

Final Examination (150 minutes)

No calculators allowed; if calculations are needed, write the explicit equation(s). Do not write “ $Y = aX$ ; solve for  $X$ .” You can write “ $100 = 10X$ ; solve for  $X$ .” The price of extra time is 1 point/minute; e.g., if your test is handed in 5 minutes after the scheduled finish time, 5 points will be subtracted from your test score.

1. On Thursday, November 11, 2010, TheStreet.com posted an article titled “How Nokia’s Stock Price Could Double.” Three days later, on Sunday, November 14, 2010, Seeking Alpha posted an article titled “Nokia is Still Overvalued,” arguing that Nokia stock is “too expensive” and a “more realistic” value would be half of its current price. Nothing substantive happened between November 11 and November 14. How could these two influential web sites have such dramatically different views of Nokia’s stock price? Doesn’t the Efficient Market Hypothesis imply that the market price is the correct price?
  
2. The August 31, 2010, Annual Report of the Templeton Emerging Markets Income Fund stated that, “We continue to hold some duration exposure in markets where we saw potential for...”
  - a. Define duration.
  
  - b. Provide a logical end to the unfinished sentence.
  
3. It was recently observed that the Great Recession (which was much worse than people expected) had been accompanied by a sharp decline in short-term interest rates and a modest decline in long-term interest rates.
  - a. Do you suppose that bond and stock prices were positively correlated, negatively correlated, or essentially uncorrelated during this period? Explain your reasoning.
  
  - b. Why did short-term interest rates fall so much more than long-term rates?
  
4. Why do you suppose Warren Buffett has never liked gold as an investment?

5. You are considering two tax-exempt assets, one with a guaranteed 0 percent return and the other with a return that is equally likely to be +20 percent or -10 percent. Considering the available risk-return opportunities, You have decided to invest half your wealth in each asset. What is the
  - a. expected percentage return on the first asset?
  - b. expected percentage return on the second asset?
  - c. expected percentage return on your portfolio?
  - d. first asset's standard deviation?
  - e. second asset's standard deviation?
  - f. portfolio standard deviation?
6. A 20 percent tax has been levied on the investments described in Exercise 5. The first asset continues to yield a 0 percent after-tax return, while the second is equally likely to have an after-tax return of +16 percent or -8 percent. (The government gives a tax credit in the case of a loss.) Should you put more or less of your wealth in the risky asset? Use mean-variance analysis and explain your reasoning carefully.
7. Finish this sentence: "Unlike futures contracts, buyers of options are not required to deposit funds in a margin account because ..."
8. In 2010 a fund manager wrote that he liked to focus on investments with substantial idiosyncratic risks.
  - a. What are idiosyncratic risks? Give two examples.
  - b. Why would a fund manager be attracted to investments with substantial idiosyncratic risks?

9. In 2010 a hedge fund manager observed that Australian banks are restricted from holding debts from other banks that are denominated in Australian dollars.
  - a. How do you think this regulatory restriction affected the spread between LIBOR rates denominated in Australian dollars and U. S. dollars?
  
  
  
  
  
  
  
  
  
  
  - b. How could Australian banks use swaps to circumvent this regulatory restriction? Give a hypothetical example.
  
  
  
  
  
  
  
  
  
  
10. Answer this student's question: "Isn't it inconsistent to measure risk by the standard deviation in mean-variance analysis and by the beta coefficient in the Capital Asset Pricing Model?"
  
  
  
  
  
  
  
  
  
  
11. Swiss Re, a reinsurance company, issued mandatory convertible bonds that pay 6.125% coupons for three years and then automatically convert into shares of Swiss Re stock.
  - a. Is this bond issue more likely to dilute the equity of existing shareholders if the price of Swiss Re stock rises or falls over the next three years?
  
  
  
  
  
  
  
  
  
  
  - b. To offset this possible dilution, which one of the following four actions should Swiss Re take regarding Swiss Re options: buy calls, sell calls, buy puts, sell puts?

12. A company has no debt and \$100 in assets. It will earn a 30% profit rate on its assets for the next two years and a 10% profit rate on its assets every year thereafter. All of its profits for the first year will be reinvested in the firm at the end of the first year; similarly, all of its profits for the second year will be reinvested in the firm at the end of the second year. All of its profits for the third year will be paid out as a dividend at the end of the third year; all of its profits for the fourth year will be paid out as a dividend at the end of the fourth year; and so on with all future profits paid out as dividends.

a. Fill in this table:

year	assets at the beginning of year (\$)	profits during year (\$)	dividends paid at end of year (\$)
1	100		
2			
3			
4			

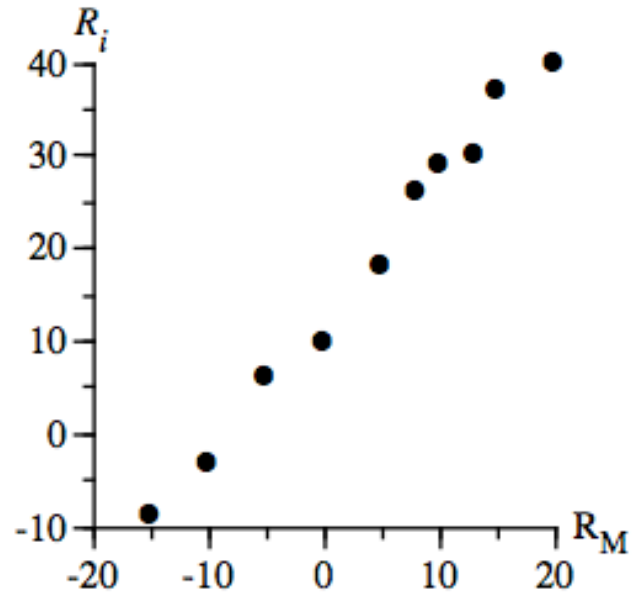
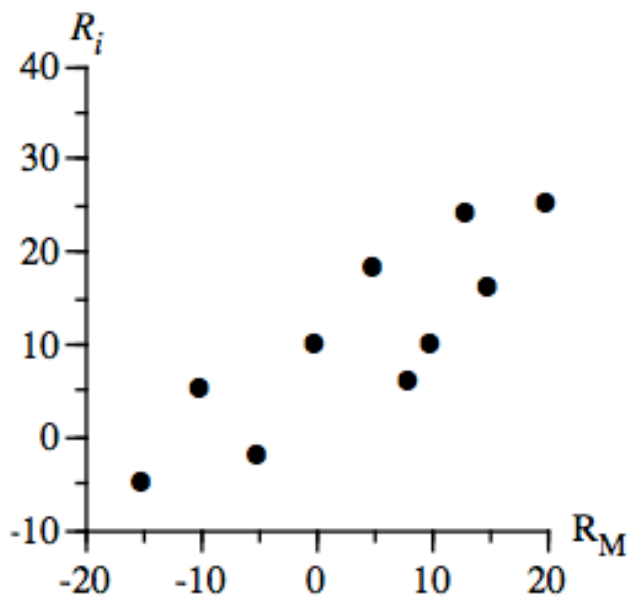
b. If the firm's stockholders require a 10% return, use the dividend-discount model to determine the current value of the firm.

13. Use the Economic Value Added (EVA) model to value the firm described in the previous exercise. Give an explicit formula with explicit numerical values.

14. Explain this analysis of pension fund and life insurance companies holding assets with an average duration of 8 years: “[I]nvestment horizons of 40 years are not uncommon for pension funds or life insurance companies....such portfolios will surely suffer when interest rates decline, even though the associated temporary increase in market value...may create the illusion of investment success.”

15. Explain why you either agree or disagree with this assertion: “According to the Capital Asset Pricing Model, zero-beta stocks have a zero expected return.”

16. Historical plots of the rates of return on two stocks and on the market as a whole are in the figure below. During this period, which of these two firms' returns had the higher
- average return?
  - standard deviation?
  - beta coefficient?
  - R-squared?



17. An October 2004 Wall Street Journal article warned of the dangers of interest-only mortgages. For example, a \$350,000 30-year loan at an interest rate of 4% might be interest only for 10 years and then interest plus principal for the last 20 years. Show the formulas you would use to determine the monthly payments for
- the first 10 years of the interest-only loan
  - the last 20 years of the interest-only loan
  - all 30 years if this were a conventional loan amortized over 30 years

EXPLAIN why (a) is either larger or smaller than (c), and why (b) is either larger or smaller than (c).

What would you advise a homebuyer?

18. Explain what is incorrect about this description of a Markowitz frontier: “The curves illustrate maximum return at the various levels of risk that an investor is willing to assume. Investments above the curve have too much risk. Below the curve, the returns are too low. Goldilocks would say that the risk along the curve is not too hot and not too cold; it’s just right.”
19. Suppose a company has 10 million shares outstanding that are currently trading for \$20 a share. The company’s board of directors unexpectedly gives the chief executive officer a bonus by allowing him to purchase 1 million new shares at \$10, and he immediately does so. Simultaneously, the company sterilizes this new issue by repurchasing 1 million shares from the company’s shareholders at \$20/share. Assuming no change in the company’s operations, what is the theoretical new value of the company’s shares?
20. It was recently reported that Gene Sukie cashed in 1,407,550 pennies that he had collected over the previous 34 years. If he collected an equal number of pennies each year and, on the last day of the year, invested these pennies in stocks that earned a 10% annual return, how much would he have had at the end of 34 years? (You do not need to calculate a numerical value, but you must explicitly show the equation that would be used to calculate a numerical answer.)