* 1% *and RORmarket =* -7%*.*

*For observation 4 RORcompany =* 17% *and RORmarket =* 20%*.*

*For observation 5 RORcompany =* 10% *and RORmarket =* 9%*.*

{xlADDRESS: PortTheory!$B$285 }

### AP2am Find beta given market model observations

Use the above observations to estimate the *market model*. Find the company’s β.

{ANSWER: C ; xlADDRESS: PortTheory!$B$285 }

/\a. 0.79 b. 0.54 c. 0.59 d. 0.72 e. 0.65

### AP2bm Find beta and OR(conservative,aggressive) given market model observations

Use the above observations to estimate the *market model*. Which statement about the company’s β is most accurate?

{ANSWER: D ; xlADDRESS: PortTheory!$F$285 }

/\a. The beta equals 0.52 and the stock is an aggressive security

/\b. The beta equals 0.45 and the stock is an aggressive security

/\c. The beta equals 0.52 and the stock is a conservative security

/\d. The beta equals 0.59 and the stock is a conservative security

/\e. The beta equals 0.45 and the stock is a conservative security

### AP2cm Find stock return given market model observations

The most recent information suggests that next period’s expected market return is 17%. Use the above observations to estimate the *market model* and find the company’s required rate of return next period.

{ANSWER: C ; xlADDRESS: PortTheory!$J$285 }

/\a. 19.6% b. 17.9% c. 14.8% d. 16.2% e. 21.6%

### AP2dm Find RORrisk-adjusted given market model observations and ROR market

Use the above observations to estimate the *market model*. The most recent information suggests that the current period market return is 17% and the company return is 18%. Use the market model to find the company risk-adjusted rate of return.

{ANSWER: A ; xlADDRESS: PortTheory!$N$285 ; CLUES: β = 0.59 Market model return: 14.8% }

/\a. 3.2% b. 2.9% c. 2.2% d. 2.7% e. 2.4%

### AP2em Find ROR company given RORrisk-adjusted and ROR market

Company management use the above observations to estimate the *market model*. They proclaim that current period policies are generating a company risk-adjusted rate of return equal to 6%. Also this period the rate of return for the market portfolio is 17%. Find the actual rate of return for the company shareholders this period.

{ANSWER: D ; xlADDRESS: PortTheory!$R$285; CLUES: β = 0.59 Market model return: 14.8% }

/\a. 22.8% b. 18.9% c. 15.6% d. 20.8% e. 17.2%

### AP5a Find OR(required,expected) ROR from CAPM and dividend growth model given simple setup

The company’s beta is 1.30, its dividend growth rate is 8.0%, just yesterday it paid a dividend of $0.95 , and today’s shareprice is $15.09 . You believe that today’s shareprice equals today’s intrinsic value. Furthermore, you believe that the shareprice moves in accordance with the dividend constant growth model. The economy wide risk free interest rate is 6.0%, and the expected risk premium for the market portfolio is 9.0%. You believe that the stock represents a good investment if the expected total rate of return implied by the dividend constant growth model exceeds the required rate of return implied by the Capital Asset Pricing Model. Which of the following statements is most accurate?

{ANSWER: C ; xlADDRESS: PortTheory!$B$301 }

/\a. The expected return equals 14.8% so buy the stock

/\b. The expected return equals 11.2% so buy the stock

/\c. The expected return equals 14.8% so do not buy the stock

/\d. The expected return equals 12.9% so do not buy the stock

/\e. The expected return equals 12.9% so buy the stock

### AP5b Find AND(required,expected) ROR from CAPM and dividend growth model given simple setup

The company’s beta is 1.30, its dividend growth rate is 8.0%, just yesterday it paid a dividend of $0.95 , and today’s shareprice is $15.09 . You believe that today’s shareprice equals today’s intrinsic value. Furthermore, you believe that the shareprice moves in accordance with the dividend constant growth model. The economy wide risk free interest rate is 6.0%, and the expected risk premium for the market portfolio is 9.0%. You believe that the stock represents a good investment if the expected total rate of return implied by the dividend constant growth model exceeds the required rate of return implied by the Capital Asset Pricing Model. Which of the following statements is most accurate?

{ANSWER: C ; xlADDRESS: PortTheory!$F$301 }

/\a. The required return is 17.7% and the expected return is 11.4% so do not buy it

/\b. The required return is 23.4% and the expected return is 11.4% so do not buy it

/\c. The required return is 17.7% and the expected return is 14.8% so do not buy it

/\d. The required return is 20.4% and the expected return is 11.4% so do not buy it

/\e. The required return is 23.4% and the expected return is 14.8% so do not buy it

### AP6a Find intrinsic value from CAPM and dividend growth model given simple setup

The company’s beta is 1.30, its dividend growth rate is 7.9%, and just yesterday it paid a dividend of $1.30 . The economy wide risk free interest rate is 3.5%, and the expected risk premium for the market portfolio is 9.0%. Find the stock’s intrinsic value using the dividend constant growth model and the required rate of return implied by Capital Asset Pricing Model.

{ANSWER: A ; xlADDRESS: PortTheory!$B$317 }

/\a. $19.22 b. $17.47 c. $15.88 d. $13.12 e. $14.44

### AP6b Find intrinsic value and make inference from CAPM and dividend growth model given simple setup

The company’s beta is 1.30, its dividend growth rate is 7.9%, and just yesterday it paid a dividend of $1.30 . The economy wide risk free interest rate is 3.5%, and the expected risk premium for the market portfolio is 9.0%. Find the stock’s intrinsic value using the dividend constant growth model and the required rate of return implied by Capital Asset Pricing Model. Which statement is most accurate?

{ANSWER: B ; xlADDRESS: PortTheory!$F$317 }

/\a. Intrinsic value is $16.71 and if the stock price is $17.29 you should not buy it

/\b. Intrinsic value is $19.22 and if the stock price is $23.06 you should not buy it

/\c. Intrinsic value is $19.22 and if the stock price is $17.29 you should not buy it

/\d. Intrinsic value is $16.71 and if the stock price is $23.06 you should buy it

/\e. Intrinsic value is $22.10 and if the stock price is $23.06 you should not buy it

### AP8 Find change in intrinsic value with shock to market risk premium given real rate, inflation premium, market premium, and company beta and growth rate

The economy wide real risk free interest rate is 3.0%, the inflation premium is 2.0%, and the market risk premium is 9.0%. At the same time, the Company’s beta is 1.70, its dividend growth rate is 5.5%, and it just paid a dividend of $0.75 per share. Due to sudden and unexpected political events, the market risk premium decreases by 180 basis points. What is the likely resultant percentage change in the intrinsic value of the company’s shares?

{ANSWER: E ; xlADDRESS: PortTheory!$B$335; CLUES: pre-shock r = 20.30% ; post-shock r = 17.24% ; pre-shock intrinsic value = $5.35 }

/\a. 23.7% b. 28.7% c. 21.5% d. 31.5% e. 26.1%

### AP9 Find change in intrinsic value with shock to beta and growth rate given real rate, inflation premium, and market premium

The economy wide real risk free interest rate is 4.0%, the inflation premium is 3.0%, and the market risk premium is 8.5%. At the same time, the Company’s beta is 1.35, its dividend growth rate is 6.0%, and it just paid a dividend of $1.00 per share. The company anticipates a change in production plan that should affect its beta and dividend growth rate. The new beta becomes 1.70 and the growth rate becomes 5.00%. What is the likely resultant percentage change in the intrinsic value of the company’s shares?

{ANSWER: D ; xlADDRESS: PortTheory!$B$352: CLUES: pre-shock r = 18.48% ; post-shock r = 21.45% ; pre-shock intrinsic value = $8.50 }

/\a. -33.1% b. -27.4% c. -36.4% d. -24.9% e. -30.1%

### AP10 Find %change in intrinsic value with shock to market premium and growth rate

The company just paid an annual dividend of $1.55 . The company beta equals 0.75 and the risk-free rate equals 3.5%. The dividend had been expected to grow at a 3.0% annual rate, and the market risk premium had been 9.0%. An international crisis is brewing, however, and all evidence suggests the market risk premium is increasing 125 basis points. Due to the company’s unique international position, it is likely the dividend growth rate is rising by 250 basis points. What is the most likely change in the stock’s intrinsic value?

{ANSWER: D ; xlADDRESS: PortTheory!$B$369; CLUES: V(0)= $22.02 , V(1)= $28.75 }

/\a. 33.6% b. 25.3% c. 37.0% d. 30.6% e. 27.8%

## Part CC Company cost of capital

### CC1 Find simple cost of capital

The company is evaluating profitability of a long-term investment opportunity. Their balance sheet shows that 28% of long term financing relies on debt at a 8.0% pretax interest rate. The other 72% is *Stockholders equity*. The company marginal tax rate is 29%. Statistical estimates find that company *β* is 1.09. The short-term risk-free rate currently is 4.8% and the company believes that the required risk premium for the market portfolio is 10.6%. Find the company’s weighted average cost of capital appropriate for computing net present value of investment opportunities.

{ANSWER: A ; xlADDRESS: PortTheory!$B$706; CLUE: *RORrequired* = 16.4% }

/\a. 13.4% b. 10.0% c. 11.0% d. 14.7% e. 12.2%

### CC2 Find NPV of perpetual savings

A company pursues a cost-cutting initiative that costs $32,000 to implement. Thereafter, however, the initiative reduces after-tax costs by $7,000 per year perpetually. The company relies on 46% debt financing at a 7.8% pretax interest rate. The company marginal tax rate is 36%. The company *β* is 1.40, short-term risk-free rate is 4.7%, and required risk premium for the market portfolio is 8.7%. Find the project’s net present value.

{ANSWER: C ; xlADDRESS: PortTheory!$B$724; CLUES: *RORrequired* = 16.9% ; WACC = 11.41% }

/\a. $26,674 b. $22,045 c. $29,342 d. $32,276 e. $24,249

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