Name: _____ Class:___ Date: _____

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Name: _____ Class:___ Date: _____

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1

answer:

one asset
risk
weighted average
tighter
standard deviation
identical

7.00

8.54

1.22

source:

objective:

Risk and Rates of Return: Stand-Alone Risk

Stand-alone risk is the risk an investor would face if he or she held only _____ . No investment should be undertaken unless its expected rate of return is high enough to compensate for its perceived _____ . The expected rate of return is the return expected to be realized from an investment; it is calculated as the _____ of the probability distribution of possible results as shown below:

$$\textbf{Expected rate of return} = \hat{r} = P_1 r_1 + P_2 r_2 + ... + P_N r_N = \sum_{i=1}^{N} P_i r_i$$

The _____ an asset's probability distribution, the lower its risk. Two useful measures of stand-alone risk are standard deviation and coefficient of variation. Standard deviation is a statistical measure of the variability of a set of observations as shown below:

$$\textbf{Standard deviation} = \sigma = \sqrt{\sum_{i=1}^{N} (r_i - \hat{r}) P_i}$$

If you have a sample of actual historical data, then the standard deviation calculation would be changed as follows:

$$\textbf{Estimated } \sigma = \sqrt{\frac{\sum_{t=1}^{N} (\bar{r}_t - \bar{r}_{Avg})^2}{N - 1}}$$

The coefficient of variation is a better measure of stand-alone risk than standard deviation because it is a standardized measure of risk per unit; it is calculated as the _____ divided by the expected return. The coefficient of variation shows the risk per unit of return, so it provides a more meaningful risk measure when the expected returns on two alternatives are not _____ .

Quantitative Problem: You are given the following probability distribution for CHC Enterprises:

State of Economy	Probability	Rate of return
Strong	0.25	18%
Normal	0.5	8%
Weak	0.25	-6%

What is the stock's expected return? Round your answer to 2 decimal places. Do not round intermediate calculations.

_____ %

What is the stock's standard deviation? Round your answer to two decimal places. Do not round intermediate calculations.

_____ %

What is the stock's coefficient of variation? Round your answer to two decimal places. Do not round intermediate calculations.

_____

2
answer:
sufficient
insufficient
9.00
11.00
10.00
12
source:
objective:

Risk and Rates of Return: Security Market Line

The security market line (SML) is an equation that shows the relationship between risk as measured by beta and the required rates of return on individual securities. The SML equation is given below:

$$\text{Required return on Stock} = \text{Risk-free return} + (\text{Market risk premium})(\text{Stock's beta})$$

If a stock's expected return plots on or above the SML, then the stock's return is _____ to compensate the investor for risk. If a stock's expected return plots below the SML, the stock's return is _____ to compensate the investor for risk.

The SML line can change due to expected inflation and risk aversion. If inflation changes, then the SML plotted on a graph will shift up or down parallel to the old SML. If risk aversion changes, then the SML plotted on a graph will rotate up or down becoming more or less steep if investors become more or less risk averse. A firm can influence market risk (hence its beta coefficient) through changes in the composition of its assets and through changes in the amount of debt it uses.

Quantitative Problem: You are given the following information for Wine and Cork Enterprises (WCE):

r_{RF} = 5%; r_M = 9%; RP_M = 4%, and beta = 1

What is WCE's required rate of return? Round your answer to 2 decimal places. Do not round intermediate calculations.

_____ %

If inflation increases by 2% but there is no change in investors' risk aversion, what is WCE's required rate of return now? Round your answer to two decimal places. Do not round intermediate calculations.

_____ %

Assume now that there is no change in inflation, but risk aversion increases by 1%. What is WCE's required rate of return now? Round your answer to two decimal places. Do not round intermediate calculations.

_____ %

If inflation increases by 2% and risk aversion increases by 1%, what is WCE's required rate of return now? Round your answer to two decimal places. Do not round intermediate calculations.

_____ %

3
answer: **12.70**; **12.71**; **12.69**
38.90; **38.91**; **38.89**; **38.92**; **38.88**; **38.93**; **38.87**
3.06; **3.07**; **3.05**
source:
objective:

EXPECTED RETURN

A stock's returns have the following distribution:

Demand for the Company's Products	Probability of This Demand Occurring	Rate of Return If This Demand Occurs
Weak	0.2	(44%)
Below average	0.2	(5)
Average	0.3	15
Above average	0.1	30
Strong	0.2	75
	1.0	

a. Calculate the stock's expected return. Round your answer to two decimal places.

_____ %

b. Calculate the stock's standard deviation. Do not round intermediate calculations. Round your answer to two decimal places.

_____ %

c. Calculate the stock's coefficient of variation. Round your answer to two decimal places.

_____

4
answer: **1.52**; **1.53**; **1.51**
source:
objective:

PORTFOLIO BETA

An individual has $15000 invested in a stock with a beta of 0.4 and another $35000 invested in a stock with a beta of 2.0. If these are the only two investments in her portfolio, what is her portfolio's beta? Round your answer to two decimal places.

_____

5
answer: **14.75**; **14.76**; **14.74**
source:
objective:

REQUIRED RATE OF RETURN

Assume that the risk-free rate is 6.5% and the required return on the market is 12%. What is the required rate of return on a stock with a beta of 1.5? Round your answer to two decimal places.

_____ %

6
answer: **11.00**; **11.01**; **10.99**
7.00; **7.01**; **6.99**
source:
objective:

EXPECTED AND REQUIRED RATES OF RETURN

Assume that the risk-free rate is 3% and the market risk premium is 8%.

a. What is the required return for the overall stock market? Round your answer to two decimal places.

_____ %

b. What is the required rate of return on a stock with a beta of 0.5? Round your answer to two decimal places.

_____ %

7
answer: **9.30**; **9.31**; **9.29**
12.13; **12.14**; **12.12**
2.99; **3.00**; **2.98**
IV
source:
objective:

EXPECTED RETURNS

Stocks A and B have the following probability distributions of expected future returns:

Probability	A	B
0.2	(6%)	(40%)
0.2	6	0
0.3	15	24
0.2	23	27
0.1	34	47

a. Calculate the expected rate of return, r_B, for Stock B (r_A = 12.50%.) Do not round intermediate calculations. Round your answer to two decimal places.

_____ %

b. Calculate the standard deviation of expected returns, σ_A, for Stock A (σ_B = 27.80%.) Do not round intermediate calculations. Round your answer to two decimal places.

_____ %

c. Now calculate the coefficient of variation for Stock B. Round your answer to two decimal places.

_____

d. Is it possible that most investors might regard Stock B as being less risky than Stock A?

I. If Stock B is more highly correlated with the market than A, then it might have a higher beta than Stock A, and hence be less risky in a portfolio sense.
II. If Stock B is more highly correlated with the market than A, then it might have a lower beta than Stock A, and hence be less risky in a portfolio sense.
III. If Stock B is more highly correlated with the market than A, then it might have the same beta as Stock A, and hence be just as risky in a portfolio sense.
IV. If Stock B is less highly correlated with the market than A, then it might have a lower beta than Stock A, and hence be less risky in a portfolio sense.
V. If Stock B is less highly correlated with the market than A, then it might have a higher beta than Stock A, and hence be more risky in a portfolio sense.

_____

8
answer: **11.56**; **11.57**; **11.55**; **11.58**; **11.54**; **11.59**; **11.53**; **11.60**; **11.52**; **11.61**; **11.51**
source:
objective:

Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through

PORTFOLIO REQUIRED RETURN

Suppose you are the money manager of a $4.99 million investment fund. The fund consists of four stocks with the following investments and betas:

Stock	Investment	Beta
A	$ 440000	1.50
B	760000	(0.50)
C	1340000	1.25
D	2450000	0.75

If the market's required rate of return is 13% and the risk-free rate is 7%, what is the fund's required rate of return? Do not round intermediate calculations. Round your answer to two decimal places.

_____ %

9
answer: **2.80**; **2.81**; **2.79**
source:
objective:

BETA COEFFICIENT

Given the following information, determine the beta coefficient for Stock L that is consistent with equilibrium: $\hat{r}_L$ = 10.25%; r_{RF} = 6.75%; r_M = 8%. Round your answer to two decimal places.

_____

10
answer: **10.50**; **10.51**; **10.49**
source:
objective:

CAPM AND REQUIRED RETURN

Beale Manufacturing Company has a beta of 2.2, and Foley Industries has a beta of 0.45. The required return on an index fund that holds the entire stock market is 12%. The risk-free rate of interest is 6%. By how much does Beale's required return exceed Foley's required return? Round your answer to two decimal places.

_____ %

11
answer: **14.30**; **14.31**; **14.29**
source:
objective:

Problem Walk-Through **Problem Walk-Through** **Problem Walk-Through** **Problem Walk-Through** **Problem Walk-Through** **Problem Walk-Through** **Problem Walk-Through** **Problem Walk-Through** **Problem Walk-Through** **Problem Walk-Through** **Problem Walk-Through** **Problem Walk-Through** **Problem Walk-Through** **Problem Walk-Through** **Problem Walk-Through** **Problem Walk-Through**

CAPM AND REQUIRED RETURN

Calculate the required rate of return for Mudd Enterprises assuming that investors expect a 3.2% rate of inflation in the future. The real risk-free rate is 2%, and the market risk premium is 6.5%. Mudd has a beta of 1.4, and its realized rate of return has averaged 15% over the past 5 years. Round your answer to two decimal places.

_____ %

12
answer: 4.00; 4.01; 3.99
1.13; 1.14; 1.12
10.03; 10.04; 10.02;
10.05; 10.01; 10.06;
10.00; 10.07; 9.99; 10.08
; 9.98
I
source:
objective:

Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through

CAPM, PORTFOLIO RISK, AND RETURN

Consider the following information for stocks A, B, and C. The returns on the three stocks are positively correlated, but they are not perfectly correlated. (That is, each of the correlation coefficients is between 0 and 1.)

Stock	Expected Return	Standard Deviation	Beta
A	8.30%	16%	0.7
B	9.90	16	1.1
C	11.90	16	1.6

Fund P has one-third of its funds invested in each of the three stocks. The risk-free rate is 5.5%, and the market is in equilibrium. (That is, required returns equal expected returns.)

a. What is the market risk premium ($r_M - r_{RF}$)? Round your answer to two decimal places.

_____ %

b. What is the beta of Fund P? Do not round intermediate calculations. Round your answer to two decimal places.

_____

c. What is the required return of Fund P? Do not round intermediate calculations. Round your answer to two decimal places.

_____ %

d. Would you expect the standard deviation of Fund P to be less than 16%, equal to 16%, or greater than 16%?

I. Less than 16%
II. Greater than 16%
III. Equal to 16%

_____

13
answer: **1.60**; **1.61**; **1.59**
source:
objective:

Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through

PORTFOLIO BETA

Suppose you held a diversified portfolio consisting of a $7,500 investment in each of 20 different common stocks. The portfolio's beta is 1.59. Now suppose you decided to sell one of the stocks in your portfolio with a beta of 1.0 for $7,500 and use the proceeds to buy another stock with a beta of 1.20. What would your portfolio's new beta be? Do not round intermediate calculations. Round your answer to two decimal places.

_____

14
answer: **0.00**; **0.01**; **−0.01**
source:
objective:

PORTFOLIO BETA

A mutual fund manager has a $20 million portfolio with a beta of 1.50. The risk-free rate is 6.00%, and the market risk premium is 5.0%. The manager expects to receive an additional $5 million, which she plans to invest in a number of stocks. After investing the additional funds, she wants the fund's required return to be 12%. What should be the average beta of the new stocks added to the portfolio? Do not round intermediate calculations. Round your answer to two decimal places. Enter a negative answer with a minus sign.

_____

15
answer: **0.1**
Take $0.1 million
Risk averter
20000
20; **20.01**; **19.99**
This depends on the individual's degree of risk aversion.
0
II
Yes
source:
objective:

EXPECTED RETURNS

Suppose you won the lottery and had two options: (1) receiving $0.1 million or (2) taking a gamble in which, at the flip of a coin, you receive $0.2 million if a head comes up but receive zero if a tail comes up.

a. What is the expected value of the gamble? Round your answer to two decimal places. Enter your answer in millions. For example, an answer of $550,000 should be entered as 0.55.

_____ million

b. Would you take the sure $0.1 million or the gamble?

_____

c. If you chose the sure $0.1 million, would that indicate that you are a risk averter or a risk seeker?

_____

d. Suppose the payoff was actually $0.1 million - that was the only choice. You now face the choice of investing it in a U.S. Treasury bond that will return $108000 at the end of a year or a common stock that has a 50-50 chance of being worthless or worth $240000 at the end of the year.

1. The expected profit on the T-bond investment is $8000. What is the expected dollar profit on the stock investment? Round your answer to two decimal places. Write out your answer completely. For example, 0.25 million should be entered as 250,000.

   $ _____

2. The expected rate of return on the T-bond investment is 8%. What is the expected rate of return on the stock investment? Round your answer to two decimal places.

   _____ %

3. Would you invest in the bond or stock?

   _____

4. Exactly how large would the expected profit (or the expected rate of return) have to be on the stock investment to make you invest in the stock, given the 8% return on the bond? Round your answer to two decimal places. If no exact answer can be obtained, enter 0.

   _____ %

5. How might your decision be affected if, rather than buying one stock for $0.1 million, you could construct a portfolio consisting of 100 stocks with $1000 invested in each? Each of these stocks has the same return characteristics as the one stock - that is, a 50-50 chance of being worth zero or $2400 at

year-end.

I. Investing in a portfolio of stocks would definitely be an deterioration over investing in the single stock.
II. Investing in a portfolio of stocks would definitely be an improvement over investing in the single stock.
III. The situation would be unchanged.

_____

Would the correlation between returns on these stocks matter?

_____

16
answer: **4.00**; **4.01**; **3.99**
2.00; **2.01**; **1.99**
I
10.50; **10.51**; **10.49**
12.00; **12.01**; **11.99**
Stock Y
11.41; **11.42**; **11.40**
Stock Y
source:
objective:

Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through Problem Walk-Through

EVALUATING RISK AND RETURN

Stock X has a 10.0% expected return, a beta coefficient of 0.9, and a 40% standard deviation of expected returns. Stock Y has a 12.5% expected return, a beta coefficient of 1.2, and a 25.0% standard deviation. The risk-free rate is 6%, and the market risk premium is 5%.

a. Calculate each stock's coefficient of variation. Round your answers to two decimal places. Do not round intermediate calculations.

CV_X = _____

CV_Y = _____

b. Which stock is riskier for a diversified investor?

I. For diversified investors the relevant risk is measured by beta. Therefore, the stock with the higher beta is more risky. Stock Y has the higher beta so it is more risky than Stock X.
II. For diversified investors the relevant risk is measured by standard deviation of expected returns. Therefore, the stock with the higher standard deviation of expected returns is more risky. Stock X has the higher standard deviation so it is more risky than Stock Y.
III. For diversified investors the relevant risk is measured by beta. Therefore, the stock with the lower beta is more risky. Stock X has the lower beta so it is more risky than Stock Y.
IV. For diversified investors the relevant risk is measured by standard deviation of expected returns. Therefore, the stock with the lower standard deviation of expected returns is more risky. Stock Y has the lower standard deviation so it is more risky than Stock X.

V. For diversified investors the relevant risk is measured by beta. Therefore, the stock with the higher beta is less risky. Stock Y has the higher beta so it is less risky than Stock X.

_____

c. Calculate each stock's required rate of return. Round your answers to two decimal places.

r_X = _____ %

r_Y = _____ %

d. On the basis of the two stocks' expected and required returns, which stock would be more attractive to a diversified investor?

_____

e. Calculate the required return of a portfolio that has $4500 invested in Stock X and $7000 invested in Stock Y. Do not round intermediate calculations. Round your answer to two decimal places.

r_P = _____ %

f. If the market risk premium increased to 6%, which of the two stocks would have the larger increase in its required return?

_____

PAGE 1 (First Page)

PAGE 1 (Subsequent Pages)

ANSWER KEY

Copy of Copy of Copy (2) of Module 2 Homework

1

one asset
risk
weighted average
tighter
standard deviation
identical

7.00

8.54

1.22

2

sufficient

insufficient

9.00

11.00

10.00

12

3 12.70; 12.71; 12.69
38.90; 38.91; 38.89; 38.92; 38.88; 38.93; 38.87
3.06; 3.07; 3.05
4 1.52; 1.53; 1.51
5 14.75; 14.76; 14.74
6 11.00; 11.01; 10.99
7.00; 7.01; 6.99
7 9.30; 9.31; 9.29
12.13; 12.14; 12.12
2.99; 3.00; 2.98
IV
8 11.56; 11.57; 11.55; 11.58; 11.54; 11.59; 11.53; 11.60; 11.52; 11.61; 11.51
9 2.80; 2.81; 2.79
10 10.50; 10.51; 10.49
11 14.30; 14.31; 14.29
12 4.00; 4.01; 3.99
1.13; 1.14; 1.12
10.03; 10.04; 10.02; 10.05; 10.01; 10.06; 10.00; 10.07; 9.99; 10.08; 9.98
I
13 1.60; 1.61; 1.59
14 0.00; 0.01; −0.01
15 0.1
Take $0.1 million
Risk averter
20000
20; 20.01; 19.99
This depends on the individual's degree of risk aversion.
0
II
Yes
16 4.00; 4.01; 3.99

2.00; **2.01**; **1.99**
I
10.50; **10.51**; **10.49**
12.00; **12.01**; **11.99**
Stock Y
11.41; **11.42**; **11.40**
Stock Y

ANSWER KEY - Page 1