



Very Important (READ THIS):

All students with seven digit ID numbers must add "2" in front of their ID number to make it eight digit. For example: ID # 6770177 should be made 26770177

You should put the eight-digit ID (26770177 in the above example) on both the exam and the bubble sheet.

Examination Cover Sheet

Print Family Name: →	Print Given Name: →	ID Number: →	
COURSE FINANCE	NUMBER COMM 308	SECTION: BB	
EXAMINATION Midterm1 VERSION Blue	DATE Nov 7, 2018	TIME 2 hours 18:00 to 20:00	# OF PAGES 6 Including this cover
INSTRUCTOR: Hamidreza Roohian		DIVISION John Molson School of Business Concordia University	

INSTRUCTIONS: Please read these carefully

1. Please ensure you have 6 pages (including this cover page) in this exam.
2. For this exam (Multiple Choice Questions): All answers must be recorded IN PENCIL on the computer sheet. Only the computer sheet will be graded.

MATERIALS ALLOWED:

1. You must submit a BLUE computer answer sheet.
2. You are allowed to bring one or more calculators (ENCS sticker not necessary)
3. You are allowed to bring one language dictionary (no finance/mathematics/economics etc. dictionary)

1. Which of the following sentences is true, assuming that all of the portfolio weights are positive?
- A. The expected return of the portfolio can be less than the minimum expected return of individual stocks in the portfolio.
 - B. The variance of the portfolio is the weighted average of individual stocks' variances.
 - C. The variance of the portfolio can be less than the minimum variance of individual stocks in the portfolio.
 - D. The risk of the portfolio can never be less than the minimum risk of individual stocks in the portfolio.

Answer: C

2. The Record date for the stocks of company B is on Nov 7th. An investor who bought the shares on Nov 6th - ----- the dividend and the Ex-dividend date is on -----.

- A. will not receive, Nov 5th
- B. will not receive, Nov 9th
- C. will receive, Nov 5th
- D. will receive, Nov 9th

Answer: A

3. In a highly diversified portfolio, the standard deviation of the portfolio will be equal to:

- A. The portfolio beta.
- B. The systematic risk.
- C. One.
- D. Zero.

Answer: B

4. Which of the following best describes a portfolio that plots above the security market line (SML)?

- A. The security is overvalued.
- B. The security is providing a return that is greater than expected.
- C. The security's beta is too high.
- D. The security's reward to risk ratio is too low.

Answer: B

5. Diversification works because:

- I. every stock has a certain level of unsystematic risk
- II. forming portfolios of stocks reduces the standard deviation of returns for each stock
- III. firm-specific risk can be dramatically reduced

- A. I only
- B. III only
- C. II and III only
- D. I and III only

Answer: D

6. How much would you pay for a share of stock today if you expect it will pay a dividend of \$2.50 each year and will sell for \$73 two years from now? Assume your required rate of return on this stock is 13 percent.

- A. \$60.50
- B. \$55.50
- C. \$53.54
- D. \$61.34

$$\frac{D_1}{(1+k)^1} + \frac{P_2 + D_2}{(1+k)^2} = \frac{2.5}{1.13} + \frac{75.5}{(1.13)^2}$$

2.21 59.1276 D

7. Air Canada Inc. just paid a dividend of 13\$. The expected ROE for next year is 15.6% and the payout ratio is 40%. How much dividends will the company pay next year?

- A. \$14.21
- B. \$14.45
- C. \$15.12
- D. \$15.34

$$D_0 = 13 \$ \quad ROE = 15.6\% \quad b = 1 - 0.4 = 0.6$$

$$g = b \times ROE = 0.6 \times 0.156 = 0.0936; D_1 = 14.21 \$$$

8. The preferred shares of company A have a face value of 100\$ along with a dividend rate of 16%. What is the required rate of return on these shares if they are selling for 97\$ right now?

- A. 15.52%
- B. 15.94%
- C. 16.49%
- D. 16.83%

$$D_p = 100 \$ \times 0.16 = 16 \$ \quad P_p = \frac{D_p}{K_p} \Rightarrow K_p = \frac{16}{97} = 0.1649$$

9. Oceanwide company's next dividend is expected to be 1.75\$. Dividend growth has been a consistent 7% per year. If investors want a 12% return, determine the stock price 4 years ago.

- A. 24.95
- B. 25.55
- C. 26.05
- D. 26.70

$$D_1 = 1.75 \$ \Rightarrow D_{-3} (1+g)^4 = 1.75 \Rightarrow D_{-3} = \frac{1.75}{(1.07)^4} = 1.3351 \$$$

$$P_4 = \frac{D_{-3}}{0.12 - 0.07} = \frac{1.3351}{0.05} = 26.70 \$$$

10. White OwI Inc. just paid a dividend of \$2/share. An investor estimates that dividends will grow at 5% per year for the next two years and then grow at an annual rate of 3% to infinity. Determine the market price of this company's common shares if the required rate of returns is 10%.

- A. 26.81
- B. 28.85
- C. 30.53
- D. 32.24

$$\frac{2(1.05)}{1.10} + \frac{2(1.05)^2}{(1.10)^2} + \left(\frac{1}{1.10}\right)^2 \frac{2(1.05)^2(1.03)}{0.10 - 0.03} = 30.53$$

1.90 1.82 26.81

11. You purchased a stock one year ago for 91.2\$. Today you sold the stock and realized a total return of -63.7% on your investment. During the year you received a total of 2.28\$ in dividends. At what price did you sell the stock?

- A. 58.09
- B. 55.81
- C. 33.11
- D. 30.83

$$P_{-1} = 91.2 ; P_0 = ? \quad Ret = \frac{P_0 + D_0 - P_{-1}}{P_{-1}} = -63.7\%$$

$$\rightarrow -0.637 = \frac{P_0 + 2.28 + (-91.2)}{91.2} \Rightarrow P_0 = -58.09 - 2.28 + 91.2$$

$$\Rightarrow P_0 = 30.82\$$$

12. Barclay's company is offering its common shareholders to receive 1 preferred share of the company for every 5 shares that they give back to the management. (Trade 5 common shares for one preferred share) The common equity holders have just received a dividend of 2\$ and this amount will grow 5% every year. The preferred shares have a FV of 150\$. If the required rate of return on common equity is 10% and the appropriate discount rate for preferred shares is 12%, what is the preferred shares dividend rate?

- A. 16.8%
- B. 12%
- C. 8%
- D. 6%

$$P_C = \frac{D_C(1+g)}{k_C - g} = \frac{2\$ \times (1.05)}{0.10 - 0.05} = 42\$ \Rightarrow P_P = 42 \times 5 = 210\$$$

$$D_P = 210\$ \times 0.12 = 25.2\$ \Rightarrow D_r = \frac{D_P}{FV} = 16.8\%$$

13. What are the arithmetic and geometric means for a stock with annual return of 21%, 8%, -32%, 41%, and 5%?

- A. 8.3 ; 5.6
- B. 8.6 ; 5.6
- C. 8.6 ; 6.3
- D. 8.3 ; 6.3

$$Arithmetic = \frac{\sum}{5} = 8.6\% \quad Geometric = \left[(1.21)(1.08)(0.68)(1.41)(1.05) \right]^{1/5} - 1$$

$$= 5.64\%$$

14. What is the expected return on a portfolio that is invested 40% in stock A and 60% in stock B, given the following information?

Economic State	Probability of State	Stock A Return	Stock B Return
Normal	70%	12%	5%
Recession	30%	-10%	8%

- A. 5.4%
- B. 5.7%
- C. 6.4%
- D. 7.8%

$$ER_A = 0.7 \times 12 + 0.3 \times (-10) = 5.4$$

$$ER_B = 0.7 \times 5 + 0.3 \times 8 = 5.9$$

$$ER_P = 0.4 \times 5.4 + 0.6 \times 5.9 = 5.7\%$$

15. What is the standard deviation of Stock A?

State of Economy	Probability of State	Stock A Return
Recession	0.20	0.05
Normal	0.55	0.08
Boom	0.25	0.13

- A. 8.65%
- B. 2.76%
- C. 10.45%
- D. 15.43%

$$ER = 0.2 \times 5 + 0.55 \times 8 + 0.25 \times 13 = 8.65\%$$

$$Std = \sqrt{0.2 \times (5 - 8.65)^2 + 0.55 \times (8 - 8.65)^2 + 0.25 \times (13 - 8.65)^2} = \sqrt{7.62\%}$$

$$\Rightarrow Std = 2.76\%$$

16. A portfolio is invested in risky asset A and the risk free asset. The risk free rate is equal to 2%. The expected return of asset A is 8% with a standard deviation of 2.5%. If the portfolio has an expected return of 5.6%, what is the portfolio's standard deviation?

- A. 1.3%
- B. 1.5%
- C. 2%
- D. 2.5%

$$r_f = 2\%$$

$$ER_A = 8\%$$

$$\sigma_A = 2.5\%$$

$$ER_P = w \times 8 + (1-w) \times 2 = 5.6 \rightarrow 6w = 3.6 \Rightarrow w = 0.6$$

$$\Rightarrow \sigma_P = w \sigma_A = 0.6 \times 2.5 = 1.5\%$$

17. Connor has 2000\$ and is trying to construct a portfolio of different stocks. There are 4 different stocks in the market to choose from: Apple, Google, Delta, and Pepsi. Connor has already decided that he is investing 1000\$ in Apple. As his financial advisor, which stock do you think he should invest the remaining 1000\$ at, if he is looking for the lowest possible level of risk.

σ (Apple) = 8.26% σ (Google) = 4.33% σ (Delta) = 4.33% σ (Pepsi) = 4.33%

Cov (Apple, Google) = 5.1% ρ (Apple, Delta) = 0.15 Cov (Apple, Pepsi) = -1.21%

- A. Apple
- B. Google
- C. Delta
- D. Pepsi

$$\sigma_P = \sqrt{\frac{\sigma_1^2}{4} + \frac{\sigma_2^2}{4} + \frac{2}{4} \text{Cov}} \Rightarrow \text{the smaller the cov, the smaller the total risk!}$$

difference between google, Delta & Pepsi is here! ✓

18. Kobe holds a portfolio of the stocks of Nike and Spalding where 60% of the total value is invested in Nike. He has designed his portfolio in a way that the standard deviation equals 2.73%. What is the correlation coefficient between the stocks of Nike and Spalding?

- A. 0.43
- B. 0.52
- C. 0.54
- D. 0.61

$$\sigma_{Nike} = 2\%$$

$$\sigma_{Spalding} = 5\%$$

$$\Rightarrow \sigma_P = \sqrt{(0.6)^2(2)^2 + (0.4)^2(5)^2 + 2(0.4)(0.6)\rho_{NS}(2)(5)} = \sqrt{7.504} = 2.73\%$$

Variance

$$\Rightarrow \rho_{N,S} = 0.43$$

Insufficient Information!

19. You are planning to choose between 4 different stocks: A, B, C, and D. as a risk averse investor, which one is the best option for you? (Risk free rate is 1%)

- A. Stock A: expected return 9%, Standard deviation 4%
- B. Stock B: expected return 9%, Standard deviation 5%
- C. Stock C: expected return 18%, Standard deviation 8%
- D. Stock D: expected return 18%, Standard deviation 10%

$$\text{Sharpe ratio} = \frac{ER - r_f}{\sigma} \rightarrow A: \frac{9-1}{4} = 2 \quad C: \frac{18-1}{8} = 2.12$$

$$B: \frac{9-1}{5} = 1.6 \quad D: \frac{18-1}{10} = 1.7$$

Answer: C

20. Abbot Inc. has a beta of 1.9 and an E(R) of 20%. Costello Inc. has a beta of 0.7 and an E(R) of 8%. What would the risk-free rate have to be for these stocks to be correctly priced according to the CAPM?

- A. 1.000%
- B. 2.121%
- C. 3.000%
- D. 6.677%

$$\begin{aligned} 1) \quad r_f + 1.9 * MP &= 20 \\ 2) \quad r_f + 0.7 * MP &= 8 \end{aligned} \quad \begin{aligned} \rightarrow (1) - (2): 1.2MP &= 12 \Rightarrow MP = 10 \\ (1) \Rightarrow r_f + 19 &= 20 \Rightarrow r_f = 1\% \end{aligned}$$

21. Charlie owns two risky assets, both of which plot on the security market line. Asset A has an expected return of 12% and a beta of 0.8. Asset B has an expected return of 18% and a beta of 1.4. If your portfolio beta is equal to 1, what proportion of your funds are invested in asset B?

- A. 1.33
- B. 0.67
- C. 0.50
- D. 0.33

$$\begin{aligned} \beta_p &= w(0.8) + (1-w)(1.4) = 1 \\ 0.6w &= 0.4 \Rightarrow w_A = 0.67 \Rightarrow w_B = 0.33 \end{aligned}$$

22. You are considering the stocks of ABC and XYZ companies. ABC has a beta of 1.4 and XYZ has a beta of 0.30. The risk free rate in the market is 2% and the return on the market portfolio is 12%. Based on your fundamental analysis, ABC will have a 13% return next year, while XYZ will produce a 5.5% return. Which one of the stocks will be a good investment choice for you based on CAPM?

- A. ABC
- B. XYZ
- C. Both
- D. Neither

$$\begin{aligned} \text{ABC: } 2 + 1.4 * (10) &= 16\% > 13\% \text{ overvalued! } \times \\ \text{XYZ: } 2 + 0.3 * (10) &= 5\% \leq 5.5\% \text{ undervalued } \checkmark \end{aligned} \quad B$$

23. A portfolio is invested in the risk free asset and the market index. The portfolio has a 7% expected return and its standard deviation equals 10%. Standard deviation of the Market index is 22%. If the risk free rate is 4% and CAPM holds, what would be the expected return of a security with a beta of 1.55?

- A. 14.23%
- B. 7.63%
- C. 16.38%
- D. 9.42%

$$\begin{aligned} 1 + r_f &\Rightarrow ER_p = wER_m + (1-w)r_f \\ \sigma_p &= w\sigma_m \\ 7 &= w * ER_m + (1-w) * 4 \\ 10 &= w * 22 \Rightarrow w = \frac{10}{22} \end{aligned} \quad \left. \begin{aligned} & \rightarrow 7 = \frac{10}{22} ER_m + \frac{12}{22} * 4 \rightarrow ER_m = 10.6\% \\ & \end{aligned} \right\} A$$

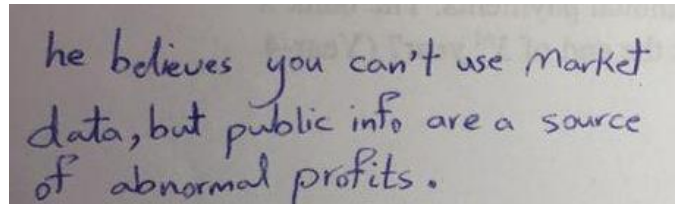
$$ER_A = 4 + 1.55 * (10.6 - 4) = 14.23\%$$

Read the following paragraph and answer questions 24, 25:

“Barack is a hedge fund manager. His hedge fund has been constantly generating greater than average returns and beating the market index by an average 15%. In an interview, he explained the reason for his team’s success was doing a detailed fundamental analysis on the financial sheets of the target companies and having great timing abilities for their purchases. He also emphasized that He did not have access to any hidden information and he was playing a fair game. Donald on the other hand believes that Barack is not doing a good job because he is wasting too much money and time on the fundamental analysis of companies. He expressed his intention to start his own fund and produce even greater results by simply looking at the historical data.”

24. What form of market efficiency does Barack believe in?

- A. Strong Form
- B. Semi-Strong Form
- C. Weak Form
- D. He believes that Markets are not efficient.

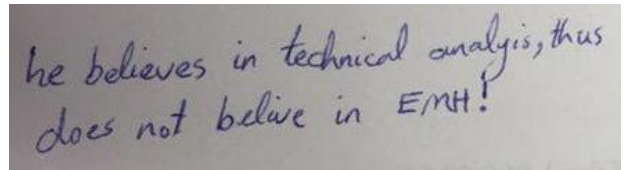


he believes you can't use market data, but public info are a source of abnormal profits.

Answer: C

25. What does Donald think about market efficiency?

- A. The market is strong form efficient.
- B. The market is semi-strong form efficient.
- C. The market is weak form efficient.
- D. The market is not efficient.



he believes in technical analysis, thus does not believe in EMH!

Answer: D