

YOUR NAME _____

EXAM 3 FINC 4531 ~~WINTER~~ 2006

Key Fall

YOU HAVE 120 MINUTES TO COMPLETE BOTH PARTS OF THIS EXAM

Instructions:

- 1) The part of the exam is open book and open notes.
- 2) 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. (8 points) Suppose you can buy a call option on a piece of land. The land is currently valued at \$50,000. In one year, the land will be either worth \$60,000 or worth 25,000. The exercise price of the option is 53,000 and the riskless rate of return is 5%.

$+20\% -50\%$
 $5\% = P(.20) + (1-P)(-.50)$
 $5\% = .2P - .5 + .5P$
 $.55 = .7P \quad P = 78.57\%$

a. What is the value of the call option today?

$S-X,0 = .7857(70000) = 55000$
 $55000 / 1.05 = 5238.09$

b. Suppose you owned the land, and wanted to buy a put option, using the same inputs as above. How much is the put option, with exercise value of \$53,000 worth today?

$50000 + P = 5238.09 + \frac{53000}{1.05}$
 $P = 5238 + 50476 - 50000 = 5714$

2. (4 points) Consider the cash flow series shown in the table below. As you will note, cash flow 5 is missing. Find the missing Year 5 cash flow that will make the present value of the cash flows equal to \$1000 given a nominal discount rate of 7.7 percent.

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

$611.87 \text{ NPV if } S=0$
 $1000 - 611.86 = 388.13$
 $PV = 388.13 \quad N=5 \quad I=7.7$
 $PMT=0$
 $FV = 562.91$

3. (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 Net Present Value? Based only on this decision rule, should the firm accept the project?

776.38 Yes

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

1-2 years, no way to decide

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

there are 2, neither can be used, no way to decide

4. (5 points) consider the projects shown below. If you were hard capital rationed to \$60 for the initial investment, which project(s) should you choose?

Project:	A	B	C	D	E	F	G	H	I
Initial Cost:	15	20	25	30	35	40	45	10	15
NPV:	2.5	3	1.5	3.2	2.8	2.1	3.1	-7	1.9
	1.16	1.15	1.06	1.11	1.08	1.05	1.07	.93	.87

A, B, C
2.5
3
1.5 (EUPO)

5. (3 points) You are long a call with a \$2,000 exercise price. On the day the option expires, the underlying asset is selling for \$2,700. What is your correct strategy and what is your expected profit/loss from following this strategy.

exercise +700

6. (3 points) You are short a put with a \$1,200 exercise price. On the day the option expires, the underlying asset is selling for \$800. What is your correct strategy and what is your expected profit/loss from following this strategy.

you have
no strategy
only obligation 1 -400

7. (4 points) READ THIS CAREFULLY. The current market value of a firm's assets is \$2,950. The firm has \$2,500 in pure discount debt due in 1 year and the risk-free rate is 10%. The firm's assets will be worth either \$2,500 or \$3,500 in one year. What is the intrinsic value of the firm's equity? If you assume the equity is valued as a call, what is the current market value of the firm's equity?

$$S + P = C + \frac{X}{1.10}$$

$$2950 + 0 = C + \frac{2500}{1.10}$$

$$2272$$

intrinsic value = $\max(S - X, 0) = 450$

call

actual call = 677.27

Remain Dp 29.49%

50

10

4

NPV = 1

8. (20 points) B. Spears Creative Productions is evaluating the construction of a studio complex. The planned site is currently valued at \$400,000 but this parcel would not need to be purchased since Britney already owns it. (If the company does not use the parcel for this project, it will be sold today for its current value). Britney got lucky when she bought the land (5 years ago) as she only paid \$70,000. The studio construction would cost Spears \$1 million and would be depreciated for tax purposes using the 10-year MACRS schedule.

Federline, LLP is retained as the creative consultant of this project. The firm will be paid \$10,000 per year if he shows up and assists the firm, or \$30,000 per year if he does not show up and assist the firm (1 point bonus if you get this correct). Britney's mom is due \$25,000 in fees next month for services already rendered in the design stage. If Spears launches the project Britney's mom will need to perform additional services, her annual fee for these services will be \$35,000.

It is expected that the studio will increase Britney's video production by 20 new releases every year with each of them to bring in \$9,000 per year in royalty fees. Thus in year 1 there are 20 videos, in year 2 there are 40 videos and so on until the project ends. Each video has onetime labor expenses of \$20,000. In addition, B. Spears must pay \$3,000 per video, per year, in digital distribution expenses. In addition to Federline and Britney's mom, the operation of the studio will necessitate additional marketing expenditures of \$30,000 per year and other general expenses of \$50,000 per year.

Due to the time needed to run the studio, Britney would need to stop doing applied semi-conductor physics and laser research (<http://britneyspears.ac/lasers.htm>). She currently earns about \$70,000 per year in government grants. Seinfeld would need a one-time inventory increase (primarily diapers, edible cloths, beer, and makeup) of \$150,000. Her suppliers will let her maintain account payable of \$80,000. She will allow customers to pay with a short lag, thus giving an average accounts receivable balance of \$40,000. These amounts would be recovered at the end of the life of the project.

At the end of the project, Seinfeld Productions expects to be able to the site parcel for \$700,000. However, before the land could be sold, Seinfeld would need to pay about \$200,000 to demolish the studio building. At the end of the project, Jerry will be able to sell all future rights to the videos for \$900,000. The marginal tax rate of Seinfeld is 40%. For purposes of identifying the timing of cash flows, consider all project related cash flows to occur at the end of the year. The construction will be completed this year, and the project will operate for 6 years. Should Britney continue doing applied physics research or build the studio. Note the correct answer is worth 1 point, showing your work on how you arrived at the correct answer is worth 19 points.

Change Wd

1. Add WACC

2. Correct Errors

WACC = 10%

0	1
Land - 400	Rev 180
Studio - 1000	Mom 35
WC - 110	Fed 30
	Dep 100
	Labor 400
	Digital 60
	Other Exp 80
	Op Rev 70
	<hr/>
	- 595
	- 238
	- 357
	100
	- 257
	4

2
360
65
180
400
120
80
70
<hr/>
- 555
- 222
- 333
180
- 153
5

3
540
65
144
400
180
80
70
<hr/>
- 399
- 1596
- 2394
144
- 9514
6

Rev	720
Dep	115.2
Labor	400
Digital	240
Fed + Mom	65
	80
	70
	<hr/>
	- 135

900
92.2
400
300
65
80
70
<hr/>
- 107.2

1080
737
400
360
65
80
70
<hr/>
- 313

Termid
Land 70
Buid 630
~~1000~~
Demolish - 200
Resale + 900
WC 110
Tax

-135 / 54.8 / 1512 / 4.2 / -107.2 / 42.8 / 414.2 / 208 / 313 / 12.5 / 18.8 / 572.5