

Key

YOUR NAME _____

EXAM 3 FINC 4531

FALL 2010

YOU HAVE 120 MINUTES TO COMPLETE BOTH PARTS OF THIS EXAM

Instructions:

- The part of the exam is open book and open notes.
- Partial points are based on readily observable evidence that you know at least part of the solution concept. The more evidence presented (and the clearer the evidence), the better the chance for partial points. In other words, SHOW ALL WORK!

1. (4 points) Suppose you believe that Du Pont's stock price is going to increase from its current level of \$82.50 sometime during the next 5 months. For \$445.25 you could sell a 5-month 100-share put option with an exercise price of \$83.00 per share. If you sold a 100-share contract for \$445.25 and Du Pont's stock price actually dropped to \$63.00, your expected profit or loss would be:

$$\min \left(\frac{63 - 83}{100}, 0 \right) + 445.25$$

$$(-2000, 0) + 445.25 = -1554.75$$

loss

2. (4 points) The current price of a pair of jeans is \$50 and the annual risk-free rate is 6 percent. A call option with an exercise price of \$50 and six months until expiration has a current value of \$3.20. What is the value of a put option (to the nearest penny) written on the pair of jeans with the same exercise price and expiration date as the call option?

6% = -2

$$S + P = C + PVX$$

$$50 + P = 3.2 + \frac{50}{(1 + 3\%)}$$

$$P = 1.74 \pm .05$$

3. (5 points) consider the projects shown below. If you were hard capital rationed to \$85 for the initial investment, which project(s) should you choose?

Project:	A	B	C	D	E	F	G	H	I
Initial Cost:	10	20	30	40	50	40	30	20	10
NPV:	2.5	1.3	1.5	3.2	3.9	2.1	3.1	-7	-1.9
	1.25	1.065	1.045	1.08	1.078	1.0525	1.08		

A G D = 80 invest with 8.8 NPV

$$Har I = -3$$

4. (6 points) The current price of a pair of jeans is \$55 and the annual risk-free rate is 6 percent. You can buy or sell a put option at \$2.30 and a call option at \$8.20; both with exercise price of \$50 and one year until expiration. Explain in detail how to make an arbitrage profit in this situation. Show your work for partial credit.

$$S + P = C + PVX$$

$$55 + 2.30 = 8.2 + \frac{50}{1 + 6\%}$$

$$57.20 = 55.36$$

make \$1.84

Sell ~~the~~ Jeans + Put = Buy Call + Bond

5. (3 points each) Consider the following cash flows, with a discount rate of 10%.

Year	Cash Flow
0	-\$884
1	-\$416
2	\$584
3	\$370
4	\$1214
5	\$400

a. What is the payback period? Based only on this decision rule, should the firm accept the project?

3-4 years

unknown/ad hoc

b. What is the Internal Rate of Return? Based only on this decision rule, should the firm accept the project?

29.14

Yes

c. What is the Net Present Value? Based only on this decision rule, should the firm accept the project?

575.99

Yes

d. What is the Profitability Index? Based only on this decision rule, should the firm accept the project?

$$1 + \frac{575.99}{884} = 1.65 \quad \text{Yes}$$

6. Over the last 3 years Genalogics Inc. spent \$500,000 to get government approval for a new and improved vaccine. Approval has been received and the company is ready to start production on the new vaccine. If the new vaccine is produced, the company will stop production of the old version of the vaccine. Whether we produce the new or old version of the vaccine, vaccine production will be halted after four years. The CEO wants you to determine if Genalogics should begin selling the vaccine based on the following information:

The estimated unit sales for both the old and/or new vaccine are:

Year	1	2	3	4
Unit Sales	10,000	15,000	20,000	15,000

Production of the new vaccines will require \$100,000 in additional inventory, \$150,000 in additional accounts receivable and \$50,000 in accounts payable. The firm's total fixed costs will increase by \$100,000 (from \$150,000 to \$250,000) in the first year and remain at this elevated level during the production period. Variable production costs are \$60 per unit for both the old and new vaccine. Each unit of the new vaccine will be priced at \$120, while the old vaccine sold for \$80.

New production equipment will be needed. The new equipment needed to begin production costs \$600,000. Shipping costs of the equipment are \$50,000, installation will be \$100,000. We must modify the equipment before we can begin production, and this will cost \$250,000. The old equipment had a depreciable basis of \$800,000 and was bought 3 years ago. The old equipment could be sold for \$200,000 right now. The old equipment would be worthless in 4 years. At the end of the project, the New equipment will be sold for 10% of its original depreciable basis, and at that time NWC will revert to its initial before-project levels. Accounting has told us that both sets of equipment qualify for the 5-year MACRS category for tax purposes and 10 year straight-line depreciation for external reporting purposes.

The company is barely profitable and thus is in the 10% marginal tax bracket and has a required return on all its vaccine projects of 16%.

