

Final Exam  
Finance 325  
December 17, 2010

Name: \_\_\_\_\_

Exam Instructions:

- This exam should have 14 pages (including this one) and 11 questions. The point value is given for each problem. The entire exam is worth 100 points.
- There is a page at the back of the exam that has information that you will need to solve problems on the test. You may remove this page if it makes it easier for you to reference it during the test.
- You may use a calculator and the provided formula sheet on this exam.
- You must show your work in order to receive credit for your answers. Partial credit will be given for partially correct answers.
- If a question asks “Why/Explain”, you should give an explanation that would convince a skeptic.
- You may use the back of a page if you need additional space to write an answer.

Suggestions:

- Use your time wisely. Move on to another problem if you feel like you’re stuck.
- You may ask me questions if you are unclear about a problem. I may be able to clarify the problem for you.

**GOOD LUCK!! Enjoy your winter break!**

1. You are in a meeting in which one of your peers is presenting his analysis of two mutually-exclusive investments. There are no other possible investments at the present time. The information for the investments is below.

Investment	Today	Yr 1	Yr 2	Yr 3	IRR	NPV
A	-\$10 million	\$7 million	\$6 million	\$10 million	52%	\$4.792 million
B	-\$8 million	\$6 million	\$9 million	\$4 million	63%	\$4.790 million

He goes on to argue that, since the discount rate for these investments is 24%, the firm should take Investment B because it has the highest rate of return.

You raise your hand and tell him that, since these two projects are mutually-exclusive, IRR should not be used to determine the investment. You argue that NPV should be used instead. His response is as follows: "The NPV of A is slightly higher than B. But this doesn't take into consideration the fact that A costs \$2 million more than B. We can invest \$8 million in B at a higher rate of return and invest the remaining \$2 million at our opportunity cost of 24%. The combination of these two investments should surely exceed the NPV of A by itself."

Evaluate his argument. If he is correct, explain why. If not, explain why not. (8 pts)

2. Compare and contrast 401-k plans and traditional IRAs. Be specific. (10 pts)

3. Given that the prices of gold have skyrocketed in the last year due to the recession, you are thinking about buying stock in a privately-held firm that mines for gold. This firm expects to pay a \$2 dividend today, and this dividend is expected to grow by 2% into perpetuity. This firm is financed with 60% equity and 40% debt. While not publicly traded, it is extremely similar to the publicly-traded firm ORO. What is the price per share of this privately-held mining stock? (10 pts)

4. You would like to form a portfolio by combining the stock from the privately-held mining firm (from problem #3) with Verizon stock. You estimate that the standard deviation of returns for the mining firm will be 35%, and the correlation between Verizon and the mining firm will be 0.37. What will be the expected return, standard deviation of returns, and the 95% confidence interval of returns for the portfolio if you invest 40% in Verizon and 60% in the mining firm? (12 pts)

5. You recently watched the movie “I love you Phillip Morris” and think that, instead of Verizon in the portfolio (from problem #4), you would rather use Phillip Morris stock instead. You have no idea what the correlation between Phillip Morris and the mining firm should be, but you know for certain that Phillip Morris has a much higher standard deviation than Verizon. If you switch your investment from Verizon to Phillip Morris, can you determine how the portfolio’s risk will change? If yes, explain how it will change. If not, explain why not. (8 pts)

6. Define the three types of market efficiency. Also describe a trading strategy that yields abnormal returns for each type of market efficiency. (10 pts)

7. Delta Airlines is looking to raise some capital to invest in a space tourism venture. They want to raise \$1 billion, and they will borrow this capital by issuing bonds. They consider this increase in their debt level to be permanent and feel that it will not impact their cost of financial distress. The investment bank charges a transaction fee of 3% of the amount of capital raised. They will use these funds to invest in space travel-related projects (thus, none of this capital will be distributed directly to shareholders). What will be the new value of the whole firm and the firm's equity after this transaction? (8 pts)

8. The risk of space tourism is very different from Delta's existing business; thus, Delta expects that the discount rate for their new venture will be different than that of its airline business. After the change in its capital structure, Delta's new equity beta became 1.02. Also, assume that Delta's new investment in space tourism represents 4% of its total investments. Using the fact that the asset beta of a firm is a weighted average of the asset betas of each of its investments (see below), calculate the discount rate that Delta should use for its new space tourism venture. (10 pts)

$$\beta_{a,Delta} = w_{space\ tourism}\beta_{a,space\ tourism} + w_{rest\ of\ Delta}\beta_{a,rest\ of\ Delta}$$

9. Define beta (in finance), and describe how beta is measured directly. Be specific. (8 pts)

10. Great Wolf Lodge is looking at two different models for its next theme attraction: indoor roller coasters. The incremental cash flows of the two models are listed below (in \$ thousands).

	<u>Today</u>	<u>Year: 1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
Dragonroll	-200	-4	-4	-4	-4	-4	-4	-4
Wizardrun	-100	-2	-2	-2	-2			

Great Wolf Lodge plans to continue with the model it chooses for the foreseeable future (i.e. it will reinvest in the chosen model when the previous model needs to be replaced.)

Great Wolf Lodge is financed with \$50 million in risky debt (currently with a YTM of 6.5%) and \$100 million in equity (with a beta of 1.10). This roller coaster investment can be considered a scale-expansion of the existing business. Which roller coaster should they choose? (10 pts)

11. It is December 2010. You are trying to price a corporate bond that matures in December 2012, has a par value of \$1,000 and a coupon rate of 6% with semi-annual payments (with the first occurring 6 months from now.) Given the following yield curve and T-strip information, what is the price of this bond? Assume all interest rates are quoted as APRs, compounded semi-annually. (8 pts)

	APR	T-strip
June 2011	5.1%	
Sept 2011	5.3%	
Dec 2011		94:21
Mar 2012		93:04
June 2012		91:22
Sept 2012	6.2%	
Dec 2012	6.4%	

EXTRA CREDIT (1 pt each): Define the following acronyms. Must be exact to receive credit.

WACC:

CAPM:

IRR:

EAA:

Company	Business	Equity Beta	Debt	Equity
ORO	Gold mining	1.42	\$60 M	\$50 M
Delta Airlines	Travel	0.75	\$14 B	\$10 B

Return on the market: 12%

Risk-free rate: 3%

Corporate tax rate: 35%

Assume the beta of debt is zero unless otherwise indicated.

Assume that changes of capital structure have no effect on investment policy.

Historical annual returns of Verizon stock over the past 5 years:

5 years ago	4 years ago	3 years ago	2 years ago	Last year
16%	25%	27%	-18%	-10%