1. **Suppose you borrow at the risk-free rate an amount equal to your initial wealth and invest in a portfolio with an expected return of 20 percent and a standard deviation of returns of 16 percent. The risk-free asset has an interest rate of 4 percent. Calculate the standard deviation and return of the resulting portfolio.**

Answer:

Weight in the risky portfolio=2

St Dev=2\*16=32

St Dev=32%

Return of the resulting portfolio=expected return=(Weightrfr x risk-free rate) + (Weightp +returnp)

2. **Stephen proposes to invest in two shares, X and Y. He expects a return of 12% from X and 8% from Y. The standard deviation of returns is 8% for X and 5% for Y. The correlation coefficient between the returns is 0.2. Compute the expected return and standard deviation of the following portfolios:**

Answer:

Portfolio 1: Ex Ret=(12\*50)+(8\*50)=10%

St Dev=5,1

Portfolio 2: Ex Ret=(12\*25)+(8\*75)=9%

St Dev=4,6%

Portfolio 3: Ex Ret=(12\*75)+(8\*25)=11%

St Dev=6,4

**3. Ebenezer Scrooge has invested 60% of his money in share A and the remainder in share B. He assesses their prospects as follows:**

• What are the expected return and standard deviation

of returns on his portfolio?

• How would your answer change if the correlation

coefficient were 0?

Answer: ER = (0,6\*15) + (0,4\*20) = 17%

Variance = (0,6^2\*20^2) + (0,4^2\*22^2) + 2\*(0,6)\*(0,4)\*(0,5)\*(20)\*(22) = 0,0327

SD =root 0,0327= 0,1808

If correlation coefficient were 0: SD=14%

4.

a. The CAPM implies that if you could find an investment with a negative beta, its expected return would be less than the risk-free rate. **TRUE**

b. The expected return on an investment with a beta of 2.0 is twice as high as the expected return on the market. **FALSE**

c. If a stock lies below the security market line, it is undervalued. **FALSE**

**5. Consider a three-factor APT model. The factors and associated risk premiums are (ТАБЛИЦА)**

**Calculate expected rates of return on the following stocks. The risk-free interest rate is 7%.**

a) A stock whose return is uncorrelated with all three factors.

7%

b) A stock with average exposure to each factor (i.e., with b = 1 for each).

7 +5-1+2 =13%

c) A pure-play energy stock with high exposure to the energy factor ( b = 2) but zero exposure to the other two factors.

7 -2 =5%

d) An aluminum company stock with average sensitivity to changes in interest rates and GNP, but negative exposure of b = 1.5 to the energy factor. (The aluminum company is energy-intensive and suffers when energy prices rise.)

7+5+1.5+2 =15.5% [ average sensitivity value =1 ]

**6. Suppose that the Treasury bill rate were 6%. Assume that the expected return on the market is 10%. Use the betas in Table .**

a. Calculate the expected return from Dell.

b. Find the highest expected return that is offered by one of these stocks.

c. Find the lowest expected return that is offered by one of these stocks.

d. Would Ford offer a higher or lower expected return if the risk -free rate were 4%? Assume that the expected market return stays at 10%.

e. Would Exxon Mobil offer a higher or lower expected return if the risk -free rate were 8%?

Using CAPM,

Expected return [E(r)] = Rf + Beta x (Rm - Rf) where Rf: Risk-free (treasury) rate and Rm: Market rate

(a) E(r) = 6% + 1.41 x (10 - 6)% = 6% + 1.41 x 4% = (6 + 5.64)% = 11.64%

(b) Rm and Rf remaining the same, the higher the Beta, the higher the value of E(r). So Amazon has highest E(r).

E(r) = 6% + 2.16 x (10 - 6)% = 6% + 2.16 x 4% = (6 + 8.64)% = 14.64%

(c) Rm and Rf remaining the same, the lower the Beta, the lower the value of E(r). So Campbell Soup has lowest E(r).

E(r) = 6% + 0.3 x (10 - 6)% = 6% + 0.3 x 4% = (6 + 1.2)% = 7.2%

(d) When Rf = 6%, Ford's E(r) = 6% + 1.75 x (10 - 6)% = 6% + 1.75 x 4% = (6 + 7)% = 13%

When Rf = 4%, Ford's E(r) = 4% + 1.75 x (10 - 4)% = 4% + 1.75 x 6% = (4 + 10.5)% = 14.5%

So, E(r) will be higher.

(e) When Rf = 6%, Exxon's E(r) = 6% + 0.55 x (10 - 6)% = 6% + 0.55 x 4% = (6 + 2.2)% = 8.2%

When Rf = 8%, Exxon's E(r) = 8% + 0.55 x (10 - 8)% = 8% + 0.55 x 2% = (8 + 1.1)% = 9.1%

So, E(r) will be higher.

**7. True or false? Explain or qualify as necessary.**

A. The CAPM predicts that a security with a beta of 0 will offer a zero expected return.

**FALSE**  (a security with a beta of zero will offer the risk-free rate of return / According to CAPM,

Expected return = risk free rate + beta\*market risk premium

So, if beta = 0

Expected return = risk free rate)

B. An investor who puts $10,000 in Treasury bills and $20,000 in the market portfolio will have a beta of 2.0

**FALSE**

Beta of the portfolio is the weighted average of individual betas

the beta will be: (1/3\*0) + (2/3\*1) = 0.67

**8. The Treasury bill rate is 4%, and the expected return on the market portfolio is 12%. Using the capital asset pricing model:**

A. What is the risk premium on the market?

B. What is the required return on an investment with a beta of 1.5?

C. If an investment with a beta of .8 offers an expected return of 9.8%, does it have a positive NPV?

D. If the market expects a return of 11.2% from stock X, what is its beta?

a) 12-4=8%

b) 0,04+1,5\*(0,12-0,04)=0,16

c) r(market) in this case will be (0,098-0,04+0,8\*0,04)/0,8=0,1125

it is lower than return on the market portfolio, therefore NPV will be negative

d) (0,112-0,04)/(0,12-0,04)=0,9