1. Consider the balance sheet of SureThing Corporation:

Assets		Liabilities and Shareholders' Equity	
Cash:	$3 million	Debt:	$3 million
Other Assets:	$11 million	Equity:	$11 million
Total:	$14 million	Total:	$14 million

Number of shares outstanding = 440,000
Price per share = $25

If SureThing pays a cash dividend of $2.50 per share, what will the balance sheet look like afterward?

   Answer:

   Balance sheet after payment of cash dividend:

Assets		*Liabilities and Shareholders' Equity*	
Cash:	*$1.9 million*	*Debt:*	*$3 million*
Other assets:	*$11 million*	*Equity:*	*$9.9 million*
Total:	*$12.9 million*	*Total:*	*$12.9 million*

   Number of shares outstanding = 440,000
   Price per share = $22.50

2. RU Corporation is an all equity financed firm with a total market value of $150 million. The company holds $20 million in cash and has $130 million in other assets. There are 2,500,000 shares of common stock outstanding for this company, each with a market price of $52. Consider the following decisions and the impact on RU Corporation's stock price and on number of shares outstanding.

   (a) The company pays a cash dividend of $5 per share.
   (b) The company repurchases 250,000 shares.
   (c) The company pays a 20% stock dividend.
   (d) The company has a two-for-one stock split.

   Answer:

   (a) *The company pays out a total of $12.5 million in cash dividends. The stock price falls to $47 per share. Shareholder wealth may decline because personal taxes may have to be paid on the cash dividend. The number of shares outstanding is still 2.5 million shares.*

   (b) *The stock price is unchanged. The number of shares outstanding is now 2,250,000 shares.*

(c) 20% stock dividend indicates that shareholders receive 0.2 shares of stock for each share they hold. The number of shares outstanding is 1.2 x 2.5 million = 3 million shares.

The stock price is $43.34.

(d) The number of shares doubles to 5,000,000.

The stock price halves to $26.

3. Use the table below:

Historical Returns

Year	DinkiDi	SirPass
1	11%	8%
2	16%	17%
3	–5%	–7%
4	–3%	–4%
5	15%	17%
6	8%	11%

(a) What is the mean return for DinkiDi? For SirPass?
(b) What is the standard deviation for DinkiDi? For SirPass?

Answer:

(a) DinkiDi:

$$E(r) = 1/6\ (11 + 16 - 5 - 3 + 15 + 8)$$
$$= 7\%$$

SirPass:

$$E(r) = 1/6\ (8 + 17 - 7 - 4 + 17 + 11)$$
$$= 7\%$$

Both stocks have the same mean return.

(b) DinkiDi:

$$\sigma = \sqrt{\tfrac{1}{6}[(11-7)^2 + (16-7)^2 + (-5-7)^2 + (-3-7)^2 + (15-7)^2 + (8-7)^2]} = 8.23\%$$
$$= 8.23\%$$

SirPass:

$$\sigma = \sqrt{\tfrac{1}{6}[(8-7)^2 + (17-7)^2 + (-7-7)^2 + (-4-7)^2 + (17-7)^2 + (11-7)^2]} = 9.43\%$$

SirPass has a wider dispersion or higher volatility.

4. The expected rate of return on a risky asset is 0.19 and the riskless rate is 0.05. The standard deviation of the risky asset is 0.3.

(a) What happens to the slope of the trade-off line if the riskless rate decreases to 0.04 and the expected return on the risky asset increases to 0.2?

(b) What happens to the slope of the trade-off line if the riskless rate increases to 0.06 and the expected return on the risky assets increases to 0.2?

Answer:

(a) Slope $= (E(r_s) - r_f)/\sigma_s$
Slope of original scenario: $(0.19 - 0.05)/0.3 = 0.14/0.3 = 0.467$
Slope in revised scenario: $(0.20 - 0.04)/0.3 = 0.16/0.3 = 0.533$
The slope rises from 0.467 to 0.533.

(b) Slope of original scenario: $(0.19 - 0.05)/0.3 = 0.14/0.3 = 0.467$
Slope in revised scenario: $(0.20 - 0.06)/0.3 = 0.14/0.3 = 0.467$
The slope is unchanged.

5. An investor has a \$150,000 investment to allocate between a risky asset and a riskless asset. The expected rate of return for the risky asset is 0.18 and the expected rate of return for the riskless asset is 0.07. The standard deviation of the risky asset is 0.2. If the investor requires a portfolio composition corresponding to an expected rate of return of 0.15, what is the standard deviation of the portfolio?

Answer:

Use the trade-off line to find w:

$$E(r) \quad = r_f + w[E(r_s) - r_f)$$
$$0.15 \quad = 0.07 + w[0.18 - 0.07]$$
$$0.15 \quad = 0.07 + 0.11w$$
$$0.08 \quad = 0.11w$$
$$0.7272 = w$$

So the standard deviation of the portfolio is $0.2(0.7272) = 0.1455$.

6. Consider the portfolio of two risky assets with the following distribution of rates of return on risk assets.

	Risky Asset 1	Risky Asset 2
Mean	0.17	0.10
Standard Deviation	0.23	0.19

What are the mean and standard deviation of a portfolio that is 60% Risky Asset 1 and 40% Risky Asset 2 if the correlation coefficient is 0.3?

Answer:
$$E(r) \quad = wE(r_1) + (1 - w)E(r_2)$$
$$= 0.6(0.17) + 0.4(0.10)$$

= 0.142

The mean is 14.2%

$$\sigma^2 \quad = w^2\sigma_1^2 + (1 - w)^2\sigma_2^2 + 2w(1-w)\rho_{1,2}\sigma_1\sigma_2$$
$$= (0.6)^2(0.23)^2 + (0.4)^2(0.19)^2 + 2(0.6)(0.4)(0.3)(0.23)(0.19)$$

$$\sigma^2 \quad = 0.03111$$
$$\sigma \quad = 0.17639$$

The standard deviation is 17.6%