Midterm Exam

Financial Management (1509 & 1510, Fall 2015)
National Chiao Tung University
November 7, 2016 (Monday) 18:30 to 20:20

Instructions

- Please read the questions carefully and make sure you provide answers to all parts of questions.
- Raise your hand if you have any problem. Please do not talk to or exchange notes with other students.
- No bathroom breaks are allowed.
- Turn off your cell phone(s) and any other electronic device.

Part I. Multiple Choice (50%, 2 points each, choose one correct answer)**:**

1. As the coupon rate of a bond increases, the bond's:
   (A) face value increases.
   (B) current price decreases.
   (C) maturity date is extended.
   (D) obligation of contribution to sinking fund decreases.
   (E) interest payments increase.

2. Which of the following statements is correct?
   (A) The net working capital of a firm will decrease when accrued wages are paid with cash.
   (B) The net working capital to total assets ratio is always a larger number than the current ratio.
   (C) Return on assets is always a larger number than the return on equity.
   (D) Increasing leverage will always act to increase a firm's ROE.
   (E) A healthy current ratio and an unhealthy quick ratio may be caused by excess inventory.

3. What is the expected exact real rate of interest for an account that offers a 12% nominal rate of return when the rate of inflation is 6% annually?
   (A) 5.00%.
   (B) 5.66%.
   (C) 6.00%.
   (D) 9.46%.
   (E) 12.00%.

4. Which of following statements is correct?
   (A) A bond's rate of return is equal to its coupon payment divided by the price paid for the bond.
   (B) A long-term investor would more likely be interested in a bond's current yield rather than its yield to maturity.
   (C) TIPS are unlike most bonds in that their cash flows increase when the national rate of gross domestic product increases.
   (D) Bonds rated BB or above by Standard & Poor's are called investment grade.
   (E) Bond ratings measure a bond's credit risk.

5. When a firm's long-term debt-equity ratio is .98, the firm:
   (A) has too much long-term debt in relation to leases.
   (B) has less long-term debt than equity.
   (C) is nearing insolvency.
   (D) has as much in long-term liabilities as in equity.
   (E) borrow too little to run its business.

6. Which of the following statements is correct for a 10% coupon bond that has a current yield of 7%?
   (A) The face value of the bond has decreased.
   (B) The bond's maturity value exceeds the bond's price.
   (C) The bond's internal rate of return is 7%.
   (D) The bond's maturity value is lower than the bond's price.
   (E) The bond is a discount bond.

7. A times interest earned ratio of 5 indicates the firm:
   (A) pays 5 times its earnings in interest expense.
   (B) earns significantly more than its interest obligations.
   (C) has interest expense equal to 5% of EBIT.
   (D) has a low tax liability.
   (E) can be improved on its profitability.

8. Assume your uncle recorded his salary history during a 40-year career and found that it had increased 10-fold. If inflation averaged 4% annually during the period, then over his career his purchasing power:
   (A) remained on par with inflation.
   (B) increased by nearly 1% annually.
   (C) increased by nearly 2% annually.
   (D) increased by nearly 3% annually.
   (E) decreased.

9. How would you interpret an inventory turnover ratio of 10.7?
   (A) The firm has sufficient inventories to maintain sales for 34.1 days.
   (B) It takes 50 days on average to collect receivables.
   (C) Inventory is converted into sales every 50 days.
   (D) Assets are converted into sales every 50 days.
   (E) The firm seems to be efficient in its profitability.

10. What is the current yield of a bond with a 6% coupon, 4 years until maturity, and a price quote of 84?
   (A) 6.00%.
   (B) 7.14%.
   (C) 5.04%.
   (D) 6.38%.
   (E) 10.13%.

11. Which one of the following statements is most likely correct for a firm with an average collection period of 90 days?
   (A) Its average daily sales are low.
   (B) Its average daily sales are high.
   (C) Its current ratio will be high.
   (D) It is providing financing for approximately 25% of its annual sales.
   (E) Its ROE would be high.

12. How much must be saved at the end of each year for the next 10 years in order to accumulate $50,000, if you can earn 9% annually? Assume you contribute the same amount to your savings every year.
   (A) $3,291.00
   (B) $3,587.87
   (C) $4,500.33
   (D) $4,587.79
   (E) $5,223.14

13. Which one of the following bond values will change when interest rates change?
    (A) The maturity value.
    (B) The expected cash flows.
    (C) The coupon payment.
    (D) The par value.
    (E) The present value.

14. A firm reports a net profit margin of 10% on sales of $3 million when ignoring the effects of financing. If taxes are $200,000, how much is EBIT?
    (A) $100,000.
    (B) $300,000.
    (C) $500,000.
    (D) $800,000.
    (E) $1,000,000.

15. Your real estate agent mentions that homes in your price range require a payment of $1,200 per month for 30 years at 9% interest. What is the size of the mortgage with these terms?
    (A) $128,035.05
    (B) $147,940.29
    (C) $149,138.24
    (D) $393,120.03
    (E) $412,008.16

16. Last year's return on equity was 30%. This year the ROE has decreased to 20% even though the firm's earnings equaled last year's earnings. The firm has no preferred stock. What caused the decrease?
    (A) Equity decreased by 10%.
    (B) Equity decreased by 50%.
    (C) Equity increased by 10%.
    (D) Equity increased by 50%.
    (E) Total asset decreased by 50%.

17. You purchased a 6% annual coupon bond at par and sold it one year later for $1,015.16. What was your rate of return on this investment if the face value at maturity was $1,000?
    (A) 4.48%.
    (B) 6.15%.
    (C) 7.52%.
    (D) 6.07%.
    (E) 3.23%.

18. Which one of these statements is correct?
    (A) Market value added measures the difference between the total market value and the total book value of equity.
    (B) Net income is also called economic value added.
    (C) EVA measures the net profit of a firm after deducting the cost of the assets used in the production process.
    (D) EVA considers the cost of long-term debt financing but excludes the cost of equity financing.
    (E) MVA is a better measurement than EVA when consider cost of capital.

19. Nominal U.S. Treasury bond yields:
    (A) are constant over time.
    (B) are equal to the real yields.
    (C) include a default premium.
    (D) include an inflation premium.
    (E) are always higher for loner maturity bonds.

20. A cash-strapped young professional offers to buy your car with four, equal annual payments of $3,000, beginning 2 years from today. Assuming you're indifferent to cash versus credit, that you can invest at 10%, and that you want to receive $9,000 for the car, should you accept?
    (A) Yes; present value is $9,510.08.
    (B) Yes; present value is $11,372.67.
    (C) Yes; present value is $13,586.41.
    (D) No; present value is $8,645.09.
    (E) No; present value is $7,461.17.

21. Which of the following would not be associated with a zero-coupon bond?
    (A) Yield to maturity.
    (B) Discount bond.
    (C) Interest-rate risk.
    (D) Government issuers.
    (E) Current yield.

22. What must happen to asset turnover to leave ROE unchanged from its original 16% level if the profit margin is reduced from 8% to 6% and the leverage ratio increases from 1.2 to 1.6? Asset turnover must:
    (A) remain constant.
    (B) increase from 1.46 to 2.33.
    (C) decrease from 1.74 to 1.67.
    (D) increase from 1.38 to 1.67.
    (E) decrease from 1.46 to 1.38.

23. How much will accumulate in an account with an initial deposit of $100, and which earns 10% interest compounded quarterly for 3 years?
    (A) $107.69
    (B) $133.10
    (C) $134.49
    (D) $313.84
    (E) $339.65

24. When will ROE equal ROC?
    (A) Whenever the firm has equal debt and equity financing.
    (B) Whenever the firm has no interest payments on debt.
    (C) Whenever the value of the firm's assets exceeds the value of its equity.
    (D) Whenever the firm’s MVA is positive.
    (E) ROE will never equal ROC.

25. When market interest rates exceed a bond's coupon rate, the bond will:
    (A) sell for less than par value.
    (B) sell for more than par value.
    (C) decrease its coupon rate.
    (D) increase its coupon rate.
    (E) likely be called for redemption.

Part II. Problems (50%, detail procedures must be provided)**:**

1. (5 points) Assuming at the $50,000 income level that the corporate marginal tax rate increases from 15 to 25%, what is the average tax rate for a firm with $75,000 of taxable income?

2. (5 points) What is the market price of a share of stock for a firm with 100,000 shares outstanding, a book value of equity of $3,000,000, and a market-to-book ratio of 3?

3. (5 points) What is the ROA of a firm with $150,000 in average receivables, which represents 60 days sales, average assets of $750,000, and a profit margin of 9%

4. (5 points) A firm's after-tax operating income was $1,000,000 in 2013. It started the year with a total capitalization of $8,000,000 and ended the year with a total capitalization of $9,000,000. The additional capital raised during 2013 started to affect the operating income in 2014. Which value best represents the return on capital for 2013?

5. (6 points) Compared to accounting profits, why is EVA a better measure of a company's performance? What might happen to a manager if his or her plant earns a negative EVA?

6. (6 points) How much more is a perpetuity of $1,000 worth than an annuity of the same amount for 20 years? Assume an interest rate of 10% and cash flows at the end of each period.

7. (6 points) Rosita purchased a bond for $989 that had a 7% coupon and semiannual interest payments. She sold the bond after 6 months and earned a total return of 4.8% on this investment. At what price, did she sell the bond?

8. (6 points) What is the amount of the annual coupon payment for a bond with par of $1,000 that has 6 years until maturity, sells for $1,050, and has a yield to maturity of 9.37%?

9. (6 points) What is the main use of yield curve? What do we learn from an inverted yield curve?

Midterm Exam Answer

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Part I (50 points; 2 points each)

1.	E
2.	E
3.	B
4.	E
5.	B
6.	D
7.	B
8.	C
9.	A
10.	B
11.	D
12.	A
13.	E
14.	C
15.	C
16.	D
17.	C
18.	A
19.	D
20.	D
21.	E
22.	A
23.	C
24.	B
25.	A

Part II (50 points)

1. (5 points)

$$\text{Average tax rate} = [(.15 \times \$50{,}000) + (.25 \times (\$75{,}000 - 50{,}000))]/\$75{,}000$$
$$= .1833, \text{ or } 18.33\%$$

2. (5 points)

Market price per share = ($3,000,000/100,000) × 3 = $90

3. (5 points)

Sales = ($150,000/60) × 365 = $912,500

ROA = Profit margin × Asset turnover

= 0.09 × ($912,500/$750,000)

= 0.1095, or 10.95%

4. (5 points)

ROC = $1,000,000/$8,000,000 = 0.125, or 12.5%

5. (6 points)

Accounting profits are calculated after deducting all costs except the cost of capital. EVA recognizes that companies need to cover their cost of capital before they add value. If a plant or division is not earning a positive EVA, its management is likely to face some questions about whether the assets could be better employed elsewhere or by fresh management. Therefore, a growing number of firms now calculate EVA and tie the managers' compensation to it.

6. (6 points)

$PV_{Perpetuity}$ = $1,000/0.10 = $10,000

$PV_{Annuity} = \$1{,}000[1/0.10 - 1/.10(1.10)^{20}]$

$PV_{Annuity}$ = $8,513.56

Difference = $10,000 - 8,513.56 = $1,486.44

7. (6 points)

0.048 = (Selling price + [(0.07 × $1,000)/2] - $989)/$989

Selling price = $1,001.47

8. (6 points)

$\$1{,}050 = PMT\ \{(1/.0937) - [1/.0937(1.0937)^{6}]\} + \$1{,}000/1.0937^{6}$

PMT = $104.97

9. (6 points)

The yield curve shows how the bonds market participants see how the trends of interest rates will be in the future. It provides a valuable reference about what interest rates might become in the future. An inverted yield curve shows that a high level of inflation rate is expected in near future but not in the long-run. One good example of inverted yield curve is in 1980s where the oil crisis occurred and caused a temporary increase of inflation rate.