INTERNATIONAL BUSINESS SCHOOL

Revision Practices

Principles and Practices of Business Finance

Dr. Sam Mohamad

Practice 1

- A car's price is currently $20,000 and is expected to rise by 4% a year. If the interest rate is 6%, how much do you need to put aside today to buy the car one year from now?

Practice 1

- A car's price is currently $20,000 and is expected to rise by 4% a year. If the interest rate is 6%, how much do you need to put aside today to buy the car one year from now?

- Future price of car = ($20,000 × 1.04) = $20,800
- PV = $ 20,800 / (1.06) = $19,623

Practice 2

- A credit card account that charges interest at the rate of 1.25% per month would have an annually compounded rate of _____ and an APR of ____.

Practice 2

- A credit card account that charges interest at the rate of 1.25% per month would have an annually compounded rate of _____ and an APR of ____.

$$\text{EAR} = (1 + 0.0125)^{12} - 1 = 0.1608, \text{ or } 16.08\%$$

$$\text{APR} = 1.25\% \times 12 = 15.00\%$$

Practice 3

- A proposed nuclear power plant will cost $2.2 billion to build and then will produce cash flows of $300 million a year for 15 years. After that period (in year 15), it must be decommissioned at a cost of $900 million. if the discount rate is 5%, should we build it? What if the discount rate is 18%?

Practice 3

- A proposed nuclear power plant will cost $2.2 billion to build and then will produce cash flows of $300 million a year for 15 years. After that period (in year 15), it must be decommissioned at a cost of $900 million. if the discount rate is 5%, should we build it? What if the discount rate is 18%?

NPV = –$2.2 billion + [$0.3 billion × annuity factor (r, 15 years)] - [$0.9 billion/$(1 + r)^{15}$]

$$= -\$2.2\,\text{billion} + \$0.3\,\text{billion} \times \left[\frac{1}{r} - \frac{1}{r \times (1+r)^{15}}\right] - \frac{\$0.9\,\text{billion}}{(1+r)^{15}}$$

$r = 5\% \Rightarrow$ NPV = –$2.2 billion + $2.681 billion = $0.481 billion

$r = 18\% \Rightarrow$ NPV = –$2.2 billion + $1.452 billion = –$0.748 billion

We should only build it in the first case, and we should not accept the project in the second case as it would have a negative NPV.

Practice 4

A couple will retire in 25 years; they plan to spend about $40,000 a year in retirement, which should last about 30 years. The APR is 6%. a. If they make annual payments into a savings plan, how much will they need to save each year?

Practice 4

1- how much will they need to save each year?

$$PV = C((1 / r) - \{1 / [r(1 + r)^t]\})$$

C=40,000

$$PV = 40000\ \{(1/0.06) - (1 / (0.06(1 + 0.06)^{30}))\}$$

$$PV = 550{,}593.25$$

$$550{,}593.25 = C((1 / r) - \{1 / [r(1 + r)^t]\})\ (1 + r)^t$$

$$550{,}593.25 = C((1 / 0.06) - \{1 / [0.06(1 + 0.06)^{25}]\})\ (1 + 0.06)^{25}$$

C= 10,035.51

Practice 5

Today you buy a 10% coupon, 10-year maturity bond when its yield to maturity is 7%.

a. Without making any calculations, tell whether the bond is trading at a discount or at a premium today. Explain your answer.

b. Calculate the price of the bond today.

c. What is the current yield of the bond?

d. What do you expect, if everything stays the same, is the price of the bond going to increase or decrease next year? Explain your answer.

Assume that a year later the company is facing financial difficulties and the yield to maturity increases to 10.5%.

e. what is going to happen to the price of the bond in this case? Explain your answer.

Practice 5

Today you buy a 10% coupon, 10-year maturity bond when its yield to maturity is 7%.

a. Without making any calculations, tell whether the bond is trading at a discount or at a premium today. Explain your answer.

Solution

a) YTM is smaller than the coupon rate, so the bond is currently trading at a premium.

Practice 5

Today you buy a 10% coupon, 10-year maturity bond when its yield to maturity is 7%.

b. Calculate the price of the bond today.

Solution

b) $PV = C((1 / r) - \{1 / [r(1 + r)^t]\})$

$PV = 100\ ((1 / 0.07) - \{1 / [0.07(1 + 0.07)^{10}]\}) + 1{,}000 / (1.07)^{10}$

$PV = 100(14.2857 - 7.2621) + 508.35$

$PV = 1{,}210.71$

Practice 5

Today you buy a 10% coupon, 10-year maturity bond when its yield to maturity is 7%.

c. What is the current yield of the bond?

Solution

c) Current yield = 100 / 1210.71 = 0,0826 = 8,26%

Practice 5

Today you buy a 10% coupon, 10-year maturity bond when its yield to maturity is 7%.

d. What do you expect, if everything stays the same, is the price of the bond going to increase or decrease next year? Explain your answer.

Solution

d) the bond price will decrease going to reach the face value at maturity.

Practice 5

Today you buy a 10% coupon, 10-year maturity bond when its yield to maturity is 7%.

Assume that a year later the company is facing financial difficulties and the yield to maturity increases to 10.5%.

e. what is going to happen to the price of the bond in this case? Explain your answer. #

Solution

e) $PV = C((1 / r) - \{1 / [r(1 + r)^t]\})$

$PV = 100\ ((1 / 0.105) - \{1 / [0.105(1 + 0.105)^9]\}) + 1{,}000 / (1.105)^9$

$PV = 100(9.5238 - 3.8775) + 407.133$

$PV = 971.77$