Name: ________________________

Midterm exam II
266: Fi. Markets and Institutions
Spring 2017
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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 for correct work.

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

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

  where $d_j = x_j - x^e$, and x_j is the j^{th} 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

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

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

- CAPM: $i_X^e = i_{rf} + \beta_X(i_m^e - i_{rf})$

1 Definitions. Do 5 of 6.

1.1 Credit risk (in, say, a loan)

1.2 Idiosyncratic risk (in, say, an equity return)

1.3 Insolvent firm

1.4 Credit default swap

1.5 Over the counter market (for a financial instrument)

1.6 Central counterparty (in the market for a financial instrument)

2 Facts/Real world stuff.

2.1 Almost all bank reserves in the U.S. at present are [pick one: excess reserves/held in the form of Treasury Bills].

2.2 The return on equity for the U.S. banking system has been roughly what since the time that the economy stabilized after the worst of the financial crisis?

2.3 The gross notional value of credit default swap protection outstanding just before the crisis was [pick one: less than/roughly the same as/much greater than] the value of the underlying securities on which default protection was provided.

2.4 In return for underwriting an IPO, investment banks generally receive about 2 percent of the value of the deal in compensation. [pick one: true/False]

2.5 Correlations of returns across a broad array of assets were abnormally [pick one: high /low] in the aftermath of the crisis. Especially since the election, correlations seem to have [pick one: become even more extreme/moved back nearer to pre-crisis levels].

Short questions

3 Commercial banking.

3.1 Commercial banks evolved as intermediaries, in part, to facilitate loans flowing between folks with funds to lend and folks who needed to borrow. Describe THREE advantages that commercial banks have in making loans relative to the individuals making the loans directly.

3.2 Fill in the blanks on the balance sheet of First National Bank of Spicer (ticker: WTF):

Balance Sheet: Bank of Spicer

A		L	
Reserves	10	Deposits	305
Securities	115	Borrowings	25
Loans	233		
Phys. Capital	5		
Total Assets:	______	Total Liab.:	______
		Net worth:	______

Note: Amounts in $millions.

3.3 Spicer Bank has a deposit outflow of $100. It funds this outflow by selling $100 in securities. Fill in all the blanks in the balance sheet below reflecting Spicer bank after these transactions.

Balance Sheet: Bank of Spicer

A		L	
Reserves	______	Deposits	______
Securities	______	Borrowings	______
Loans	______		
Phys. Capital	______		
Total Assets:	______	Total Liab.:	______
		Net worth:	______

Note: Amounts in $millions.

3.4 State a measure of balance sheet leverage and give the value of this leverage measure for Spicer bank for the two balance sheets above.

4 Derivatives and Hedging. Suppose that one ton of malting barley (a grain used in the brewing industry) currently costs $140 on the spot market. The table below presents a risk model of what the (spot) price of barley will be in 3 months:

Barley price in 3 months

Outcome	Prob.	Price ($)
1	0.1	300
2	0.3	155
3	0.6	130

4.1 What is the expected spot price of 1 ton of barley in 3 months?

4.2 What is the variance of the spot price of barley in 3 months?

4.3 Suppose that Bannon brewing company knows it will need to buy 1 ton of barley in 3 months. Bannon is concerned about the risk that the spot barley price will jump. Bannon buys a 3-month European call option on 1 ton of barley with a strike price of $170.

Taking the option into account, what now is Bannon's expected cost for obtaining one ton of barley in 3 months? (Note: do not include the purchase price today of the option).

4.4 Jared Capital, a hedge fund, develops improved weather forecasting techniques and assesses that the barley growing season will be much drier than Bannon and the rest of the market participants generally expect. The drier season would mean that the barley harvest will be poor and that the price of barley is likely to be higher than the prices reflected in the risk model above.

Jared Capital could profit from this new information by selling Bannon the call option described above at the current market price. [true/false and explain]

5 CAPM.

5.1 The CAPM implies that an equity return with higher variance will generally pay a higher expected return. True/false, explain.

5.2 Why would investors be willing to hold a negative beta stock even though on average the stock is expected to pay a return less than the risk-free rate?

5.3 Under the CAPM, what is be the beta of asset *ABC* if the expected return of ABC is 18% the risk free rate is 5% and the expected return on the market portfolio is 14%.

Congratulations. The End.