Spring 2016 Name:

Final Exam: Corporate Finance

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

1. Thexos Inc. is a company that has operated in two businesses, housewares and food processing, across the US and Mexico, for the last five years. You have a regression of the returns of the stock against the market index (on top) and a breakdown of revenues by country, below.

   Regression: $\text{Returns}_{\text{Thexos}} = 0.20\% + 0.944\ \text{Returns}_{\text{Market Index}}$

Regional Breakdown

	Revenues (in $ millions)	Govt Bond rate (in US $)	Govt Bond rate (in Pesos)	Marginal tax rate	Equity Risk Premium (Total)
US	$800	2.00%	NA	40%	6.00%
Mexico	$200	3.50%	6.00%	30%	8.00%

The company had an average (market) debt to equity ratio of 30% during the last five years, with all of the debt in the US, but <u>it currently has 150 million shares trading at $10 per share and no debt outstanding</u>. The marginal tax rate is 40%.

a. Assuming that the regression beta is the <u>right beta for the equity for the five-year period</u>, estimate <u>the cost of equity for the company</u> in <u>US dollar</u> terms today. (2 points)

b. Now assume that the company plans to sell off its housewares business, which accounts for 40% of the current value of the company, for fair value, and hold the cash. If the unlevered beta for housewares is 0.65, estimate the US dollar cost of equity for the company after this transaction. (You can assume that the geographical mix is unaffected). (2 points)

c. Now assume that the company plans to sell off its housewares business, which accounts for 40% of the current value of the company, for fair value, and uses the cash from the divestiture to invest in the luxury retail business in Mexico, estimate the cost of equity after this investment. (You can assume that the EV/Sales ratio for the retail business is 1.5 and that the unlevered beta of this business is 1.20) (2 points)

2. Collier Inc. is a firm that currently generates an EBITDA of $200 million on revenues of $ 1 billion (all in the US) and is a mature business, with stable margins and growth of 2% a year in perpetuity. The company is considering an expansion opportunity (in the same business) in China, where investing $1.5 billion will allow the company to double its sales immediately (with the additional sales coming from China), while generating an EBITDA margin of 40% (in perpetuity) on the additional sales. The marginal tax rate is 40%.
    a. Assume that the company currently is all equity funded and uses a (correct) US $ cost of capital of 6.5% on its US investments. What cost of capital would you use for the China expansion, if the company plans to borrow 20% of the capital needed for the investment at a 5% US $ interest rate? (The risk free rate in US $ is 2% and the US ERP is 6%; the ERP in China is 9%) (2 points)

b. Assume that 10% of the initial investment will be depreciated each year, but also that capital maintenance will be 110% of depreciation. Estimate the NPV of this investment. (2 points)

c. What is the return on equity on the expansion investment and what does it tell you about whether the investment is a good or bad one? (Show the comparison you would make to arrive at your conclusion? (2 points)

3. Xterra Inc. is **an all-equity funded technology company** that is profitable but is seeing growth slacken, as it matures. The company has 25 million shares trading at $10/share currently and generated $10 million in operating income in the most recent year. The company's current cost of equity is 6.8%, the risk free rate is 2%, the marginal tax rate is 40% and the equity risk premium is 6%. You have worked out a schedule of pre-tax costs of debt for the company, at different dollar debt levels:

$ Debt (millions)	$0	$25	$50	$75	$100	$125	$150	$175	$200	$225
Pre-tax cost of debt	3.00%	3.25%	3.60%	4.00%	4.50%	5.00%	6.00%	7.80%	9.00%	12.00%

   a. Assume that the company plans to borrow $100 million and buy back shares at $12.5/share. Estimate the value per share for the remaining shares after the buyback. (You can assume that the firm is stable and will generate its current operating income with no growth forever) (3 points)

b. Now instead of the recapitalization in part (a), assume now that you could borrow $175 million to do a leveraged buyout of the company (where you plan to buy all the shares @$10/share and take the company private). How much will your equity investment be worth after the transaction? (3 points)

4. You have been given the task of assessing how much FinServe Bank, a small bank with regulatory capital shortfalls, can pay out in dividends over the next 5 years. The bank held $200 million in regulatory capital (which you can assume is also equal to book value of equity) on risk-adjusted assets of $2 billion. It earned net income of $20 million in the most recent year. The table below provides projections of return on equity and targeted regulatory capital ratios for the next 5 years:

Year	Most recent year	1	2	3	4	5
ROE	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%
Regulatory Capital Ratio	10.0%	10.5%	11.0%	11.5%	12.0%	12.5%

   a. Assuming that risk-adjusted assets are expected to increase 5% a year for the next five years, estimate the FCFE each year for the next 5 years. (3 points)

b. Now assume that the bank wants to maintain its policy of paying out 40% of its net income as dividend each year for the next five years. Estimate the regulatory capital ratio in year 5, <u>if the bank issues no new equity</u>. (2 points)

c. Now assume that you are an investor who likes dividends and would like to invest in banks that not only pay high dividends but can securely continue to do so in future years. Holding asset growth constant, which of the following combination of characteristics would you <u>most</u> like to find in a bank?
   i. Increasing ROE and stable regulatory capital ratio
   ii. Increasing ROE and rising regulatory capital ratio
   iii. Increasing ROE and decreasing regulatory capital ratio
   iv. Decreasing ROE and stable regulatory capital ratio
   v. Decreasing ROE and rising regulatory capital ratio
   vi. Decreasing ROE and decreasing regulatory capital ratio

5. Delta General is a publicly traded company and you have been provided the following information on its expected revenues and after-tax operating income (in $ millions), each year for the next 5 years:

	Last year	1	2	3	4	5
Expected Growth rate		8.00%	8.00%	8.00%	8.00%	8.00%
Revenues	$1,000.00	$1,080.00	$1,166.40	$1,259.71	$1,360.49	$1,469.33
EBIT (1-t)	$120.00	$129.60	$139.97	$151.17	$163.26	$176.32

The company currently has 150 million shares trading at $10/share (book value of equity=$500 million). The company also had $400 million in debt outstanding (book and market value) and $300 million in cash. The cost of capital for the firm is expected to be 12% for the next 5 years and drop to 8% thereafter.

a. Assuming that the firm's return on invested capital stays at its current level for the next 5 years, estimate the free cash flow to the firm each year for the next five years. (2 points)

b. After year 5, <u>you expect the firm's return on invested capital to halve</u> (from current levels) and the expected growth rate to drop to 2% a year in perpetuity. Estimate the terminal value at the end of year 5. (1.5 points)

c. Estimate the value of equity per share today. (2.5 points)