

Fall

YOU HAVE 120 MINUTES TO COMPLETE BOTH PARTS OF THIS EXAM

Instructions:

- 1) The part of the exam is closed book and closed notes. No scrap paper is allowed; use the back of the exam if necessary.
- 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!**
- 3) If you have additional time remaining, give your work one last check.
- 4) True/False questions are worth 2 points. Multiple-choice questions are worth 3 points. Short answer/Fill in the Blanks questions usually take less than three sentences and are worth 4 points.

A

1. According to the text, the primary goal for a firm's financial managers is to maximize shareholder's wealth.
a. True b. False

2. (2 points each) Real Options -- fill in the blanks. If you need to describe the option more fully, write your description near the question. For the record, the type of option is either call or put. The underlying asset refers to the item, which upon a change in value, will affect the decision to exercise or not exercise the option.

a. Firm is planning a stock Initial Public Offering where currently all common stock where all stock is owned by an owner/manager

Type of option Put Who is long Owner Who is short potential buyers Underlying Asset Company Assets

b. Use of an efficient specialized machine with no salvage value versus a less-efficient general machine with large salvage value.

Type of option Put Call Who is long You Who is short Ward Underlying Asset increase of productivity
Exercise Price price of machines

c. A friend is taking FI 4531 next term. She makes a binding offer to buy your FI 4531 textbook for \$25.

Type of option Put Who is long You Who is short Friend Underlying Asset textbook
Exercise Price 25

d. A different friend, who always follows through on her commitments, works in the Department of Accounting and Finance. She offers to sell you the answer key to the FI 4531 final for \$100.

Type of option Call Who is long You Who is short Friend Underlying Asset Value of highly grade on exam
Exercise Price 100

e. A third friend hears that you are having "difficulties" with your significant other (insert wife, boyfriend, girlfriend, husband as appropriate). This third friend says that they would like to get to know you much better if things do not work out with your current significant other. This third friend says that you are their forever love and that they will wait for you always.

Type of option Call Who is long You Who is short 3rd Friend Underlying Asset and/or love
Exercise Price loss of current relationship

3. Two investment opportunities have the same total cash flows. This means that with a discount rate of 0%, their cash flows have the same sum. Choose the combination from the following three aspects of capital budgeting that will give the highest Internal Rate of Return (hint, change each of the aspects one at a time, assume the projects are identical except for this change). CHOOSE THE BEST ANSWER.

- Payback Period
1. shortest
 2. longest
 3. doesn't matter

- Depreciation (to zero salvage value)
4. straight line
 5. MACRS
 6. does not matter

- Cost of Financing
7. high cost
 8. low cost
 9. doesn't matter

- a. 3, 6, 9. b. 1, 5, 8. c. 1, 5, 9. d. 2, 4, 7. e. 3, 4, 7. f. 2, 6, 8.

C

4. What is a post-audit and why is it used?

why review of past capital budgeting projects, to improve future projects, and provide accountability

5. For a normal, above-average risk (by any measure) capital budgeting project, the Net Present Value criteria assumes that expected future cash flows are reinvested at _____, and the Payback Period criteria assumes that expected future cash flows are reinvested at _____.

- A**
- (a) A rate above the firm's weighted average cost of capital, no discount rate is used.
 - (b) A rate above the firm's weighted average cost of capital, the accounting rate of return.
 - (c) The internal rate of return, the rate below the firm's weighted average cost of capital.
 - (d) The firm's weighted average cost of capital, The accounting rate of return,.
 - (e) The accounting rate of return, the accounting rate of return.
 - (e) Neither criterion assumes reinvestment of future cash flows.

6. Which of the following is considered the most important responsibility of the financial managers of a corporation?

- a. liquidity management
- b. operations management
- c. capital budgeting**
- d. capital structure
- e. dividend policy

7. For an all equity firm, investments with NPV=\$0:

- C**
- a.** typically has positive accounting profits.
 - b. is generally high risk.
 - c. will generally have low discount rates.

8. For a long-term capital budgeting project, expensing an item rather than capitalizing an item will most likely not affect the project's total net income over the life of the project. However, expensing the item will reduce the project's calculated Payback Period and increase the Internal Rate of Return.

- A**
- a.** True
 - B. False

9. Consider the following independent projects, for a firm using a discount rate of 10%:

Project	Initial Investment	NPV	IRR
A	\$1,000,000	\$100,000	10.2%
B	\$100	\$1	11%
C	\$50,000	\$70,000	23%
D	\$200,000	\$24,000	13%

Which project(s) should the firm accept?

- E**
- a.** Project A
 - b. Project B
 - c. Project C
 - d. Project D
 - e.** The firm should accept all of these projects.

10. Two of your classmates are evaluating a project with the following net cash flows:

Year	Cash Flow
0	-\$ 10,000
1	\$100,000
2	-\$100,000

One classmate says that the project has an IRR of between 12 and 13%. The other classmate calculates an IRR of just under 800%, but fears his calculator's battery is low and may have caused an error. You agree to settle the dispute by analyzing the project cash flows. Which statement best describes the IRR for this project?

- E**
- a. There is a single IRR of approximately 12.7 percent.
 - b. This project has no IRR, because the NPV profile does not cross the X-axis.
 - c. This project has two imaginary IRRs.
 - d. There are an infinite number of IRRs between 12.5 percent and 790 percent that can define the IRR for this project.
 - e.** There are multiple IRRs of approximately 12.7 percent and 787 percent.

11. On the day an option expires, you observe a stock price of \$ 44, an exercise price of \$50, and an exercise value/option price of \$6. If investors are rational, this option must be:

- B**
- a.** an in-the-money call.
 - b. an in-the-money put.
 - c. an at-the-money call.
 - d. an at-the-money put.
 - e. an out-of the money call.
 - f. an out of the money put.

12. Briefly explain why considering real options will sometimes allow firms to accept negative net present value projects.

What decision rule should a firm use if real options are considered?

Ability to change mind in future is valuable

Strategic NPV = Passive NPV + Value of Real opt

13. Suppose you are a sole proprietor (a firm's only owner) and thus have unlimited liability for the firm's debts. Your firm has a significant amount of debt. You incorporate your company and as a stockholder have limited liability for the firm's debts. By incorporating, you would increase the value of your put option on the firm's assets.

- C**
- a.** True
 - b. False

14. If the calculated NPV is negative on an average risk project with normal cash flows, which of the following must be true?

- A**
- a. The payback is less than 8 years.
 - b. The WACC is too high.
 - c.** The WACC is greater than the internal rate of return.
 - d. The profitability index is greater than 1 and less than infinity.
 - e. All of the above are true.

YOUR NAME _____

EXAM 1 FINC 4531 ~~SPRING~~ ^{Fall} 2006

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Instructions:

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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%.

$+20\% \quad -50\%$
 $S-X_1 = .7857(70000) = 55000$
 $55000 / 1.05 = 52380.9$
 $5\% = P(.20) + (1-P)(-.50)$
 $5\% = .2P - .5 + .5P$
 $.55 = .7P \quad P = 78.57\%$

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

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?

$50000 + P = 52380.9 + \frac{53000}{1.05}$
 $P = 5238 + 50476 - 50000 = 5714$

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	50	55
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	0.93	1.87

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 = ^{max}(S - X, 0) = 450

call

actl call = 677.27

Remain Dep 29.49%

40

10

4

PPU = 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 with

1. Add WACC

2. Correct Errors

WACC = 10%

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

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

3	540
	65
	144
	400
	180
	80
	70
	<hr/>
	-399
	<hr/>
	-159.6
	<hr/>
	-239.4
	<hr/>
	144
	<hr/>
	-95.4

4	720
	115.2
	400
	240
	65
	80
	70
	<hr/>
	-135

5	900
	92.2
	400
	300
	65
	80
	70
	<hr/>
	-107.2

6	1080
	73.7
	400
	360
	65
	80
	70
	<hr/>
	-31.3

Termid
Lsa 70
Bwd 630
~~1700~~
Demolish - 200
Resden + 900
WC 110
Tax

-135 / -54.8 / 1.512 / 24.2 / -107.2 / -42.8 / 41.4 / 2.2 / 22.8 / 31.3 / 12.5 / 18.8 / 57.2 / 55