

Chapter Preview : Chapter 10

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Answer the following questions briefly.

1. Explain the following terms;

a. **Volatility:**

- Volatility refers to the degree of variation of a trading price series over time. It measures the dispersion of returns for a given security or market index. Higher volatility implies greater uncertainty and risk.¹

b. **Common Risk, Independent Risk:**

- Common risk, also known as systematic risk, pertains to factors affecting the entire market or a specific segment of it. Independent risk, on the other hand, refers to risks that are unique to a particular asset or investment and are not correlated with broader market movements.

c. **Firm-Specific, Systematic Risk:**

- Firm-specific risk, also termed unsystematic risk, encompasses risks inherent to a specific company or industry. Systematic risk, conversely, encompasses market-wide factors such as economic trends, interest rates, and geopolitical events that affect the entire market.

d. **Risk Premium:**

- The risk premium is the excess return an investor expects to receive for holding a risky asset compared to a risk-free asset. It compensates investors for taking on additional risk and is determined by factors such as volatility and market conditions.

e. **Market Risk Premium:**

- The market risk premium represents the excess return expected from an investment in the overall market compared to a risk-free investment. It serves as a key component in the calculation of the

cost of equity capital and is influenced by factors such as investor sentiment and economic outlook.

f. Efficient Portfolio and Market Portfolio:

- An efficient portfolio is a portfolio that offers the highest expected return for a given level of risk or the lowest level of risk for a given expected return. It is typically achieved through diversification to minimize unsystematic risk. When there is just common risk, then it is efficient portfolio.
- The market portfolio represents a theoretical portfolio comprising all investable assets weighted by their market capitalization. It serves as a benchmark for evaluating portfolio performance and is often used in the capital asset pricing model (CAPM) to calculate expected returns.

2. Explain why the risk premium of diversifiable risk is zero.

- The risk premium of diversifiable risk is considered zero due to the nature of diversification. Diversifiable risk, also known as firm-specific risk or unsystematic risk, is the risk that can be eliminated through portfolio diversification.
- When an investor holds a well-diversified portfolio consisting of various assets with uncorrelated or negatively correlated returns, the unsystematic risk associated with individual assets tends to cancel out. As a result, the overall risk of the portfolio is reduced without sacrificing expected returns.
- Since investors can effectively eliminate diversifiable risk through diversification, they are not compensated with a risk premium for bearing this type of risk. Instead, the risk premium primarily reflects compensation for bearing systematic risk, which is the risk inherent in the overall market or economy and cannot be diversified away.

3. Define the beta of a security.

- The beta of a security is a measure of its sensitivity to movements in the overall market. It quantifies the relationship between the returns of the security and the returns of the market index (usually the market portfolio).

- A beta of 1 indicates that the security tends to move in tandem with the market, meaning its returns are expected to change at the same rate as the market returns. A beta greater than 1 suggests the security is more volatile than the market, while a beta less than 1 indicates lower volatility compared to the market.

4. How can you use a security's beta to estimate its cost of capital?

- Beta is used in the Capital Asset Pricing Model (CAPM), which estimates the expected return of an asset given its risk relative to the market. In simpler terms, beta helps investors understand how much an individual security's price might move in response to fluctuations in the overall market.

Solve the following problem in the textbook.

Problems in chapter 8:

#5 After looking at the projections of the HomeNet project, you decide that they are not realistic.

It is unlikely that sales will be constant over the four-year life of the project. Furthermore, other companies are likely to offer competing products, so the assumption that the sales price will remain constant is also likely to be optimistic. Finally, as production ramps up, you anticipate lower per unit production costs resulting from economies of scale. Therefore, you decide to redo the projections under the following assumptions: Sales of 50,000 units in year 1 increasing by 50,000 units per year over the life of the project, a year 1 sales price of \$260/unit, decreasing by 10% annually and a year 1 cost of \$120/unit decreasing by 20% annually. In addition, new tax laws allow 100% bonus depreciation (all the depreciation expense occurs when the asset is put into use, in this case immediately).

a. Keeping the other assumptions that underlie Table 8.1 the same, recalculate unlevered net

income (that is, reproduce Table 8.1 under the new assumptions, and note that we are ignoring cannibalization and lost rent).

Incremental Earnings Forecast / year	0	1	2	3	4	5
Sales	\$ -	\$ 13,000	\$ 23,400	\$ 31,590	\$ 37,908	\$ -
Cost of Goods Sold	\$ -	\$ -6,000	\$ -9,600	\$ -11,520	\$ -12,288	\$ -
Gross Profit	\$ -	\$ 7,000	\$ 13,800	\$ 20,070	\$ 25,620	\$ -
Selling, General, and Administrative	\$ -	\$ -2,800	\$ -2,800	\$ -2,800	\$ -2,800	\$ -
Research and Development	\$ -15,000	\$ -	\$ -	\$ -	\$ -	\$ -
Depreciation	\$ -	\$ -7,500	\$ -	\$ -	\$ -	\$ -
EBIT	\$ -15,000	\$ -3,300	\$ 11,000	\$ 17,270	\$ 22,820	\$ -
Income Tax at 20%	\$ -3,000	\$ -660	\$ 2,200	\$ 3,454	\$ 4,564	\$ -
Unlevered Net Income	\$ -12,000	\$ -2,640	\$ 8,800	\$ 13,816	\$ 18,256	\$ -

b. Recalculate unlevered net income including lost rent and assuming that each year 20% of sales comes from customers who would have purchased an existing Cisco router for \$100/unit and that this router costs \$60/unit to manufacture

Incremental Earnings Forecast / year	0	1	2	3	4	5
Sales	\$ -	\$ 13,000	\$ 23,400	\$ 31,590	\$ 37,908	\$ -
Cost of Goods Sold	\$ -	\$ -6,000	\$ -9,600	\$ -11,520	\$ -12,288	\$ -
Ir sales	\$ -	\$ -1,000	\$ -1,000	\$ -1,000	\$ -1,000	
Ir costs	\$ -	\$ 600	\$ 600	\$ 600	\$ 600	
Gross Profit	\$ -	\$ 6,600	\$ 13,400	\$ 19,670	\$ 25,220	\$ -
Selling, General, and Administrative	\$ -	\$ -2,800	\$ -2,800	\$ -2,800	\$ -2,800	\$ -
Research and Development	\$ -15,000	\$ -	\$ -	\$ -	\$ -	\$ -
Depreciation	\$ -	\$ -7,500	\$ -	\$ -	\$ -	\$ -
EBIT	\$ -15,000	\$ -3,700	\$ 10,600	\$ 16,870	\$ 22,420	\$ -
Income Tax at 20%	\$ -3,000	\$ -740	\$ 2,120	\$ 3,374	\$ 4,484	\$ -
Unlevered Net Income	\$ -12,000	\$ -2,960	\$ 8,480	\$ 13,496	\$ 17,936	\$ -