

Corporate Finance, Module 12: Corporate Financing and Market Efficiency (Chapter 13)

Practice Problems / Illustrative Test Questions

(The attached PDF file has better formatting.)

Exercise 12.1: Demand Elasticity, Definition

What does elasticity of demand measure?

Solution 12.1: The price elasticity of demand is the *percentage change in the quantity demanded for a percentage change in price*. If the quantity demanded increases by 0.5% when the price declines by 1%, the price elasticity of demand is $-0.5\% / 1.0\% = -50\%$.

Exercise 12.2: Positive vs Negative Elasticity

Is the price elasticity of demand positive or negative?

Solution 12.2: When the price rises, the quantity demanded declines, so the price elasticity of demand is negative.

Exercise 12.3: High vs Low Elasticity

Is the elasticity of demand for a stock high or low?

Solution 12.3: Price elasticity of demand is high when a good has close substitutes. The relevant characteristics of a stock (for most investors) are its covariance with overall market returns (its beta), its industry (such as oil stocks, insurance stocks, high-tech stocks), and other general attributes. Many stocks share these attributes, so price elasticity of demand is high. Stocks are undifferentiated; they are like commodities (wheat, copper, steel, etc.), which have high price elasticity of demand.

Exercise 12.4: Price Elasticity of Demand and Price Behavior

The price of goods with high price elasticity of demand doesn't change much even if a supplier sells a large quantity. Why might a stock may not behave like other goods with high price elasticity of demand when someone sells a large block of shares?

Solution 12.4: Sale of a large block of stocks may indicate to other investors that the seller has inside information that motivates the sale. This may cause the stock price to drop.

Exercise 12.5: Efficient Market Hypothesis

Should managers should favor equity or debt financing after an abnormal price rise?

Solution 12.5: Even the weak form of the efficient market hypothesis implies that past price information has no predictive power for the future (markets have no memory; all past price information is embedded into the current stock prices). The abnormal price movement occurred because of new information which caused investors to bid up or down the price of the stock. Once the effect of the new information has affected the stock price, we expect no unusual future movements in the stock price.

Question: This is not consistent with the capital structure modules of this course (which we cover later), which say that managers should favor equity financing when the stock is overvalued and debt financing when the stock is undervalued.

Answer: We differentiate between abnormal price movements and insider information.

Illustration: A pharmaceutical firm is expecting to produce a new drug that increases life span, and its stock price is high based on early results of drug trials. Another series of test show that the drug causes Alzheimer's disease, but this information is secret. Managers have insider information that the stock is overvalued; equity financing might be preferred to debt financing at this time. Once investors learn of the new drug trials, they will bid down the price of the stock, causing an abnormal price decline. After the price decline, equity and debt financing are back in equilibrium.

Even the weak form of the efficient market hypothesis implies that past price information has no predictive power for the future (markets have no memory; all past price information is embedded into the current stock prices). Abnormal price movement reflect new information which causes investors to bid up or down the price of the stock. Once the new information has affected the stock price, we expect no unusual future movements.

Exercise 12.6: Superior Rates of Return

Two thousand investors trade shares of common stock:

- 1,000 investors are experienced financial analysts knowledgeable about stocks.
- 1,000 investors are retired grandmothers who know nothing about stocks.

All the investors have portfolios with betas of one. The experienced financial analysts trade frequently, holding their stocks for three months, on average. The grandmothers trade infrequently, holding their stocks for five years, on average. Which investors do better in an efficient market?

Question: The experienced financial analysts sell stocks when their market prices rise above their theoretical prices and buy stocks when their market prices fall below their theoretical prices. The grandmothers can't determine the theoretical prices and so don't trade much. Surely the financial analysts do better.

Answer: If the capital markets are efficient, new information about a stock is immediately impounded into the price of the stock. Since 1,000 experienced analysts are competing with each other, nobody gains from price fluctuations. Holding stocks is a zero net present value investment, since the expected gain is the opportunity cost of capital. Trading stocks is a negative net present value project, since the trading expenses outweigh the gains. The grandmothers do better than the experienced analysts.

Question: If this is true, why invest in stocks?

Answer: Stocks are a high risk – high return investment, with large tax advantages for personal investors. People who can afford to take risks with long-term investments should hold stocks, though they should trade them as infrequently as possible.

Question: Why do many stock brokers recommend trading stocks every few months?

Answer: The broker gets a commission when a stock is traded. These recommendations are generally poor; they help the broker, not the investor.

Question: Don't traders with more knowledge do better than other traders?

Answer: Unless an investor has more information or better investing skills *than all other investors* trading this stock, he or she can not out-perform market averages. If 5,000 stocks trade on the New York Stock Exchange, and for most of these stocks, several dozen competent stock analysts compete fiercely, few investors make above average returns. Only insiders have non-public information, and insider trading brings such heavy penalties that it is extremely rare. With thousands of trained investors who seek to outperform the others, it would be unusual for any investor to have materially better skills.

Exercise 12.7: Stock Dividends

Are stock dividends needed to let shareholders participate in the increase in a firm's value?

Solution 12.7: We do not need the dividend to share in the firm's value; we trade the stock.

Question 12.8: Semi-Strong Market Efficiency

Which of the following statements is an implication of the *semi-strong form* of the efficient market hypothesis but not of the weak form?

- A. The market price reflects all information about the firm.
- B. Prices adjust slowly to incorporate information.
- C. Past price data has no predictive power for stock returns.
- D. Actively managed portfolios do not consistently outperform the market.
- E. The correct answer is not given by A, B, C, or D.

Answer 12.8: D

Statement A: The semi-strong form implies that market prices reflect all *publicly available* information, though not necessarily private information.

Statement B: Prices adjust immediately, not slowly, to incorporate past information.

Statement C: Even the weak form of the efficient market hypothesis implies that past price data have no predictive power for stock returns.

Statement D: Portfolio managers use public information. If the market prices already incorporate all public information, portfolio managers can not out-perform others.

Question: Stock prices follow a random walk, implying that the best predictor of tomorrow's price is today's price. This shows that past price data has excellent predictive power.

Answer: The current price is the best predictor of tomorrow's price. Additional past prices tell us no further information that allows us to predict the return, or the change from today's price to tomorrow's price.

Exercise 12.9: We have been following a stock price for the past month. The price at 4:00 pm today is \$65. Which scenario suggests a higher price tomorrow at 8:00 am?

- Scenario A: Price was \$63 today at 8:00 am at \$64 at 12:00 noon.
- Scenario B: Price was \$67 today at 8:00 am at \$66 at 12:00 noon.

Solution 12.9: Even the weak form of the efficient market hypothesis says that neither scenario suggests a higher price. Past price information is incorporated into the current price, and the current prices are equal.

Question: What is an example of a time series that does not follow a random walk?

Answer: Suppose we have been following the weather in Chicago. The temperature at 4:00 pm today is 65° F. Which scenario suggests a higher temperature tomorrow at 8:00 am?

- Scenario A: Temperature was 63° F today at 8:00 am at 64° F at 12:00 noon.
- Scenario B: Temperature was 67° F today at 8:00 am at 66° F at 12:00 noon.

Answer: weather does not follow a random walk. Scenario A suggests a warm front is moving in; Scenario B suggests a cold front is moving in. We expect a higher temperature tomorrow with Scenario A.

Exercise 12.10: Shareholders and Common Stock

Which of the following is true?

- A. In efficient markets investors purchase a firm's stock for the unique qualities of the firm.
- B. Elastic demand means that sales of a large block of shares do not affect the price.
- C. Common stockholders' liability is limited to their investment in the stock.
- D. The price elasticity of demand for the average stock is 1.000.
- E. None of A, B, C, or D is true.

Solution 12.10: C

Statement A: In an efficient market, stocks are like commodities. Investors select stocks for their general characteristics, such as their covariance with market returns, not for their unique qualities. Unique qualities are minimized by diversification of the stock portfolio.

Statement B: A large sale of a particular stock may indicate to other investors that the seller has private information that motivates the sale; this may drive down the price of the stock. If other investors know that the investor has no private information motivating the sale, the stock price should not change materially with the sale.

Question: Why is this different from other elastic goods?

Answer: Other goods have a value to the consumer. A consumer buys a loaf of bread for the utility he or she gets from eating. What others know about the bread doesn't affect the utility the consumer gets from eating it.

Common stocks are different. The utility of a share of stock depends on the value that others put on it. This value is unknown, but it may be inferred from others' actions or from undisclosed information about the firm.

- If one investor takes a liking to a stock but has no insider information, the general perception of the stock should not change.
- If an investor trades a stock because of insider information, we infer that others will soon change their views of the stock as well.

Sales of large blocks of shares often stem from insider information.

Statement C: The *corporate shield* limits the liability of shareholders to the capital that they have contributed to the corporation.

Question: How is this different from a sole proprietorship? If I set up a grocery store, and I fail to sell the products, I lose my investment in the store.

Answer: If you set up a grocery store, and a consumer slips on the floor and becomes disabled, you may be liable for millions of dollars, far more than your investment. If you are a shareholder of the store's stock, the most you can lose is your investment.

Statement D: The price elasticity of demand for stocks is close to negative infinity.

Exercise 12.11: Efficient Markets

All but which of the following statements are true regarding efficient capital markets?

- A. In efficient markets, stock-price cycles self-destruct when they are recognized.
- B. In efficient markets, security prices reflect all relevant and ascertainable information.

- C. Markets are strong-form efficient if prices follow a random-walk.
- D. In a perfectly efficient market, most knowledgeable investors do not perform better than average investors.
- E. All of A, B, C, and D are true.

Solution 12.11: C

Statement A: Once stock price patterns are recognized, investors bid up or down stock prices in anticipation of future price changes, eliminating the pattern.

Statement B: The semi-strong form of the efficient market hypothesis assumes that ascertainable information is quickly embedded into stock prices.

Statement C: A random walk is implied by the *weak* form of the efficient market hypothesis, that there are no patterns in stock prices.

Statement D: If the market is perfectly efficient and prices follow random walks, no investor does better than others (unless for investors who know more than everyone else).

Exercise 12.12: Efficient Market Hypothesis

Which of the following are true?

1. Financing decisions are less easily reversed than are investment decisions.
2. Fundamental analysis by security analysts and investors keeps markets efficient.
3. The semi-strong form of the efficient market hypothesis states that prices reflect all publicly available information.

Solution 12.12:

Statement 1 is false. Because securities can be efficiently traded, financing decisions are easily reversed. The only loss is the expenses of trading, which are only a few percent of the capital. To reverse a debt issue, the company can repurchase all the bonds; the only loss is the expenses of issuing the bonds and the expense of repurchasing them. In contrast, to reverse the building of a factory or the production of a new product means the loss of research costs and the value of specialized plants or equipment; this can be many times annual earnings.

Statement 2 is correct. Thousands of highly skilled analysts analyze the firms traded on the stock exchange, no one is materially better than the others, and each seeks to profit from any information learned about the firms. Any information is immediately embedded into the prices of traded stocks.

Statement 3 is correct. The strong form says that prices reflect all information; the semi-strong form says that prices reflect publicly available information.

Question: Firms have all types of inside information; how can it be that inside information can not be used by management to profit from non-public events affecting the company? Don't we hear stories of insider trading creating huge profits for managers?

Answer: Every so often, we hear a story, which the press plays up enormously to show the depravity of the business world. The penalties for insider trading are so strong that it is rare to find serious transgressions.

- If a manager below the CEO is caught for insider trading, the CEO may be fired. To prevent this, the CEO makes clear that he will fire anyone who is caught for insider trading. Few managers risk this penalty, since the CEO can discover insider trading.

- If the CEO does any stock trading on the firm's own stock and profits from it, everyone assumes that the trading was illegal, and the CEO is immediately sued. Even if the CEO was not guilty of insider trading, the public assumes he is, and he will probably be convicted and fined. Most CEO's avoid insider trading like the plague.

Every so often, we hear of a foolish CEO caught for insider trading, often a minor item which did not even make much money. The story is spread over the national newspapers for weeks; these are rare exceptions.

Question 12.13: Earnings Overstatements

It has been suggested that companies often overstate earnings in bad years and understate them in good years because they want investors to believe that the cash flows are less variable than they actually are. Which of the following, if true, would cast the most doubt on the sensibility of this strategy?

- A. Investors are risk-averse.
- B. Earnings follow a random walk.
- C. The strong efficient market hypothesis holds.
- D. Investors rely on historically observed betas.
- E. Corporate tax rates increase with earnings.

Answer 12.13: C

Under- and over-stating earnings assumes that investors can be fooled. The strong form of the efficient market hypothesis assumes that management can't fool investors; they are wasting their time by manipulating reported earnings.