Boston College, MF 820
Professor Strahan
Midterm Exam, Spring 2006

Name:_____

Write all answers on the exam. You may use the back of pages if necessary. The exam has 100 points. You are allowed a 1-page (1-sided) 'cheat sheet'. Calculators are permitted, but not computers. You have 2.5 hours. Be brief, but show all relevant calculations (partial credit will be assigned). Your answers must be legible. Good Luck!

True, False, Uncertain. (7 points each)
Explain why the following statements are true, false, or uncertain

1. Securitization has allowed banks to improve both credit and liquidity risk management, and has thus made banking safer.

2. Direct finance is more efficient than indirect finance because you do not need to compensate a financial intermediary.

3. Value-at-risk tends to understate the true risk during periods of high market volatility.

4. The breakeven interest rate on a loan depends only on the loan's probability of default and its loss given default (i.e. its salvage value).

5. A rational investor would not lend to a U.S. commercial bank at 3 percent when numerous creditworthy borrowers are willing to pay 6 percent for the same funds.

6. The risks of a receive-fixed, pay-floating rate swap are equivalent to the risks of buying a fixed rate Treasury financed by short-term borrowing.

Longer Questions

1. Bank Two has the following market-value balance sheet (expressed in millions of dollars):

Assets	
Short Term Loans	1000
Long-Term Loans	500
Liabilities	
5-year CDs	1350
Net Worth	150

The short-terms loans are zero coupon and repaid at the end of 1 year. The Long-term loans are zero coupon loans that mature in 3 years. On the liability side, the 5-year CDs are also zero coupon.

Assume that the yield curve is flat and interest rates are 5% today.

a. Compute the exact and approximate changes (using just duration) in the value of Bank Two's net worth for a 1% increase in interest rates (8 points).

b. Does Bank Two's net worth have positive or negative convexity? Explain. (4 points)

c. Suppose you want to duration hedge the bank's equity by buying a 10-year Treasury STRIP financed with overnight borrowing in the interbank market. How many STRIPs do you need to purchase? (A Treasury STRIP is a zero-coupon bond based on U.S. Treasuries.) (8 points)

d. What are the drawbacks to the strategy in part c relative to hedging with interest rate swaps? (4 points)

2. Here are the returns on IBM's stock over the past 50 days, sorted from highest to lowest:

0.024761
0.022764
0.02217
0.021297
0.017776
0.015693
0.01538
0.01532
0.014075
0.013994
0.013832
0.010394
0.008982
0.007824
0.0076
0.007089
0.00707
0.006769
0.005239
0.005148
0.004462
0.004427
0.001976
0.001021
-0.00167
-0.00169
-0.00451
-0.00468
-0.00486
-0.0057
-0.00615
-0.00754
-0.00961
-0.01034
-0.01112
-0.0122
-0.01234
-0.01498
-0.01545
-0.01578
-0.01878
-0.01888
-0.01964
-0.02352
-0.02394
-0.02551
-0.03283
-0.04634
-0.04712
-0.04763

a. You have a position worth $100 million in IBM's stock. What is the (approximate) 1-day VAR with 95% confidence using historical simulation? (6 points)

b. The standard deviation of the return series above is 0.0174. Compute the 1-day VAR with 95% confidence using Delta-Normal. Why are the two methods so different? (6 points)

c. Provide an estimate of the VAR over a 1-year holding period. What assumptions are you making for this to be valid? (6 points)

3. Describe the key differences between bank loans and bonds. Explain what kinds of firms are more likely to issue bonds and why. Explain what kinds of firms are likely to use bank loans instead and why. (16 points)

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Bank Page