Chapter Preview: Chapter 3 & 4

Answer the following questions briefly.

1. Define the term “competitive market”, give examples of markets that are competitive and some aren’t, and discuss the importance of a competitive market in determining the value of a good.

[Answer]

* 1. Definition of competitive market

The market where it can be bought and sold at the same price. Decision makers in the market can make choices without personal favor or opinions.

* 1. Example of competitive market and non-competitive market

Competitive market:

When you buy or sell your gold to jeweler, the suggested price from the jeweler is always dependent on market price. There is no intervention of preference of jeweler.

Non-competitive market:

When you visit grocery stores to buy something to eat, the store manager decides the labeled(one-sided) price. Price tag is possible to be aside from the actual market value. The consumers are required to make decisions based on their own values about the products.

* 1. Importance of competitive market in determining the value of a good.

Competitive market can realize Valuation Principle. The idea is that the value of assets is decided by competitive market value. Benefits and costs should also be evaluated by the market value.

1. What is Arbitrage?

[Answer]

Arbitrage is simultaneously purchasing and selling the same assets in different markets for making profit from difference of price between the markets. This transaction requires no taking risks and investment.

1. What is the Law of One Price?

[Answer]

The concept is that the price of the same goods is always the same even in all different markets when equivalent investment opportunities trade in different competitive markets.

1. When investors exploit an arbitrage opportunity, how do their actions affect prices?

[Answer]

When people buy assets from cheaper markets, then the price will increase because demand for purchase increased. On the other hand, the more expensive market will experience price degradation of the same asset, because the supply of the product increases by people who want to sell and make profit. In conclusion, the difference in price between the markets will be resolved soon.

1. Briefly explain the Separation Principle.

[Answer]

We can consider investment decisions separately from how to finance the capital because the way of financing cannot affect the NPV of the investment. The value of investment is dependent on future cash flow, not on how to finance.

1. Explain the concept of time value of money.

[Answer]

Difference between present value and future value of money. Today’s 100$ has more worth than 100$ after a year because of inflation, risks, and investment possibilities.

1. Interest rate, interest rate factor, discount factor

[Answer]

* 1. interest rate: the rate at which money grows over time.
  2. interest rate factor: the factor used for calculating amount of loan interest; (1 + interest rate)
  3. discount factor: decimal number multiplied by cash flow value to discount it back to its present value.

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

[Answer]

n = period, r = interest rate, C=cash flow.

* 1. PV

Evaluate today’s value of future cash flow by moving cash flow C backward n periods, i.e., discount it by n intervention of interest rate factor.

* 1. FV

Evaluate tomorrow’s value from today’s value by moving cash flow C forward n periods, i.e., compound it by n intervention of interest rate factor.

* 1. NPV

Benefit: cash inflow, cost: cash outflow

Represent how much of value is created in the future from today’s investment.

1. What are the annuities? Distinguish a perpetuity from a growing perpetuity.

[Answer]

Annuity is a stream of N equal cash flows paid at regular intervals.

A perpetuityis a stream of equal cash flows that occur at regular intervals and last forever, i.e., endless annuity. However, a growing perpetuityis a stream of cash flow that occurs at regular intervals and grows at a constant rate forever. So, the amount of cashflow is increasing at a certain ratio in a growing perpetuity.

1. What is the internal rate of return (IRR)?

IRR is the interest rate that sets the NPV of cashflow equal to zero.

Potential rate of return of the investment.

1. 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?

[Answer]

Today’s investment: $0.98M = ¥107.8M

NPV of JPY = ¥107M / (1 + 0.023) - ¥107.8M = ¥ -3205669.6

NPV < 0, So it is a bad 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%.

1. What is the difference in their offers in terms of dollars today? Which offer should your firm take?

[Answer]

A: $144000 today + $12\*12000 in one year

B: $25 \*12000 in one year

Demand of A is a more reasonable choice because each PV of suggestion is $279849.1 and 283018.9, respectively. Therefore, I should select a lower price offer from A.

1. 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?

[Answer]

Then, the firm should pay $296640 = $144000\*(1+6%) + $144000 after one year.

#4.4 What is the present value of $13,000 received.

1. Fourteen years from today when the interest rate is 10% per year?

[Answer]

$13000/(1+0.10)^14 = $3423.3

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

[Answer]

$13000/(1+0.20)^28 = $78.9

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

[Answer]

$13000/(1+0.05)^7 = $9238.9

#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

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

[Answer]

$9588 \* 1/0.09 \* (1 – 1/(1+0.09)^20) = $87524.5

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

[Answer]

$9588 \* 1/0.09 \* (1 – 1/(1+0.09)^10) = $61532.5

1. 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?

[Answer]

$9588 + $9588 \* 1/0.09 \* (1 – 1/(1+0.09)^20) = $97112.5