Final Exam: Valuation

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

1. You have been asked to estimate the cost of capital for Profumo Inc., a company that operates in the health care and senior center businesses, and have been provided the following information on the businesses.

	Value ($ millions)	Unlevered Beta		Value (in $ millions)
Health Care	$500.00	0.60	Debt	$400.00
Senior Centers	$1,500.00	0.80	Equity	$1,600.00

Profumo faces a marginal tax rate of 25% and is rated AA (with a default spread of 0.70%). If the riskfree rate is 4.50% and the equity risk premium is 5%, **estimate the cost of capital for the firm**. (3 points)

2. You are provided with the following information for Nagel Corporation (with all values in millions of dollars):

	Most recent year	Year 1	Year 2
EBITDA	$120.00	$150.00	$160.00
EBIT	$90.00	$120.00	$125.00
- Interest Expenses	$10.00	$20.00	$25.00
Taxable Income	$80.00	$100.00	$100.00
- Taxes	$24.00	$30.00	$30.00
Net Income	$56.00	$70.00	$70.00
Cap Ex	$45.00	$50.00	$55.00
Working capital	$80.00	$100.00	$90.00
Total Debt	$150.00	$175.00	$160.00

Estimate the **expected free cash flows to equity each year, for the next two years** (years 1 & 2) (3 points)

3. Salazzo Marble is a flooring company and you are trying to estimate its expected cashflows and returns. The numbers for the most recent year and the expected values for revenues and margins for the next two years are provided below:

	Most recent year	1	2
Revenues (in $ millions)	$1,000.00	$1,250.00	$1,600.00
Operating Margin (pre-tax)	2.50%	5.00%	10.00%

If the effective tax rate is 20% and the invested capital at the end of the most recent year was $500 million, **estimate the expected free cash flows for the firm for the next two years if you expect the after-tax return on capital at the end of year 2 to be 12%.** (You can assume that return on capital is computed by dividing the after-tax operating income during the year by the invested capital at the end of the year). (3 points)

4. You are trying to value Maglite Inc., a steel company with a <u>60% holding in Fertex Inc</u>, a fertilizer firm, and you have the following information (with $ values in millions):

	Maglite (Consolidated)	*Fertex*
EBIT (1-t)	$125.00	$25.00
Reinvestment	$35.00	$5.00
FCFF	$90.00	$20.00
Book Equity	$800.00	$50.00
Net Debt	$200.00	$50.00
Cost of capital	8.00%	10.00%

Estimate the value of equity in Maglite Inc., assuming that both firms are in stable growth, maintaining existing returns on capital and reinvestment rates. (3 points)

5. You are comparing Loblaw, a brand name cosmetics company, with Costless, a generic cosmetics company and have collected the following information:

	Loblaw Inc.	*Costless Inc*
After-tax Operating Margin	15.00%	7.50%
Sales to invested capital	1.60	2.00
Expected growth in perpetuity	3.00%	3.00%

If Loblaw trades at an EV/Sales ratio of 2.1875, **estimate the EV/Sales ratio for Cosgrove**. (Assume that these are both computed using expected sales next year, i.e., forward ratios.) (3 points)

6. You are pricing banks and have been given the following information on Sound Bank, a small regional bank, and on the average bank in the market:

	PBV	ROE	Cost of equity
Sound Bank	0.40	6.00%	8.00%
Average Bank	1.40	11.00%	9.00%

If all banks are mature (in stable growth) and the average bank is correctly priced, given its fundamentals, **evaluate how much Sound Bank is under or over-priced**. (3 points)

7. You are trying to value control in Hardaway Stores, a poorly run retail business that you think you can turn around, and have collected the following information:

	Status Quo	*Plans for change*
Revenues next year ($ mil)	$100	No change
Expected Operating margin (pre-tax)	6.00%	Cut costs by $3 million (pre-tax)
Growth in perpetuity	3%	No change
Invested Capital ($ mil)	$60.00	No change
Cost of Equity (& Capital)	9%	
Debt ratio`	0%	Increase debt ratio to 20%, by borrowing at 5% (pre-tax cost of debt)

If the marginal tax rate is 25%, the riskfree rate is 4% and the equity risk premium is 5%, **estimate the value of control**. (4 points)

8. You are trying to value merger in a synergy, and have collected information on Stancil (the acquiring firm) and Merritt (the target firm):

	Stancil	*Merritt*
FCFF next year ($ millions)	$100.00	$100.00
Debt to Capital ratio	20%	20%
Cost of equity	9.25%	9.25%
Cost of debt (pre-tax)	5.25%	5.25%
Expected growth rate forever	4.00%	4.00%

If the two firms merge, you believe that <u>you can cut operating expenses by $25 million, after taxes</u>, without affecting expected growth, and that the combined firm will be able to <u>double the debt to capital ratio to 40%, without altering the pre-tax cost of debt</u>. **Estimate the value of synergy**. (The marginal tax rate is 25%, the riskfree rate is 4.50% and the equity risk premium is 5.00%). (4 points)

9. You are considering bidding for a rental property, with an expected after-tax rental income of $1.2 million a year in perpetuity; the cost of capital is 10% for rental properties. That property comes with zoning rights that will allow you to double the size of the property, at the end of the fifth year; that expansion will cost you $15 million, and that expansion will also double your annual rental income. If the riskfree rate is 4% and the expected rental income has an annualized standard deviation of 20%, **estimate the most you would pay for this property**. (If you believe that there is an option in here, please list the option inputs, before valuing the option.) (4 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		