Quiz 1: Fall 1997

1. You have been asked to assess the implied risk premium on the Timbuktu Stock Exchange (TSE). The index is trading at 1050, and the dividend yield is 3%. The current long term bond rate is 6.5%, and the expected long term nominal growth rate in the economy is 6%. Estimate the implied risk premium for equities.

2. You have been provided the following information on CEL Inc, a manufacturer of high-end stereo systems.

- In the most recent year, which was a bad one, the company made only $ 40 million in net income. It expects next year to be more normal. The book value of equity at the company is $ 1 billion, and the average return on equity over the previous 10 years (assumed to be a normal period) was 10%.
- The company expects to make $ 80 million in new capital expenditures next year. It expects depreciation, which was $ 60 million this year, to grow 10% next year.
- The company had revenues of $ 1.5 billion this year, and it maintained a non-cash working capital investment of 10% of revenues. It expects revenues to increase 20% next year and working capital to decline to 9.5% of revenues.
- The firm expects to maintain its existing debt policy (in market value terms). The market value of equity is $ 1.5 billion and the book value of equity is 500 million. The debt outstanding (in both book and market terms) is $ 500 million.

Estimate the FCFE next year.

3. Cello Inc. is a manufacturer of pianos. It earned an after-tax return on capital of 10% last year and expects to maintain this next year. If the current years after-tax operating income is $ 100 million and the firm reinvests 50% of this income back, estimate the free cash flow to the firm next year.(After-tax Operating Income = EBIT (1-t)]

Spring 1998: Quiz 1: Equity Instruments and Markets

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

1. Risk Perspectives (1 point each)

A. Recently, mutual funds and banks have started funds to do venture capital investing (Eg. Citicorp Venture Capital Fund). In what types of firms will these funds have an advantage over traditional venture capitalists (who tend to specialize in sectors)?

- ❏ Firms which require a lot of resources
- ❏ Firms where the returns are highest
- ❏ Firms, where information about the firm is easily available to all potential investors, and which have good management in place
- ❏ Other: ____

____

B. In the last decade real estate investment trusts (REITs) have grown substantially, often at the expense of traditional real estate investors, who tended to be localized (in a particular area - eg. New York) or specialized (in a particular type of property - eg. malls). Which of the following factors best explains this growth?

- ❏ Investors want to diversify into real estate
- ❏ Real estate is more undervalued today, relative to values a decade ago and relative to other assets.
- ❏ REITs have tax advantages over individual real estate investors
- ❏ Real estate value is being driven less by localized information and more by broader market forces.

REIT: A real estate investment trust is created by buying a property or properties, dividing it into shares, and allowing people to trade these shares (which are like common stock in a company). REITs are not taxed on their income, but have to pay out 95% of their earnings as dividends, which get taxed at the investor's tax rate.

2. You have been asked to estimate the beta for a large South Korean company, with large holdings in steel and financial services. A regression of stock returns against the local market index yields a beta of 1.10, but the firm is 15% of the index. You have collected the average betas for global companies in each of the sectors, as well as the average debt equity ratios in each sector:

Sector	Average Beta	Average D/E ratio
Steel	1.18	30%
Financial Services	1.14	70%

(The average tax rate for these firms is 40%)

In the most recent period, the company you are analyzing earned 70% of its operating income from steel and 30% from financial services. The firm also had a debt/equity ratio of 150%, and a tax rate of 30%.

a. Estimate the beta for the company (3 points)

b. If the Korean government bond rate in nominal Won is 12%, Korea's rating is BBB (Country bonds with this rating earn a spread of 2% over the U.S. long bond rate) and Korean equities are twice as volatile as Korean bonds, estimate the cost of equity for this company. (1 point)

3. You are trying to estimate the expected free cash flow next year for Brown Forman, a leading U.S. wine and spirits producer. In 1996, Brown Forman had after-tax operating income [EBIT(1-t)] of $ 235 million; it had a book value of equity of $ 730 million and book value of debt of $ 210 million. Assume that you expect after-tax operating income to grow 10% in 1997, and no change in the firm's after-tax return on capital. Estimate the free cash flow to the firm in 1997. (4 points)

Fall 1998: Quiz 1: Equity Instruments and Markets

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

1. You want to estimate the country risk premium (over and above the base equity premium) to charge for a company listed in Indonesia, and have been supplied with the following information:

- Indonesia is rated BB by S&P, and the corporate bond spread over the treasury bond rate for BB rated bonds is 3.0%.
- The standard deviation in Indonesian equity prices over the last year has been 84%, while the standard deviation in Indonesian government bond prices has been 21%.

a. Estimate the country risk premium for Indonesia. (1 point)

b. You are now trying to estimate the cost of equity, in nominal Rupiah, for an Indonesian paper and pulp firm. The firm has a beta of 0.75. In addition, it derives 80% of its revenues in US dollars, whereas the average Indonesian firm derives only 20% of its revenues in US dollars. Estimate the cost of equity for this firm, if the Indonesian Rupiah riskfree rate is 15%, and the risk premium for mature equity markets is 5.5%. (2 points)

2. You are trying to estimate the beta for InfoSoft, a firm that produces entertainment software.

- The stock is currently trading at $ 40 per share, and there are 250 million shares outstanding; the firm has <u>no debt outstanding</u>. InfoSoft also has <u>$ 2 billion in cash</u> that it has accumulated over time.
- The average beta for entertainment software firms is 1.50, and that the average debt/equity ratio of these firms is 10%. (You can assume that the cash balances at these firms are negligible and that the marginal tax rate is 40% for all firms)

Estimate InfoSoft's current beta. (3 points)

3. The following are projected free cash flows to equity for a company that is expected to be in high growth for the next 3 years. The firm's beta is also expected to change over the 3-year period:

Year	*1*	*2*	*3*	*4*
Expected Growth Rate	12%	10%	8%	6%
Beta	1.5	1.3	1.1	1.0
Revenues	$ 22.40	$ 24.64	$ 26.61	$28.21
EPS	$ 2.24	$ 2.46	$ 2.66	$2.82
- (Cap Ex - Deprec'n) (1-DR)	$ 0.90	$ 0.75	$ 0.60	$0.45
- Change in WC (1 - DR)	$ 0.36	$ 0.33	$ 0.29	$0.24
FCFE	$ 0.98	$ 1.38	$ 1.77	$2.13

Assume that after year 3, the beta will stay at 1.00, and that the growth rate will remain 6% forever. The riskfree rate is 5%, and you can assume a risk premium of 5.5%.

a. Estimate the price at the end of the third year. (2 points)

b. Estimate the value per share today. (2 points)

Spring 1999: Quiz 1

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

1. Savoy Inc. is a company based in Indonesia, with substantial interests in the hotel/tourism business and in forest products.

Business	Operating Income	Unlevered Beta of comparables
Hotel/Tourism	60%	1.25
Forest Products	25%	0.80
Cash	15%	

Savoy also has a debt to equity ratio of 150%. Indonesia has a rating of B-, the default spread for B- rated bonds is 3%, and the Indonesian equity index is three times more volatile than the Indonesian long term bond. Estimate the cost of equity for this firm in U.S. dollar terms, if the treasury bond rate is 5%. (The tax rate for the firm is 30%, and the historical risk premium <u>in the US</u> is 6%) (4 points)

2. Cell Phone Inc. is a cellular firm that reported net income of -$50 million in the most recent financial year. The firm had $ 1 billion in debt, on which it reported interest expenses of $ 100 million in the most recent financial year. The firm had depreciation of $ 100 million for the year, and capital expenditures were 200% of depreciation. Assuming that there is no working capital requirement, estimate the free cash flow to the firm in the most recent financial year. (3 points)

3. Softcom Inc. is a firm that manufactures entertainment software. The firm reported net income of $ 25 million for the most recent financial year. It raised no new equity during the course of the year, and the book value of equity increased from $ 125 million at the beginning of the year to $ 145 million at the end of the year. Based on these fundamentals, estimate the expected growth rate in earnings per share for Softcom. (3 points)

Spring 2000: Quiz 1: Equity Instruments

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

1. Chimera Corporation is in two businesses – soft drinks and consumer products, and has operations in two countries – the United States and Mexico.

- The firm had operating income of $ 1.5 billion on its US operations, with 60% coming from soft drinks and 40% from consumer products, and of $ 1 billion from its Mexican operations, with 50% from soft drinks and 50% from consumer products. (You can assume that value is proportional to operating income)
- The unlevered beta for soft drink firms is 0.7 and the unlevered beta for consumer products is 0.9.
- Mexico is rated BB, the default spread is 3.8% for BB rated countries and the Mexican equity index is twice as volatile as the Mexican long term bond.

Assuming that this firm has no debt outstanding, estimate the cost of equity for the firm in US dollar terms. The treasury bond rate is 6.5% and the market risk premium for the US is 6%. You can assume that value is proportional to operating income, and that beta also measures exposure to country risk (4 points)

a. Estimate the unlevered beta for the firm. (1 point)

b. Estimate the cost of equity for the US operations. (1 point)

c. Estimate the cost of equity for the Mexican operations. (2 points)

2. Hannaford Enterprises reported earnings before interest, taxes, depreciation and amortization (EBITDA) of $ 500 million in 1999. The firm had depreciation of $ 80 million and reported capital expenditures of $ 120 million. In addition, the firm acquired another firm for $ 150 million during 1999, and reported amortization of $ 40 million for the year. Finally, the firm's total working capital increased from $ 80 million to $ 180 million, but

half of this increase was due to an increase in the cash balance; the firm has no short term debt. If the firm has a tax rate of 40%, estimate the free cash flow to the firm. (3 points)

3. GNC Bank reported a net income of \$ 150 million on a beginning book value of equity of \$ 1.2 billion in 1999. The firm pays out \$ 60 million in dividends, and bought back \$ 15 million of stock during the year.

a. Assuming that the firm's return on equity and reinvestment rate remain the same in 2000, estimate the expected growth rate in 2000. (1 point)

b. The average return on equity for the industry is 15%. If GNC's return on equity changes to match the industry average in 2000, estimate the expected growth rate in earnings in 2000. (2 points)

Spring 2001: Quiz 1: Equity Instruments

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

1. You have been asked to estimate the cost of capital for Baklak Stores, a firm that generates all of its revenues in Thailand. You are supplied with the following additional information:

- The average beta for specialty retailers in South East Asia is 1.20, and the average debt to equity ratio for these firms is 45%.
- Baklak Stores has 100 million shares trading at 24 Malaysian Rupees per share and debt of 600 million.
- The riskfree rate in Thai Baht is 9% and that tax rate for all firms is 40%.
- Baklak is not rated, but it does have recent borrowing in its books and the interest rate on the debt is 11%.

a. The Thai stock index is trading at 800, the dividend yield on the index is 5% and the expected growth rate in perpetuity in dividends is 10%. Estimate the implied equity risk premium on the Thai index. (2 points)

b. Estimate the cost of equity for Baklak Stores. (3 points)

c. Estimate the cost of capital for Baklak Stores in Thai Baht. (1 point)

2. You have been asked to estimate the expected free cash flow to the firm next year of Lymon Enterprises, a beverage company. The firm has reported the following:

- The earnings before interest and taxes in the most recent year amounted to $ 150 million. The tax rate of the firm is 40%.
- The firm had operating lease payments of $ 50 million in the most recent year, and has commitments to make similar payments each year for the next 10 years. The pre-tax cost of debt for the firm is 8%.

- The book value of equity is $ 400 million and the book value of debt (not including operating leases) is $ 100 million.

The expected growth rate in the earnings before interest and taxes next year is 10% and the return on capital will remain unchanged from this year's level.

a. Estimate the adjusted (for operating leases) return on capital for the firm. (2 points)

b. Estimate the expected free cash flow to the firm next year. (2 points)

Spring 2002: Quiz 1: Equity Instruments

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

1. You have been asked to estimate the cost of equity for Holton Holdings, a firm with operations in three different businesses – retailing, hotels and travel. You have collected information on the firm's operations and of comparable firms in each of the businesses

		Comparable firms	
	Revenues	Unlevered beta	Firm Value/ Sales
Retailing	$ 400 million	0.85	2.0
Software	$ 400 million	1.15	3.0
Travel	$ 800 million	1.35	1.25

a. Estimate the bottom-up unlevered beta for Holton Holdings. (2 points)

b. Holton Holdings has no market-traded debt. The firm does, however, have $ 1.2 billion in book debt and an interest expense of $ 60 million. If the debt has an average maturity of 5 years, and the fair market rate for debt for the firm is 7%, estimate the market value of the debt. (2 points)

c. Holton Holdings has 100 million shares outstanding trading at $ 10 a share. In conjunction with the estimated market value of debt in (b), estimate the bottom-up levered beta for the firm. (You can assume a marginal tax rate of 40%.) (1 point)

2. Now assume that you have been asked to estimate the free cash flow to the firm last year for Holton Holdings and have collected the following information.

- The firm reported earnings before interest, taxes, depreciation and amortization of $ 350 million on its revenues of $ 1600 million.
- Depreciation and amortization charges amounted to $ 100 million and capital expenditures were $ 200 million.
- Holton spent $ 100 million last year on research and development in its software division, following R&D expenditures of $ 60 million (3 years ago), $ 75 million (2 years ago) and $ 90 million (1 year ago) in the prior three years. You believe that research expenditures have an amortizable life of 3 years.
- The working capital items for the last year and the previous year are reported below.

Last Year Year before last

Cash	$ 100 million	$ 80 million
Accounts Receivable	$ 80 million	$ 90 million
Inventory	$ 150 million	$ 100 million
Accounts Payable	$ 130 million	$ 110 million
Short term Debt	$ 150 million	$ 130 million

- The tax rate for the firm is 40%.

a. Estimate the value of the research asset of the firm. (1 point)

b. Estimate the operating income adjusted for R&D expenditures. (1 point)

c. Estimate the free cash flows to the firm last year. (3 points)

Fall 2002 Name:

Quiz 1: Equity Instruments

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

1. You have been asked to estimate the peso cost of equity for Rojas Holdings, a firm that has all of its operations in Mexico. You decide that you will compute a dollar cost of equity first and then convert into a peso cost of equity.

- The Mexican government has dollar denominated bonds yielding 8% and peso denominated bonds yielding 12%. The treasury bond rate in the United States is 5% and you believe that a mature market equity risk premium is 4%.
- The standard deviation in the Bolsa (the Mexican equity index) is 32% whereas the standard deviation in the Mexican government bond is 20%.
- Your company is in two businesses – chemicals and real estate and derives roughly half its value from each. The unlevered beta of chemical companies globally is 1.15 and the unlevered beta of real estate is 0.60.
- You have 100 million shares trading at 20 pesos per share and debt outstanding of 1 billion pesos (in market value terms). Your firm faces a 30% marginal tax rate.

a. Estimate the levered beta for Rojas Holdings. (2 points)

b. Estimate the country risk premium for Mexico. (1 point)

c. Estimate the dollar cost of equity for Rojas Holdings, assuming that the average Mexican company gets 80% of its revenues in Mexico. (2 points)

d. Estimate the peso cost of equity for Rojas Holdings. You can assume that the inflation rate in Mexico is 7% and the inflation rate in the U.S. is 2%. (1 point)

2. The following questions are short questions relating to estimating free cashflows to the firm. Each question is worth one point.

a. Select Stores is a retail firm with no debt outstanding. However, the firm does have operating lease commitments of $ 100 million a year for the next 3 years (years 1-3), and $ 80 million a year for the following 3 years (years 4-6). The pre-tax cost of debt is 7%. Estimate the debt outstanding, including operating lease commitments.

b. Assume that you decide to convert R&D expenses into capital assets for all firms. This will generally have an impact on operating income. For which of the following firms will the increase in operating income (resulting from this adjustment) be greatest?

- ❑ A firm with a long amortizable life for R&D and stable R&D expenses over time.
- ❑ A firm with a short amortizable life for R&D and growing R&D expenses over time
- ❑ A firm with a long amortizable life for R&D and growing R&D expenses over time.
- ❑ A firm with a short amortizable life for R&D and stable R&D expenses over time

c. You are trying to convert pre-tax operating income into after-tax operating income and decide to use the effective tax rate of the company (which is 20%, due to tax deferrals) as your tax rate all through your value (for estimating cashflows and cost of debt) instead of the marginal tax rate of 40%. If you do this:

- ❑ You will overvalue your firm since your after-tax cashflows will be too high.
- ❑ You will undervalue your firm since your after-tax cost of debt will be too high.
- ❑ There will be no effect on value since the two effects (cashflow and cost of debt) will cancel out.

d. If you decide to build in the expected growth from acquisitions in your cashflows, you should also count the acquisitions in your capital expenditures. When you consider acquisitions as part of capital expenditures, which of the following types of acquisitions should be counted?

- ❑ Only acquisitions that generate synergy and growth.
- ❑ Only acquisitions that are paid for with stock
- ❑ Only acquisitions that are paid for with cash
- ❑ All acquisitions
- ❑ Only small acquisitions

Spring 2003: Quiz 1: Equity Instruments

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

1. Environ Systems is a firm that specializes in cleaning environmental damage (waste disposal) and specialty chemicals. The firm has been traded for only 2 years and gets all of its revenue in the United States. You have been asked to estimate a cost of equity for the firm and have collected the following information:
   - The average regression beta across waste disposal firms is 1.34 and the average market debt to equity ratio for these firms is 12%; the average regression beta for chemical firms is 1.15 and the average market debt to equity ratio is 25%. The corporate tax rate is 40%.
   - Environ Systems' book value of equity of $ 500 million but the market value of equity is $ 2 billion. The book (and market) value of debt is $ 500 million.

   a. Estimate the bottom-up levered beta for Environ Systems, assuming that 80% of its value comes from chemicals and 20% from environmental clean up. (2 points)

   b. Assume now that Environ Systems decides to borrow an additional $1.5 billion and expand its environmental clean up business. Estimate what the beta for Environ Systems will be if it takes this action. (2.5 points)

2. You are now trying to assess the free cashflow to the firm for Environ Systems in the most recent year. The income statement is reported below:

Revenues	$1,000
- Cost of goods sold	$ 550
- Depreciation	$ 150
Operating Profit (EBIT)	$ 300
- Interest expenses	$ 100

Taxable Income	$ 200
Taxes	$ 60
Net Income	$ 140

You are also provided with the following information:

- The firm reported capital expenditures of $ 50 million in the most recent year and also made two acquisitions – one for $125 million (using cash) and one for $75 million (using stock).
- The working capital, inclusive of cash, increased from $ 80 million at the beginning of the year to $105 million at the end of the year; the firm's cash balance decreased by $ 15 million during the year and it has no short term debt.

a. Estimate the free cashflow to the firm for the most recent year. (2 points)

b. The book value of equity was $ 1100 million at the beginning of the year and the book value of debt was $1000 million. Assuming that the firm maintains its return on capital and reinvestment rate from the most recent year for the next 5 years, estimate the expected growth rate. (2 points)

c. Assume now that analysts are projecting a change in the return on capital at Environ to 12% next year. If your reinvestment rate remains unchanged, estimate the expected growth rate next year. (2 points)

Spring 2004 Name:

Quiz 1: Equity Instruments

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

1. You are trying to estimate the cost of equity for Faust Inc., a conglomerate, and have been provided with the following information on the firm.
   - The firm is in three businesses – transportation, real estate and financial services- and you have the following information on the businesses:

Business	Faust's Revenues	Comparable firm information	
		Unlevered beta	Value/Sales
Transportation	$ 1 billion	1.20	1.5
Real Estate	$ 2 billion	0.60	0.75
Financial Services	$ 2 billion	0.70	1.0

   - The market value of debt at the firm is $1.5 billion and there are 100 million shares trading at $ 30 a share.
   - The firm gets 80% of its revenues in the US and 20% of its revenues from Mexico. In comparison, the average Mexican firm gets 80% of its revenues from Mexico.
   - The 10-year U.S. treasury bond rate is 4.25% and the risk premium for the United States is 4%. Peso denominated bonds issued by the Mexican government carry a 10.25% interest rate but Mexico is rate Baa1; the typical default spread for Baa1 rated country bonds is 3%. Mexican equities are 1.8 times more volatile than Mexican government bonds. The marginal tax rate for Faust is 40%.

   a. Estimate the unlevered beta for Faust Inc. (2 points)

   b. Estimate the US dollar cost of equity for Faust Inc. (You have sufficient information to estimate the lambda and the country equity risk premium for Mexico) (3 points)

2. You are trying to estimate the free cashflows for Forman Distilleries, a brewer, based upon last year's financial statements which are reproduced below:

Revenues $ 500 million

- Labor, material and other expenses	$ 350	million
- Depreciation & Amortization	$ 50	million
Earnings before interest and taxes	$ 100	million
- Interest expenses	$ 10	million
- Taxes	$ 27	million
Income before extraordinary items & interest income	$ 63	million
+ Interest income from Cash & Securities	$ 7	million
Net Income	$ 70	million

- The firm's effective tax rate last year is equal to its marginal tax rate.
- Capital spending last year amounted to $ 40 million but the firm did an acquisition towards the end of the year, where it used 2 million shares (trading at $30 per share at the time) to buy another publicly traded firm.
- While revenues last year were unchanged from the previous year, non-cash working capital as a percent of revenues decreased from 4% of revenues to 2% of revenues.
- The ten-year treasury bond rate is 4.25%.

a. Estimate the free cashflow to the firm last year. (2 points)

b. How would your answer to (a) change if you were told that the operating expenses for last year included an operating lease expense of $ 20 million and that Forman Distilleries has lease commitments of $ 20 million every year for the next 10 years. Their lease commitments were the same the previous year. (You may need the interest coverage table on the next page… but then again, you may not) (3 points)

Interest Coverage Ratio	*Rating*	*Default Spread*
> 12.5	AAA	0.40%
9.50 - 12.50	AA	0.75%
7.50 – 9.50	A+	1.00%
6.00 – 7.50	A	1.25%
4.50 – 6.00	A-	1.50%
3.50 – 4.50	BBB	1.75%
3.00 – 3.50	BB	2.00%
2.50 – 3.00	B+	2.25%
2.00 - 2.50	B	2.50%
1.50 – 2.00	B-	3.00%
1.25 – 1.50	CCC	5.00%

0.80 – 1.25	CC	7.50%
0.50 – 0.80	C	10.00%
< 0.50	D	12%

Spring 2005 Name:

Quiz 1: Equity Instruments

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

1. You are trying to estimate the implied equity risk premium to use for an emerging market and have been provided with the following information:
   - The equity index for the market is currently trading at 10,500
   - Based upon <u>earnings in the just completed financial year</u>, the market trades at a price earnings ratio of 10.
   - Earnings are expected to grow 5% a year in perpetuity and firms are expected to pay out 60% of their earnings as dividends in perpetuity.
   - The riskfree rate for the market is 5.2%.

   a. Estimate the implied equity risk premium for the emerging market, using the information supplied in the problem. (3 points)

   b. During the course of the most recent financial year, the equity index increased 20%, earnings were up 8% and the expected growth rate and riskfree rate did not change. Which of the following statements would you agree with, given this information? (1 point)

   i. The implied equity risk premium increased over the course of the year
   ii. The implied equity risk premium decreased over the course of the year
   iii. The implied equity risk premium did not change over the course of the year
   iii. There is insufficient information to make a judgment on whether the implied equity risk premium increased or decreased during the year.

   c. Now assume that you have also computed a historical risk premium for this market of 10%. Given the implied equity risk premium that you computed in part (a), which of the following statements would you agree with? (1 point)

i. If you use the historical risk premium to value stocks today, you will find more stocks to be undervalued (estimated value is higher than the stock price) than overvalued.

ii. If you use the implied equity risk premium, you will find more stocks to be undervalued (estimated value is higher than the stock price) than overvalued.

iii. If you use the historical risk premium to value stocks, you will find more stocks to be overvalued (estimated value is less than the stock price) than undervalued.

iv. If you use the implied equity risk premium to value stocks, you will find more stocks to be overvalued (estimated value is less than the stock price) than undervalued.

2. You are trying to estimate the free cashflow to the firm for Lafayette Enterprises, a furniture-manufacturing firm, from its most recent financial statements. The income statement for the firm is provided below:

Revenues	\$1,000
- Operating Expenses	\$ 600
- Depreciation	\$ 150
Operating Income	\$ 250
- Interest Expenses	\$ 50
Earnings before tax	\$ 200
Taxes paid	\$ 80
Net Income	\$ 120

You can assume that the firm paid its marginal tax rate on taxable income and that capital expenditures amounted to \$225 million in the most recent financial year. Working capital decreased by \$ 40 million but the firm's cash balance (which is included in working capital) dropped by \$ 60 million.

a. Estimate the <u>free cashflow to the firm</u> in the most recent financial year (2 points)

b. Estimate the free cashflow to equity for this firm in the most recent financial year, assuming that the firm's total debt decreased during the course of the year from $ 800 million to $ 760 million. (2 points)

c. Now that you have computed the free cashflow to equity and the free cashflow to the firm, which of the following statements about the two cashflows is true. (1 point)

i. The free cashflow to equity will always be higher than the free cashflow to the firm.

ii. The free cashflow to the firm will always be higher than the free cashflow to equity.

iii. Paying common dividends reduces the free cashflow to equity

iv. Paying off debt reduces the free cashflow to the firm

v. None of the above.

Fall 2007 Name:

Quiz 1: Equity Instruments

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

1. You have been asked to assess the value of a finite-life asset with an expected life of 5 years and constant cash flows over that life (with no salvage value at the end). You have been given the following income statement for the asset:

	Yrs 1-5
Revenues	$1,000
- Operating Expenses	$600
EBIT	$400
- Interest expenses	$100
Taxable Income	$300
- Taxes	$105
Net Income	$195

You can assume that the firm has no capital expenditures, depreciation or working capital needs; in other words, earnings are cash flows. The effective tax rate is also the marginal tax rate. The cost of capital for the asset is 10%.

a. Estimate the value of the asset. (2 points)

b. How would your answer to (a) change if you were told that the cash flows were real cash flows and that the cost of capital (of 10%) was a nominal cost of capital. (The expected inflation rate is 2%) (1 point)

2. Lundell Enterprises is an all-equity funded firm that operates in two businesses – publishing and entertainment – in two countries – the United States and Mexico. The breakdown of revenues (in millions of dollars) for the firm is provided below:

	US	Mexico
Publishing	$500	$250
Entertainment	$500	$750

You have collected the following information on the company:

a. The unlevered beta of being in the publishing business is 0.9, whereas the unlevered beta of being the entertainment business is 1.20.
b. The U.S. treasury bond rate is 4.5% and the ten-year Mexican government peso bond rate is 7.5%
c. Mexico is rated AA for local currency and foreign currency borrowings and the typical default spread for AA rated countries is 0.50%.
d. Mexican equity markets are twice as volatile as the Mexican government bond.
e. The equity risk premium for a mature market is 4%.

a. Estimate the cost of equity for Lundell's publishing business in the US (in US $). (1 point)

b. Estimate the cost of equity in peso terms for Lundell's Mexican entertainment operations. (2 points)

c. Now assume that Lundell plans to sell its Mexican operations and return the cash to stockholders. Estimate the cost of equity (in US $) for the company after the transaction. (You can assume that the Enterprise Value to Sales ratio is 1.5 for the publishing business and 2.5 for the entertainment business) (2 points)

Multiple choice questions on Cash flows (only one choice per problem) (1/2 point each)

3a. If you capitalize operating leases and treat them as debt, which of the following will always occur?

i. The cost of equity will increase because of the higher debt ratio.
ii. The operating income will increase because you will be adding back operating lease expenses.
iii. The debt ratio will increase.
iv. The return on capital will go up.
v. None of the above.

3b. The primary reason for capitalizing R&D expenses is the following:

i. To reward companies that invest a lot in R&D
ii. To punish companies that invest a lot in R&D
iii. To measure the free cash flow to the firm more precisely
iv. To get a higher return on capital
v. To get a better sense of how much the company is reinvesting for future growth
vi. None of the above

3c. For most companies, the effective tax rate is lower than the marginal tax rate. For such companies, using the effective tax rate (instead of the marginal tax rate) in perpetuity to compute the after tax operating income will result in which of the following?

i. We will overstate the value of the company
ii. We will understate the value of the company
iii. It should have no effect on the value of the company

3d. If a company grows primarily through acquisitions, and we are trying to estimate the cash flows to the firm, which of the following estimation choices is likely to yield the best estimate of value?

i. Ignore the growth from acquisitions when computing projected earnings and include acquisitions in your forecasted capital expenditures.
ii. Count the growth from acquisitions when computing projected earnings and exclude acquisitions in your forecasted capital expenditures.
iii. Ignore the growth from acquisitions when computing projected earnings and exclude acquisitions in your forecasted capital expenditures
iv. Count the growth from acquisitions when computing projected earnings and include acquisitions in your forecasted capital expenditures
v. None of the above

3. You have been asked to estimate the expected growth in earnings in MNL Bank, a regional bank that reported $ 2 in earnings per share in the most recent year on a book value of equity, per share, of $10. The firm paid out $0.50 in dividends per share.
   a. Assuming that the firm can maintain the return on equity and payout ratio from last year for the next 5 years, estimate the expected growth rate in earnings for the next 5 years. (1.5 points)

   b. Now assume that the banking crisis will create the following changes: the firm will be required to <u>raise its equity capital by 50% immediately</u> by regulatory authorities, to set aside 20% of earnings each period to cover bad loans and to suspend dividend payments for the next 5 years. Estimate the new expected growth rate in earnings per share. (1.5 points)