Name: _____

Midterm exam II
266: Fi. Markets and Institutions
Spring 2016
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Directions: You have 70 min. to do the exam (unless other arrangements have been made).

Some questions offer a bit of choice on which parts you do, so read carefully. If you answer too many parts, we will grade the first ones and ignore extras.

Where computations are required, full points will be given for the correct answer. Partial points will be given.

You may write on the backs of the exam pages. If your answer extends outside the space provided, you must label clearly where the additional portion is located.

Each part of each question will be given equal value.

Formulas you may find useful

- The variance of a random variable x is given by

$$\text{var}(x) = \sum_{j=1}^{J} pr_j d_j^2$$

  where $d_j = x_j - x^e$, and x_j is the jth outcome, which happens with probability pr_j and x^e is the mean of x.

- The covariance between random variables x and y is given by

$$\text{cov}(x, y) = \sum_{j=1}^{J} pr_j d_{x,j} d_{y,j}$$

  where $d_{x,j} = x_j - x^e$ and $d_{y,j} = y_j - y^e$.

- The key equation of the Gordon growth model is:

$$P = \frac{D_0(1 + g)}{k - g}$$

  where you should understand the notation.

1 Definitions. Do 5 of 6.

1.1 Secondary market

1.2 Stock 'total return' index

1.3 Call Option

1.4 Stop order

1.5 American option

1.6 Dark pool

2 Do 5 of 6. Facts/Real world stuff.

2.1 The two most commonly reported U.S. stock indices are the Dow and the S&P 500. Which index do you think gives a better indication of broad market conditions? Why?

2.2 Roughly what is the historical average for the price-earnings ratio of the S&P 500?

2.3 The Nikkei index as reported in the FT is about 55 percent lower today than it was in January 1991. This figure exaggerates the losses that would have been experienced by the typical U.S.-dollar-based investor who held the shares in the Nikkei over this period. Explain why this is so.

2.4 Since the recovery from the financial crisis began in early 2009, U.S. stock markets have recovered more slowly than European stock markets. True/False and explain.

2.5 From the start of this year to mid-February, North American stock indices fell by more than 10 percent. Given the approximate combined market capitalization of these markets, how large, in dollar terms, is the loss in value associated with a 10 percent decline in the indices?

2.6 In dollar terms, the size of derivative markets (e.g. futures, swaps, etc.) is smaller than, roughly the same size as, or much larger than the value of U.S. nominal GDP? Pick one: [Smaller, roughly the same as, much larger]

Short questions

3 Probability, risk models, and value at risk

Table 1 below represents my risk model for capital gains on my portfolio on any given trading day. My model has 6 possible outcomes and the dollar gain or loss in the value of my portolio in each outcome is given in the table along with the probability of that outcome.

Table 1: Daily capital gains or losses ($millions)

Outcome	Probability	Capital Gain
1	0.50	1
2	0.025	-10
3	0.025	10
4	0.025	-2
5	0.025	-4
6	0.40	2

3.1 Under this model, what is the probability that I experience positive capital gains on any given day?

3.2 What is the 1-day, 95% VaR (value at risk) implied by this model?

4 Mean, variance, and covariance

Table 2 presents returns for 2 assets, A and B in any given year. Asset returns are in percent. The probability of each outcome is included.

Table 2: Returns in %

outcome	prob.	A	B
1	1/3	0.5	3.2
2	1/3	1.0	1.5
3	1/3	1.5	-0.7

4.1 What is the expected return for asset A?

4.2 What is the variance of the return for asset A?

4.3 What is the standard deviation of the return for asset A?

4.4 What is the sign of the covariance of the returns of assets A and B? pick one: positive/negative

5 Gordon growth model. You are an analyst at Morgan Stanley covering the phar-maceutical company Valeant. Investors believe that Valeant's dividend per share will grow by 9 percent per year, while the appropriate annual discount rate for the dividend stream is 10 percent. Valeant's dividends per share this year where $10.

(An equation for the Gordon model is listed on the first page.)

5.1 What approximate value does the Gordon growth model suggest for Valeant shares?

5.2 Over drinks, your pal who works in the CFO's office at Valeant tells you that dividends are more likely to grow each year at 3 percent instead of 9 percent. What does the Gordon growth model suggest will be the value of Valeant shares after this information becomes public?

5.3 Your pal suggests that before the information beomes public, you sell short 1,000 shares of Valeant and split the proceeds with him. What does it mean to 'sell short'?

5.4 You tell your pal (circle one),

(a) This sounds illegal. Let me run this by the compliance officer at my firm first.

(b) Why go small? Let's short 2,000 shares instead.

6 A growing burrito restaurant chain, Burrito Loco, wants to go public by having an intial public offering of equity.

6.1 Burrito Loco hires an investment bank to help with the process. Describe 2 services that the investment bank will likely provide.

6.2 Burrito Loco intends to issue 1 million shares. Burrito Loco earnings next year are expected to be about \$2 million. If the average price-earnings ratio for similar firms is about 10, what might be a reasonable approximate value for the new Burrito Loco shares?

6.3 The investment bank agrees to 'underwrite' the offering by puchasing all of the shares. Describe two steps the investment bank might take to reduce the risk that after purchasing the shares, it will take a loss when attempting to sell the shares to the public.

7 Visitors and the news.

7.1 According to Patricia Little, CFOs spend time (a) managing the leverage and liquidity of the firm and (b) providing financial advice to units of the firm that are attempting to evaluate the financial merits of current and prospective business activities. Which of these endeavors (a or b) takes up most of the CFOs time?

7.2 Some of the largest financial instituions in the U.S. combine both commercial banking and investment banking. According to a Financial Times article we discussed, the shareholders of some of these institutions are beginning to demand that the firms break themselves up into smaller, more specialized companies. Explain the role that financial regulation plays in motivating these demands.

8 Portfolio theory basics

8.1 The variance of an asset's return is the main thing driving the premium that investors demand to hold the asset. True/False, explain?

8.2 Take two assets with returns that have the same variance. One pays a much lower expected return. Give two reasons why sensible folks may want to hold the asset paying the lower expected return.

Congratulations. The End.