FUNDING INVESTMENTS
FINANCE 238/738, D. Musto
SECOND TEST, 11/30/06
80 MINUTES / 80 POINTS

WRITE ALL ANSWERS ON THIS TEST
SHOW ALL YOUR WORK
ANSWER ONLY ON THE FRONT, NOT THE BACK
USE A BLUE BOOK FOR SCRATCH PAPER

Your Name: ______________________________

Your Section: ______________________________

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1. Your firm has made two loans, and each has an independently-distributed ½ chance of defaulting (i.e. one's probability of defaulting is unrelated to whether the other defaults). If a loan defaults then it pays 0.4, and if it does not then it pays 1. You want to get these loans off your balance sheet, and finance them instead by securitizing them. The issue you confront, in structuring this securitization, is that investors require higher expected returns on riskier bonds. Specifically, they require a 0% expected return if the probability of default is 0, a 5% expected return if the probability of default is between 0 and 1/3, and a 10% expected return if the probability of default is 1/3 or greater. How can you structure the securitization to maximize the revenue from selling the bonds? (*Don't bother calculating the revenue; just tell me how you would structure it and why that structure maximizes revenue)*. (*Hint – consider the probability distribution of the combined payoffs of the two loans*)

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2. Here's an IPO from this month:

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November 17, 2006
HEADLINE: First Solar IPO priced at $20 per share
PHOENIX (AFX) - First Solar Inc., a maker of solar modules used to
generate solar energy, said Friday it will offer 20 million shares for
$20 each in an initial public offering, above an expected range of $17
to $19 per share.
   The shares will be traded under the ticker symbol 'FSLR' on the
Nasdaq Global Market.
   The offering includes 6.75 million shares that are being sold by
certain shareholders, and the proceeds of which will not go to the
company.
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And here's another one:

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Oil and Gas Investor This Week
November 20, 2006
VENOCO PRICED:  Denver-based Venoco Inc. (NYSE: VQ) priced its IPO at
$17 per share for proceeds of about $212 million. The original share
price range was $19 to $21.
…
   Of the total shares sold, 2.5 million were offered by a family trust
controlled by the company's chief executive, Timothy Marquez. Proceeds
will be used to pay debt.
   Credit Suisse Securities, J.P. Morgan Securities Inc. and Lehman
Brothers Inc. were lead underwriters. A.G. Edwards & Sons Inc. and BMO
Capital Markets Corp. were also underwriters.
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Based on the information provided, what would you predict regarding the market price for the stock, and the underwriters' use of the overallotment option? Why?

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3. A bank has two potential projects, *A* and *B*, which both cost 100. The projects' payoffs depend on whether there is Depression (*D*) or Prosperity (*P*), which each have probability ½:

Project	***D***	***P***
A	*80*	*120*
B	*95*	*116*

The bank can choose one project, and wants to finance some or all of the 100 with deposits. After taking in the deposits, the bank is free to choose which project it invests in. The depositors will be repaid out of the chosen project's proceeds. <u>However, the deposits are 100% federally insured, so if the payoff from the project is insufficient to pay depositors their face value, then the government will pay depositors the difference, so they will definitely get their face value</u>. Everyone is risk neutral and requires an expected return of at least 0. The bank maximizes the value of equity, which gets whatever is left after paying depositors.

a. Can the bank make a positive expected net profit if it raises the entire 100 it needs by issuing deposits? What is its expected net profit, given the project it would choose, and what is the net value to society (i.e. the bank's expected net profit minus the government's expected net payout to depositors)?

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b. Suppose now the government imposes a capital requirement on the bank: it can raise only 90 by issuing deposits; equity must pay in the remaining 10. Does this capital requirement improve the net value to society? Explain.

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4. On June 20th this year, when its stock closed for the day at $67.68/share, USG Corp announced that it would, as part of its emergence from bankruptcy, raise new capital with a rights offering. For every share held on June 30th, shareholders would receive one transferable right to buy one new share for $40 on or before July 27th. Before this offering, USG had 45M shares outstanding.
   a. Ignoring market fluctuations for the moment, would this work? That is, would investors exercise their rights, regardless of what they expect other investors to do? What price would the transferable rights trade for, and how much would the offering raise for USG?

   b. For a fee of $67MM, Berkshire Hathaway agreed to backstop the deal, i.e. exercise any rights that shareholders did not exercise. What sort of option on USG's stock does this backstop arrangement represent to Berkshire?

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5. The Bankruptcy Reform Act, which took effect in October 2005, prohibited higher-income consumers from filing Chapter 7, but allowed them to file Chapter 13. What are the relevant differences between Chapters 7 and 13 that might motivate the government to do this?

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6. On November 29th, 2006, we observe the following prices for Amazon Stock, and puts and calls on Amazon, with strike price equal to 42.5, expiring 142 days later:

	Bid	**Ask**
AMZN	40.51	40.52
Put	4.30	4.50
Call	3.30	3.40

Also, the discount rate for 142-day commercial paper was 5.18%. Assume these are European options (also, Amazon pays no dividends).

a. Using the commercial paper rate, what is the present value on 11/29 of receiving the strike price of 42.5 at expiration?

b. Suppose you want to buy Amazon. Given these prices, would you be better off simply buying the stock, or instead buying a combination of the options and the CP that give the same payoff as buying the stock?

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7. Suppose you are a making a market for Amazon stock, so you post a bid and an ask at which you will honor the next order to sell or buy 1 share. Amazon will announce its earnings tomorrow, and everybody knows that it will be worth 43 if earnings are good, and 40 if earnings are bad. From what you know, these outcomes are equally likely. You know that any given order has a 20% chance of coming from an insider, and 80% chance of coming from a Day Trader. Insiders know for sure what the stock will be worth tomorrow, and Day Traders *think* they know for sure but *you* know that they are right only 60% of the time. Both Insiders and Day Traders trade only when they perceive a profit opportunity.

   a. What is the expected value of 1 share, given that a Day Trader makes a buy order?

   b. What is the ask price at which you, the market maker, break even?

   c. Is day trading profitable or not? Explain.

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8. In the Treasury-price listings from Wednesday's *Wall Street Journal* we see an 11¾% bond maturing 11/15/2014, which is callable at par on every coupon date starting 11/15/2009. This is the first bond listed here. We also see a couple bonds maturing on one of these coupon dates, 5/15/2013:

Coupon	Maturity	Bid	Asked
11.750	11/15/09-14	119:23	119:24
3.625	5/15/13	95:09	95:10
0.000	5/15/13	75:03	75:04

a. Is the callable bond selling for more or less than a synthetic bond with the same coupon, maturing 5/15/13?

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b. Would there be an arbitrage opportunity if the callable were trading for more than the synthetic? Why or why not? Be precise.