Chapter Preview: Chapter 3 & 4

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Answer the following questions breifly.

1. Define the term “competitive market”, give examples of markets that are competitive and some that aren’t, and discuss the importance of a competitive market in determining the value of good.
    a. Competitive market is a market structure where competition is at the highest possible level. It means there are a lot of buyers, homogenous products and entry and exit is free. As a result, sole seller or buyer are not able to determine the price of products in competitive market.
    b. E-commerce market, Used market are considered to be the competitive market.
    c. Mobile carrier market, Semiconductor market are not considered to be the competitive market (+especially for AI semiconductor market, there are no other competitor to Ndivia, so it is monopoly market.)
    d. In competitive market, seller has low ability to determine the price of products. Also there will be intense competition to pull customers, so sellers are willing to sell at a lower price or better-qualitied goods. As a result, consumers can buy products at adequaqte price or quality.
2. Explain the concept of time value of money.
    a. The concept of time value of money is that the value of money is changed by time due to the inflation rate. interest rate, etc. Generally, it is commonsense that inflation occurs annually, so the value of money usually go down as time goes.
3. Interest rate, interest rate factor, discount factor.
    a. An interest is the cost for borrowing money or return on investment for lending money. An interest rate is the percentage charged or paid for the

use of money, typically expressed as an annual percentage rate.

b. The interest rate factor is a multiplier used to calculate the interest charges on a loan or investment.

c. A discount factor is used in discounted cash flow analysis to calculate the present value of future cash flows. It represents the time value of money, reflecting the fact that a dollar received in the future is worth less than a dollar received today due to factors like inflation and the opportunity cost of capital.

4. Explain the PV, FV, and NPV (net present value)

   a. Present Value(PV) represents the current worth of a future sum of money or cash flow, given a specified rate of return or discount rate. It's the amount of money that needs to be invested today at a certain rate of return to equal the future value of an investment or cash flow.

   b. Future value (FV) represents the value of an investment or cash flow at a specified future date, assuming a certain rate of return or interest rate. It's the amount of money that an investment will grow to over time, given compound interest or other forms of investment growth.

   c. Net present value (NPV) is a financial metric used to evaluate the profitability of an investment or project. It measures the difference between the present value of cash inflows (revenues or benefits) and the present value of cash outflows (costs or investments) over a specified time period.

5. What is Arbitrage?

   a. Arbitrage is a trading strategy that involves exploiting price differences of the same or similar financial instruments in different markets or within the same market. The aim of arbitrage is to profit from the temporary imbalances in prices by simultaneously buying and selling the same asset or related assets to take advantage of the price differential.

      The basic principle behind arbitrage is the assumption that prices for identical or similar assets should be the same across different markets once transaction costs and other factors are accounted for. When a price discrepancy occurs, arbitrageurs step in to exploit the difference by

buying the undervalued asset in one market and selling it at a higher price in another market, thereby making a profit.

6. What is the Law of One Price?
    a. The Law of One Price is an economic principle that states that in efficient markets, identical goods or assets should be sold for the same price when expressed in the same currency. In other words, the Law of One Price asserts that identical goods or assets should converge to a single equilibrium price across different markets.
7. When investors exploit an arbitrage opportunity, how do their actions affect prices?
    a. Since investors who exploit arbitrage try to narrow the price discrepancy between markets, by buying products from cheaper market and selling it to more expensive market, so the price difference diminishes and price convergence is achieved.
8. Briefly explain the Seperation Principle.
    a. When we determine the value of product or project, we have to separate investment decision and financing decision. The value of a capital project is independent of the mix of methods(equity, debt, and/or cash which are used to finance the proejct).
9. Explain the concepts of compounding and discounting.
    a. Compounding refers to the process of calculating the future value of an investment or cash flow by adding the interest earned on the initial principal amount, as well as any interest accumulated over previous periods.
    b. Discounting is the opposite of compounding. It involves adjusting the value of future cash flows to their present value, considering the time value of money.
10. What are the annuities? Distinguish a perpetuity from a growing perpetuity.
    a. Annuities are financial products that involve a series of periodic payments made or received over a specified period. These payments can be made at regular intervals, such as monthly, quarterly, or annually, and can involve

both contributions (payments made into the annuity) and withdrawals (payments received from the annuity).

11. What is internal rate of return?

    a. The Internal Rate of Return is a financial metric used to evaluate the profitability of an investment or project. It represents the discount rate at which the net present value (NPV) of all cash flows from the investment equals zero.

12. Solve the following problems in the textbook;

    (3.7) You have an investment opportunity in Japan. It requires an investment of $0.98 million today and will produce a cash flow of ¥107 million in one year with no risk. Suppose the risk-free interest rate in the United States is 3.9%, the risk-free interest rate in Japan is 2.3%, and the current competitive exchange rate is ¥110 per $1. What is the NPV of this investment? Is it a good opportunity?

    1. -29,142$
    2. It is not a good opportunity.

    (3.11) Your computer manufacturing firm must purchase 12,000 keyboards from a supplier. One supplier demands a payment of $144,000 today plus $12 per keyboard payable in one year. Another supplier will charge $25 per keyboard, also payable in one year. The risk-free interest rate is 6%.
    a. What is the difference in their offers in terms of dollars today? Which offer should your firm take?

    1. The difference between two is $3,170.
    2. Your company should take first supplier's offer.

       (a) $279,849

       (b) $284,019

    b. Suppose your firm does not want to spend cash today. How can it take the first offer and not spend $144,000 of its own cash today?

    - You can take the first offer by spending $152,640 one year later.

(4.4) What is the present value of $13,000 received
a. Fourteen years from today when the interest rate is 10% per year?

- $3,423

b. Twenty-eight years from today when the interest rate is 20% per year?

- $79

c. Seven years from today when the interest rate is 5% per year?

- $9,239

(4.21) When you purchased your house, you took out a 30-year annual-payment mortgage with an interest rate of 9% per year. The annual payment on the mortgage is $9588. You have just made a payment and have now decided to pay the mortgage off by repaying the outstanding balance. What is the payoff amount if

a. You have lived in the house for 10 years (so there are 20 years left on the mortgage)?

- $87,524

b. You have lived in the house for 20 years (so there are 10 years left on the mortgage)?

- $61,533

c. You have lived in the house for 10 years (so there are 20 years left on the mortgage) and you decide to pay off the mortgage immediately before the tenth payment is due?

- $97,112