

VALUATION AND THE LAW

Professor John Orcutt
Fall Semester 2018

FINAL EXAM – IN-CLASS

December 10, 2018

Instructions:

1. This is a closed-book examination. You may not bring any materials to the examination with the exception of ESL students who are allowed to bring and use a Home Language/English dictionary.
2. This is a 90-minute examination and is worth 45 points (or 15% of your final grade). The examination consists of four short-answer questions:

Q1 = 10 points

Q2 = 10 points

Q3 = 10 points

Q4 = 15 points

If you base your time on the possible points per question, the time apportionment should be:

Q1 = 20 minutes

Q2 = 20 minutes

Q3 = 20 minutes

Q4 = 30 minutes

3. The grading of examinations is anonymous. So, you must write your examination number on the examination and your blue book. **YOU MAY NOT WRITE YOUR NAME ON ANYTHING – YOU MAY ONLY USE YOUR EXAM NUMBER.**
4. For those of you who are handwriting your exams, please write your answers in a blue book. The only answers that will be graded are the answers written into a blue book. While you are free to use scratch paper, answers written on scratch paper, or anything else other than a blue book, will not be read and will not be counted for any credit. Please write only on the front side of the pages in the blue book.
5. For those of you who are taking this exam on a laptop computer, you will be subject to the laptop exam rules that are provided to you by the Registrar. The above scratch paper rules also apply to laptop exams. I do not grade scratch paper.
6. Please remember that organization, persuasiveness, neatness, and legibility all count in determining your grade on the essay answers. To improve the organization of an answer, you may wish to quickly outline the answer on a separate sheet of paper prior to writing your full answer in the blue book or on your laptop.
7. I have tried my best to write and proofread the exam so there are no distracting typos or other errors – but I may not have been totally successful. If you believe there is a typo or other error that makes it difficult to answer a particular question, please point out the error in your answer and explain any assumption you used to answer the question.

Good luck on the examination!

DO NOT TURN TO PAGE 2 UNTIL THE PROCTOR TELLS YOU TO BEGIN

Short-Answer Questions

Question 1 (10 possible points—20 minutes suggested)

Income methods attempt to measure the present value of the future benefits (e.g., cash flows or profits) that will come from a given asset or project. During class, we spent considerable time looking at profit models (which measure the future benefits) and conducting discounted future economic benefit (“DFEB”) calculations to measure the present value of the projected profits. Question 1 requires you to answer two mechanical model-building questions.

Hypo

Acme has the opportunity to buy a business line in a highly speculative technology area. The business line manufactures and sells a new product (the “Product”). Acme intends to manufacture and sell the Product. Tech Purchaser believes the market for the Product will last roughly 5 years and, therefore, generated profit projections for the Product for the next 6 years. Acme would like to run DFEB calculations for the projected profits.

Please assume the following is an Excel spreadsheet.

Rows		Columns						
1	A	B	C	D	E	F	G	H
1			1	2	3	4	5	6
2	Revenues		\$1,000,000	\$2,000,000	\$4,000,000	\$5,000,000	\$3,000,000	\$1,000,000
3	Production costs		-\$800,000	-\$1,250,000	-\$2,000,000	-\$2,500,000	-\$1,500,000	-\$500,000
4	Operating costs		-\$500,000	-\$1,000,000	-\$1,200,000	-\$1,500,000	-\$900,000	-\$300,000
5	Operating profits		-\$300,000	-\$250,000	\$800,000	\$1,000,000	\$600,000	\$200,000
6								
7	Present value at							
8		20%						
9		25%						
10		30%						
11		35%						
12		40%						
13		45%						
14		50%						

Your assignment

- a. **Loss years (1 and 2).** Acme projects the Product will lose money in Years 1 and 2. If you were building the Excel DFEB model for Acme, what formula would you insert for Cell C8? When answering this question, please assume you would copy this formula and paste it into Cells C9-C14 and Cells D8-D14.

Just tell me the formula for Cell C8.

- b. **Profitable years (3 – 6).** Acme projects the Product will be profitable in Years 3 through 6. If you were building the Excel DFEB model for Acme, what formula would you insert for Cell E8? When

answering this question, please assume you would copy this formula and paste it into Cells E9-E14, Cells F8-F14, Cells G8-G14, and Cells H8-H14.

Just tell me the formula for Cell E8.

Question 2 (10 possible points—20 minutes suggested)

Mary recently signed a 6-year employment contract with Acme. Mary wants to calculate the present value of her future compensation.

Please assume the following is an Excel spreadsheet.

Rows		Columns						
	A	B	C	D	E	F	G	H
1			1	2	3	4	5	6
2	Annual compensation		\$1,000,000	\$1,050,000	\$1,100,000	\$1,150,000	\$1,200,000	\$1,250,000
3								
4	Present value at							
5		2%						
6		3%						
7		4%						
8		5%						
9		6%						
10		7%						

Your assignment

- For Question 1, the discount rates range from 20% to 50%. For Question 2, the discount rates range from 2% to 7%. Why is the range of discount rates so much lower for Question 2? Please explain.
- Mary's compensation will be paid in equal monthly installments on the last day of each month. For example, in Year 1, she will be \$83,333.33 on the last day of each month. If Mary asked you to run the DFEB analysis of her compensation, would you use the end-of-year discounting convention or the mid-year discounting convention? Please explain.
- If you were building the Excel DFEB model for Mary, what formula would you insert for Cell C5? When answering this question, please assume you would copy this formula and paste it into Cells C6-C10, Cells D5-D10, Cells E5-E10, Cells F5-F10, Cells G5-G10, and Cells H5-H10. Please also assume that you decided to use the mid-year discount convention.

Just tell me the formula for Cell C5.

Question 3 (10 possible points—20 minutes suggested)

Wildcat Co. has the opportunity to buy a portfolio of clothing trademarks (the "Portfolio"). The Portfolio consists of a series of trademarks covering popular beach clothing (t-shirts, shorts, sandals, and hats).

Your assignment

- (a) Wildcat was able to identify three comparable trademark portfolios that were sold during the last year. These comparable portfolios involved trademarks covering similar types of beach clothing and similar market sizes. The three comparable portfolios have been labeled A, B, and C.
- Portfolio A sold for \$12 million and had projected 1-year forward operating income of \$2 million.
 - Portfolio B sold for \$15 million and had projected 1-year forward operating income of \$1.5 million.
 - Portfolio C sold for \$24 million and had projected 1-year forward operating income of \$3 million.

What is the average valuation ratio for the comparable portfolios? How would you use this information to help value the Portfolio that Wildcat is considering buying? Please explain.

- (b) Wildcat is also aware of a fourth comparable transaction. Wildcat gave you the following press release announcing this fourth transaction.

Concord, N.H., Oct. 1, 2018 /PRNewswire/ -- Beta Incorporated today announced it has entered into a definitive agreement to sell a portfolio of select Trademarks to Skyview Co., a privately held investment firm headquartered in Atlanta, Georgia.

Skyview will pay \$20 million for the portfolio.

The transaction, which is subject to certain regulatory approval and customary closing conditions, is expected to close during the fourth quarter of 2018.

Does the press release give you enough information to include Beta/Skyview transaction in your comparable transactions analysis? Please explain.

Question 4 (15 possible points—30 minutes suggested)

Giving legal advice, like any other form of decision-making, requires evaluating choices and picking the preferred path. Recommending a particular legal action requires guiding the client through the competing choices. We spent time learning how to use decision trees to clearly articulate (and quantify) the different choices a client may face.

Here is one of the problems we looked at:

Franks plans on creating 40 new positions for software programmers to work on a special, three-year project. Franks must decide whether to treat those positions as “employee” or “independent contractor” positions. If you are interested in the distinction between an employee and an independent contractor, here is the url to a brief IRS article on the topic:
<http://www.irs.gov/Businesses/Small-Businesses-&-Self-Employed/Independent-Contractor-Self-Employed-or-Employee>.

Franks has designed the positions such that it is not perfectly clear whether the programmers will be employees or independent contractors. If they are employees, Franks will incur a number of costs. Franks would (i) have to pay various employee costs (e.g., reimbursement of expenses and workers' compensation), (ii) have to withhold Social Security and Medicare taxes, and (iii) incur costs associated with *respondeat superior* liability. Franks estimates these costs at \$10,000 per programmer per year.

Please assume the following facts:

- There is a 40 percent chance that your classification of the programmers will be detected by tax/employment authorities and challenged. Please assume this would take place in Year 3 after the decision.
- If the classification is challenged, there is a 70 percent chance the programmers will be classified as employees.
- If the programmers are classified as employees, Franks will have to pay \$30,000 per programmer. In addition, there is a 25 percent chance Franks will have to pay a \$500,000 fine, a 50 percent chance it will have to pay a \$250,000 fine, and a 25 percent chance it will pay no fine.
- It will cost Franks \$100,000 in legal fees to defend against the regulatory challenge. Please assume the \$100,000 will be paid in a single payment at the end of Year 3.

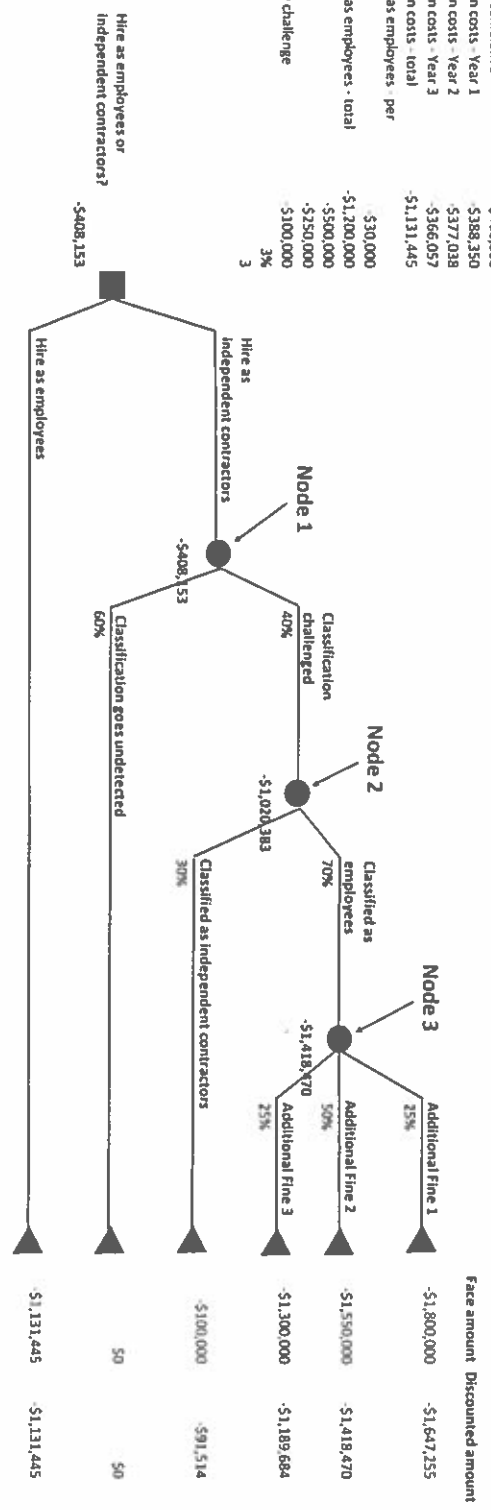
And here is the decision tree we built to assist Franks with its “employee or independent contractor” decision.

Valuation and the Law
From you Class B Homework Assignment

Legal Compliance - Employee or Independent contractor decision

Data

Annual cost of employee classification - per programmer	\$10,000
Number of programmers	40
Annual cost of employee classification - cumulative	\$400,000
PV of cumulative employee classification costs - Year 1	\$388,350
PV of cumulative employee classification costs - Year 2	\$377,038
PV of cumulative employee classification costs - Year 3	\$366,057
PV of cumulative employee classification costs - total	\$1,131,445
Cost if regulators classify programmers as employees - per programmer	\$30,000
Cost if regulators classify programmers as employees - total	\$1,200,000
Additional fine 1	\$500,000
Additional fine 2	\$750,000
Legal costs to defend against regulatory challenge	\$100,000
Discount rate	3%
Discount period	3



Your assignment

- (a) The tree includes three uncertainty nodes. They are labeled as Nodes 1, 2, and 3.
- Node 3 = -\$1,418,470. Your contact at Franks has asked you to explain what that number means. Please do so.
 - Node 2 = -\$1,020,383. Your contact at Franks has asked you to explain what that number means. Please do so.
 - Node 1 = -\$408,153. Your contact at Franks has asked you to explain what that number means. Please do so.
- (b) All of the “Face amount” numbers are discounted to present value, with the exception of the - \$1,131,445 number for the “Hire as employees” branch. Why is the “Hire as employees” branch not discounted, while all the other branches are discounted? Please explain.
- (c) Assume you are a government policy maker who wants to encourage companies to hire workers as employees rather than independent contractors. How would the decision tree help you with your policy making? Please explain.

*** * * * * END OF EXAM * * * * ***

Good luck with your other exams! Have a wonderful break!