Valuation: Final Exam

Answer all questions and show necessary work. Please be brief. This is an open books, open notes exam.

1. Solar Circuits is a manufacturing company that generated $75 million in after-tax operating income in the most recent year. It had book equity of $450 million, debt outstanding (book and market) of $150 million and a cash balance of $100 million. The company expects to maintain its existing return on capital in perpetuity. It also expects its after-tax operating income to grow 12% a year for the next 3 years, and 3% thereafter. If the cost of capital for the firm is 9%, estimate the value of equity today. (4 points)

2. Chiara Inc, is a money-losing start-up with no revenues in the most recent year that expects high revenue growth, improving margins and changing costs of equity (it plans to say all equity-funded):

	1	2	3
Revenues ($ millions)	$200	$300	$350
Operating Margin (pre-tax)	-5%	5%	10%
Cost of equity (capital)	15%	12%	9%

If you believe that the appropriate sales/capital ratio for the company is 2.00, estimate **the present value of the expected free cash flows over the next 3 years.** The marginal tax rate is 25% and you can assume that the company does not have any NOLs to carry forward right now. (4 points)

3. You are trying to price Giraldo Vineyards, a publicly traded Argentine wine company, but your peer group is composed entirely of US vineyards. The summary statistics (all in US $ terms) are below:

	Giraldo Vineyards	*Publicly traded US Vineyards*
PE	9.00	15.00
ROE	15.00%	12.00%
Expected growth rate	3.00%	3.00%

Assuming that both Giraldo Vineyards and the US companies are mature (growing at a constant rate forever) and that the US peer group is fairly priced, given its fundamentals, **how under or over priced is Giraldo Vineyards, relative to the US peer group?** (You can assume that the cost of equity for Argentine companies is 3% higher than the cost of equity for the US peer group). (4 points)

4. LVT Inc. is a conglomerate in three different businesses and you have information on revenues and operating income by business, as well as peer group regressions that you have run on EV/Sales across companies within each business:

Business	Revenues	Operating Income	EV/Sales Peer Group Regression
Leisure	$300.00	$30.00	EV/Sales = 2.25 + 10.00* Operating Margin
Business Services	$500.00	$25.00	EV/Sales = 0.45 + 8.00* Operating Margin
Technology	$200.00	$50.00	EV/Sales = 2.50 + 6.00* Operating Margin

(In the regressions, percentages are converted to decimals; 20% would be 0.20)

The company does have corporate expenses that have not been allocated to any of the businesses and expects these expenses to be $8 million next year, after taxes, every year in perpetuity. Estimate how much you would be willing to pay for the equity in this firm, if it has $400 million in debt outstanding and a cash balance of $100 million. The cost of capital for the company is 8%. (4 points)

5. Narnia Enterprises is considering an acquisition of Aslan Inc, motivated by the possibility of synergy. You are given the following estimates for key numbers the two firms (with all dollar values in millions):

	Narnia	Aslan
EBIT (1-t) next year	$160	$40
Expected growth rate (perpetuity)	2%	2%
Invested Capital	$1,600	$500
Cost of capital	8%	8%

After the merger, Narnia believes that it can sell Aslan's distribution system for book value; this **system accounts for $100 million in invested capital and is expected to have after-tax operating expenses of $10 million next year**, without affecting growth or cost of capital. Assuming that both companies were fairly valued before the merger and that Narnia paid a 50% premium (over value) to acquire Aslan, how much value did this merger create or destroy for Narnia's stockholders? (4 points)

6. You have been asked to assess Giant Foods, a mature US-based food company, that has been targeted by activist investors. You have the following information on the company, run by the existing management, as well as what the activist investors are pushing for, in terms of change in operations and financing:

	Status Quo	Activist Plan
EBIT (1-t) next year	$100.00	$100.00
Reinvestment Rate	50%	20%
Return on Capital	5%	10%
Debt to Capital	0%	20%

The current cost of capital is 7.9% and the activists believe that the company can borrow money at 4%, pre-tax, if it moves to a 20% debt ratio, **If there is a 60% chance that the activist investors will be able to push their changes through, but with a 2-year period before change actually happens, estimate the expected value of operating assets today.** (The risk free rate is 2.5%, the equity risk premium is 6%, and the marginal tax rate is 25%). (5 points)

7. You are interested in investing in Selia Drugs, a money-losing company with a significant debt load and have collected the following information:
    - The company is expected to have negative FCFF of -$30 million each year for the next three years, before turning operations around, and delivering $50 million in FCFF in year 4, growing 2% a year in perpetuity.
    - The cost of capital for all drug companies is 9%.
    - The company has $750 million in debt outstanding (face value), with an average duration of five years.
    - The current 5-year treasury bond rate is 2%.

Assuming that you view the equity in Selia Drugs to be an option and that you (or I) have estimated the following numbers (approximated & rounded) for d1 and d2 (in option pricing model.

d1 = 0.05 d2 = -0.85

Using the cumulative normal distribution on the next page, estimate the <u>fair interest rate to charge on its debt.</u> (5 points)

d	*N(d)*	*d*	*N(d)*	*d*	*N(d)*
-3.00	0.0013	-1.00	0.1587	1.05	0.8531
-2.95	0.0016	-0.95	0.1711	1.10	0.8643
-2.90	0.0019	-0.90	0.1841	1.15	0.8749
-2.85	0.0022	-0.85	0.1977	1.20	0.8849
-2.80	0.0026	-0.80	0.2119	1.25	0.8944
-2.75	0.0030	-0.75	0.2266	1.30	0.9032
-2.70	0.0035	-0.70	0.2420	1.35	0.9115
-2.65	0.0040	-0.65	0.2578	1.40	0.9192
-2.60	0.0047	-0.60	0.2743	1.45	0.9265
-2.55	0.0054	-0.55	0.2912	1.50	0.9332
-2.50	0.0062	-0.50	0.3085	1.55	0.9394
-2.45	0.0071	-0.45	0.3264	1.60	0.9452
-2.40	0.0082	-0.40	0.3446	1.65	0.9505
-2.35	0.0094	-0.35	0.3632	1.70	0.9554
-2.30	0.0107	-0.30	0.3821	1.75	0.9599
-2.25	0.0122	-0.25	0.4013	1.80	0.9641
-2.20	0.0139	-0.20	0.4207	1.85	0.9678
-2.15	0.0158	-0.15	0.4404	1.90	0.9713
-2.10	0.0179	-0.10	0.4602	1.95	0.9744
-2.05	0.0202	-0.05	0.4801	2.00	0.9772
-2.00	0.0228	0.00	0.5000	2.05	0.9798
-1.95	0.0256	0.05	0.5199	2.10	0.9821
-1.90	0.0287	0.10	0.5398	2.15	0.9842
-1.85	0.0322	0.15	0.5596	2.20	0.9861
-1.80	0.0359	0.20	0.5793	2.25	0.9878
-1.75	0.0401	0.25	0.5987	2.30	0.9893
-1.70	0.0446	0.30	0.6179	2.35	0.9906
-1.65	0.0495	0.35	0.6368	2.40	0.9918
-1.60	0.0548	0.40	0.6554	2.45	0.9929
-1.55	0.0606	0.45	0.6736	2.50	0.9938
-1.50	0.0668	0.50	0.6915	2.55	0.9946
-1.45	0.0735	0.55	0.7088	2.60	0.9953
-1.40	0.0808	0.60	0.7257	2.65	0.9960
-1.35	0.0885	0.65	0.7422	2.70	0.9965
-1.30	0.0968	0.70	0.7580	2.75	0.9970
-1.25	0.1056	0.75	0.7734	2.80	0.9974
-1.20	0.1151	0.80	0.7881	2.85	0.9978
-1.15	0.1251	0.85	0.8023	2.90	0.9981
-1.10	0.1357	0.90	0.8159	2.95	0.9984
-1.05	0.1469	0.95	0.8289	3.00	0.9987
-1.00	0.1587	1.00	0.8413		