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)?

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

- o Investors want to diversify into real estate
- o Real estate is more undervalued today, relative to values a decade ago and relative to other assets.
- o REITs have tax advantages over individual real estate investors
- o 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 no debt outstanding. InfoSoft also has $ 2 billion in cash 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)

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 earnings in the just completed financial year, 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 <u>real</u> cash flows and that the cost of capital (of 10%) was a <u>nominal</u> cost of capital. (The expected inflation rate is 2%) (1 point)

2. Lundell Enterprises is an <u>all-equity funded</u> 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

Quiz 1: Equity Instruments

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

1. Modern Media, an all-equity funded US entertainment company, is planning an acquisition of an Mexican entertainment firm for $ 500 million (entirely financed with equity). The expected cash flows for the target company have been estimated in nominal pesos and you have been asked for some advice on the inputs to use to estimate the cost of equity to discount these cash flows.
   a. Given your desire to get a precise beta, which beta estimate would you use in your computation? (1 point)
      i. The beta estimated for the US company against the S&P 500 (1.50)
      ii. The beta estimated for the Mexican company against the Mexican Bolsa (0.60)
      iii. The weighted average of the US and Mexican company betas (1.30)
      iv. The average regression beta across entertainment companies (1.25)
      v. The average unlevered beta across entertainment companies (1.05)
      vi. None of the above

   b. The Mexican government has 10-year U.S. dollar denominated bonds, trading at 5.25%, and 10-year nominal peso denominated bonds, trading at 7.25%, and both are rated AA by S&P. The ten-year U.S. T. bond rate is 4%. What risk free rate would you use to estimate the cost of equity? (1 point)

   c. The historical risk premium for the U.S, over the last 80 years, is 4.5% and the historical risk premium, over the last 15 years, for Mexico is 9%. The standard deviation in the Mexican equity index has been roughly twice the standard deviation in the Mexican dollar denominated bond. Using the beta and risk free rate from the last two sections, estimate the cost of equity. (2 points)

2. You are trying to compute the cost of capital for a retail firm with significant operating lease commitments and some conventional debt and have collected the following information:
   - There are two classes of shares outstanding in the firm: 12 million of non-voting shares that trade at $ 10 a share and 2.5 million voting shares that do not trade but have an estimated value of $ 12 a share.
   - The firm has a bank loan on its books with a face value of $ 50 million, with 5 years left to maturity. The stated interest rate on the loan is 5%, but the company currently is rated BBB and the market interest rate on BBB rated bonds is 6%.
   - The firm has expected lease commitments of $15 million each year for the next 8 years.
   - The cost of equity for the firm is 10%. The effective tax rate is 30% and the marginal tax rate is 40%

Estimate the cost of capital for the firm. (3 points)

3. Leon Technology is a firm that specializes in advanced telecommunication software and has been in existence for 4 years. For the current year, the firm reported \$ 5 million in after-tax operating income and a book value of equity of \$ 25 million. However, the operating income was computed after an R&D expense of \$ 5 million. You believe that it will take approximately 5 years for R&D to commercially pay off in this business and have collected the R&D expenses for the 3 prior years the firm has been in existence:

	Year -3	Year -2	Year -1
R&D expense	\$ 2 million	\$ 3 million	\$ 4 million

a. Estimate the capitalized value of research at Leon Technology. (2 points)

b. Estimate the corrected after-tax operating income for Leon Technology (1 point)

Quiz 1: Valuation

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

1. You are reviewing the cost of equity computation that an analyst has made for Luo Tang, a Vientamese company. The analyst has estimated a cost of equity of 18% for the company in Vienamese Dong (VND). In making this estimate, the analyst used the following information:
   - The ten-year Vietnamese government bond rate, in VND, is 9%, and was used by the analyst as the riskfree rate. However Vietnam has a local currency rating of Baa3 and the default spread for Baa3 rated bonds is 3%.
   - The analyst used a total equity risk premium of 7.5% for Vietnam (obtained by adding 3% to the US risk premium of 4.5%) and a beta of 1.2 for the company.

a. Assuming that you were trying to estimate the cost of equity in VND, what risk free rate would you use in your estimate? (1 point)

b. If you were told that the volatility in the Vietnamese equity index is twice the volatility in the Vietnamese government bond, what country risk premium would you attach to Vietnam (over and above the US premium)? (1 point)

c. If you are now told that only 30% of Luo Tang's revenues come from Vietnam and that the rest come from mature markets, estimate the lambda for Luo Tang. (You can assume that the average Vietnamese company gets 90% of its revenues from Vietnam).
(1 point)

d. Using your estimates of the risk free rate, risk premium and lambda, estimate the cost of equity in VDG for Luo Tang. (You can assume that the analyst's estimates of beta and the US risk premium are correct). (1 point)

2. You are analyzing the earnings/cashflows of a consulting firm that reported \$ 5 million in net income this year on a book value of equity of \$ 15 million, yielding a return on equity of 33.33%. In computing these earnings, though, the firm subtracted out \$ 5 million in recruiting and training expenses spent during the course of the year on new consultants. Typically, consultants hired by the firm stay with the firm approximately 4 years, and the recruiting and training expenses for the last 4 years are as follows:

Year	Recruiting and Training Expense
-1 (Last year)	\$ 4 million
-2	\$ 3 million
-3	\$ 2 million
-4	\$ 1 million

If you capitalized recruiting and training expenses, estimate the correct return on equity for the firm. (3 points)

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)

Fall 2009 Name:

Quiz 1: Equity Instruments

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

1. Jarlisco Enterprises is a firm that is incorporated in Mexico, but with substantial US operations. You have obtained the following information on its exposure in the two countries:

	Mexico	*United Stated*
Currency	Pesos	US $
Ten-year government bond rate (in local currency)	8% (in pesos)	3.5% (in US dollars)
Sovereign rating (for local currency borrowing)	A2	Aaa
Default spread associated with sovereign rating	2.0%	0.0%
Proportion of revenues for Jarlisco from country	30%	70%
Proportion of revenues for average company in country	60%	80%
$\frac{\text{Std Deviation of Equity}}{\text{Std Deviation of Govt bond}}$	1.8	1.6

The equity risk premium for mature equity markets is 5% and the beta for Jarlisco, based upon its business mix is 0.90. Using the lambda approach, estimate the cost of equity for the company <u>in Mexican pesos</u>. (4 points)

2. You have been given the assignment of computing the after-tax cost of debt to use in the cost of capital computation for Lavella Inc, a publicly traded firm. You have obtained the following information on its outstanding debt:

Loan Type	*Face Value*	*Interest Rate*	*Remaining Maturity*
Secured bank loan	$ 200 million	7.0%	7 years
Subordinated bank loan	$ 150 million	8.0%	10 years
Unsecured short term bank loan	$ 150 million	6.0%	0.5 years

All of the debt has <u>been on the books for at least a year</u>. The current treasury bill rate is 4% and the 10-year US treasury bond rate is 5%. Key numbers from Lavela's income statement for the most recent year are summarized below:

Revenues	$ 1,000 million
EBITDA	$ 200 million
EBIT	$ 140 million
Net Income	$ 73.5 million

The effective tax rate for the most recent year was 30% and the marginal tax rate was 40%. The following table summarizes the current relationship between coverage ratios and ratings, if you want to use it:

If interest coverage ratio is			
>	*≤ to*	*Rating is*	*Spread is*
8.50	100000	AAA	1.25%
6.5	8.499999	AA	1.75%
5.5	6.499999	A+	2.25%
4.25	5.499999	A	2.50%
3	4.249999	A-	3.00%
2.5	2.999999	BBB	3.50%
2.25	2.49999	BB+	4.25%
2	2.2499999	BB	5.00%
1.75	1.999999	B+	6.00%
1.5	1.749999	B	7.25%
1.25	1.499999	B-	8.50%
0.8	1.249999	CCC	10.00%
0.65	0.799999	CC	12.00%
0.2	0.649999	C	15.00%
-100000	0.199999	D	20.00%

Estimate the after-tax cost of debt. (3 points)

3. FASB, the accounting standards board, is considering requiring that technology and pharmaceutical firms capitalize R&D expenses and has approached you for advice on the consequences for some widely used accounting and valuation numbers. Respond to each of the following multiple-choice questions, with your response (only one choice, please…)
   a. **Effect on earnings**: If you capitalize R&D expenses at technology and pharmaceutical firms, which of the following would you expect to happen to the adjusted earnings for these firms?
      A. There will be no effect on earnings.
      B. The reported earnings for all these firms will increase
      C. The reported earnings for all these firms will decrease
      D. The reported earnings will increase for firms that have seen R&D expenses increase over time
      E. The reported earnings will increase for firms that have seen R&D expenses decrease over time.

   b. **Effect on book value**: If you capitalize R&D expenses at technology and pharmaceutical firms, which of the following consequences would you expect for the adjusted book value for these firms?
      A. The book value of assets and the book value of debt will increase
      B. The book value of assets and the book value of equity will increase
      C. The book value of assets and the book value of debt will decrease
      D. The book value of assets and the book value of equity will decrease
      E. None of the above.

c. **Effect on cost of capital**: If you capitalize R&D expenses at technology and pharmaceutical firms, which of the following consequences would you expect for the cost of capital for the firms?
   A. The cost of capital for the firms will increase
   B. The cost of capital for the firms will decrease
   C. The cost of capital for the firms will be unchanged

Fall 2010 Name:

Quiz 1: Valuation

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

1. You have been asked to review the valuation of Santiago Cement, a small Peruvian cement company, by an M&A analyst, for acquisition by a US cement company. The analyst has estimated a value of 1 billion Peruvian Sol for the equity, based upon the expectation that the firm will generate 50 million Peruvian sol in cash flows (to equity) next year, growing at 5% (in sol) a year forever; mistakenly, he used the US company's dollar cost of equity in the valuation. To correct the valuation, you have been provided with the following information:

➔➔ The US treasury bond rate is 3% and Peruvian dollar denominated bond rate is 5%; Peruvian equities are 1.5 times more volatile than the Peruvian dollar bond.

➔➔ The expected inflation rate in Peruvian sol is 6% and the expected inflation rate in US dollars is 2%.

➔➔ The typical Peruvian company generates 80% of its revenues in Peru, but Santiago Cement generates all of its revenues in Peru.

Estimate the correct value of equity in Santiago Cement. (4 points)

2. TryTips Inc., a food processing company, has come to you for some help in estimating a beta for their equity. The firm has been publicly traded for two years and the regression beta is 0.45. The firm is in two businesses, and you have collected the following information on them:

		Comparable firms	
Business	TryTip's revenues	Unlevered Beta	EV /Sales Ratio
Food Processing	$ 800 million	0.60	0.50
Restaurants	$ 200 million	1.20	3.00

EV = Enterprise value = Market value of equity + Market value of debt (includes leases) - Cash

TryTips has 100 million shares outstanding, trading at $6 a share, $ 100 million in debt and lease commitments of $ 50 million each year for the next 8 years. The riskfree rate is 3.5%, the equity risk premium is 4.5% and the firm has a rating of BBB (with a default spread of 1.5%). The marginal tax rate for all firms is 40%.

Estimate the cost of equity for TryTips. (3 points)

3. You are trying to estimate the free cash flow to the firm on January 1, 2010, for a software company and have been provided with the following information for 2009 (all numbers in millions):

Revenues	$ 800
- Depreciation & Amortization	$ 100
- R & D expenses	$ 200
- Other operating expenses	$ 200
Operating income	$ 300
- Interest expenses	$ 50
Taxable income	$ 250
- Taxes paid	$ 100

Net Income $ 150

You are also given the following information:

- The firm invested $ 180 million in property, plant and equipment in 2009.
- The firm's R&D generally takes an average of 4 years to pay off; its R&D expenses were $40 million in 2005, $80 million in 2006, $ 120 million in 2007 and $ 160 million in 2008.
- Total working capital (including cash) increased by $ 10 million last year but the cash balance decreased by $ 20 million. The firm has no short-term debt.

Estimate the free cash flow to the firm in 2009. (3 points)

Fall 2011 Name:

Quiz 1: Valuation

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

1. Ulysses Inc., a publicly traded toy manufacturing company, is considering investing in a 5-year joint venture with Lowie Inc, a movie company, to produce animated movies. You have been provided with the following information on the cost of equity and capital of the two companies:

	Ulysses Inc.	Lowie Inc.
Cost of equity	9%	12%
Cost of capital	7.50%	10%

The following are the projected cash flows for Ulysses' share of the joint venture:

	Time period (years)					
	0	1	2	3	4	5
Revenues		\$100	\$110	\$125	\$140	\$160
- COGS (includes depreciation)		\$40	\$44	\$50	\$56	\$64
Operating income		\$60	\$66	\$75	\$84	\$96
- Taxes		\$18	\$20	\$23	\$25	\$29
After-tax operating income		\$42	\$46	\$53	\$59	\$67
- (Cap ex – Depreciation)	\$80	\$0	\$0	\$0	\$0	\$0
- Change in working capital		\$5	\$5	\$5	\$5	\$5
Cash flow	-\$80	\$37	\$41	\$48	\$54	\$62

Estimate the value of the joint venture to Ulysses. (Provide your rationale for the discount rate that you use) (3 points)

2. Lucas Media is a company that is incorporated in Brazil but it operates in three countries: Brazil, the United States and Portugal. You have information on the three countries (and what the average company generates in revenues in that country):

Country	10-year government bond rate	Sovereign Rating	Sovereign default spread	Standard deviation of equity index	Standard deviation of gov't bond	Average company: % of revenues
Brazil	8% (in Reais)	Baa1	1.50%	25%	20%	80%
US	2% (in US \$)	Aaa	0%	20%	15%	75%
Portugal	7.5% (in Euros)	Caa	6.00%	30%	20%	60%

The implied equity risk premium for the US is 7% but cannot be computed for Brazil and Portugal. The firm is in two businesses: movies and TV broadcasting, with details below (EV: Enterprise value):

Business	Revenues in country (millions)			Global sector average	
	Brazil	US	Portugal	Unlevered Beta	EV/Sales ratio
Movies	\$2.00	\$1.40	\$0.60	1.2	1.00
TV Broadcasting	\$0.50	\$0.10	\$0.40	0.9	3.00

If the firm has no debt outstanding, estimate the **cost of equity for the firm in nominal Brazilian Reais for its Portuguese operations**. (4 points)

3. You have been asked to review the numbers for TalkTones, a social media company that is planning to go public. The company reported the following revenues and operating income (in millions):

	Most recent	1 year ago	2 years ago	3 years ago
Revenues	$1,000	$700	$400	$200
Pre-tax Operating Income	-$200	-$300	-$200	-$100

The cost of acquiring new customers accounted for half of all operating expenses in each of the period and the company offers strong evidence that acquired customers stay on as customers for three years. If you capitalize customer acquisition costs and the corporate tax rate is 40%, estimate the corrected pre-tax operating income for the company for the most recent year. (3 points)

Fall 2012 Name:

Quiz 1: Valuation

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

1. Stabler Inc. is a US steel company that is interested in acquiring Sosa Inc., a stable-growth Mexican steel company. Sosa is expected to generate 1 billion pesos in cashflows to equity next year and the cash flows are expected to grow 5% a year (in nominal peso terms) in perpetuity. You don't have a cost of equity for Sosa, but the cost of equity for Stabler, for its US operations, is 9.2% (in US dollar terms). You have the following additional information:
   a. The expected inflation rate in pesos is 5% and the inflation rate in US dollars is 1%.
   b. The riskfree rate in US dollars is 2%, the equity risk premium in the US is 6% and the additional country equity risk premium for Mexico is 3%.
   c. You can assume that steel companies globally share the same beta.

   Estimate the value of equity in Sosa. (3 points)

2. You are analyzing Lester Enterprises, an unlevered company operating in two businesses (computer software and electronics) and in two countries (the United States and Brazil). You have collected the following information on revenues (in US dollar terms) generated by business in the countries that Lester operates in.

	US	Brazil
Software	$800	$200
Electronics	$400	$600

   The unlevered beta for the software business is 1.20 and the unlevered beta for the electronics business is 0.90, both based upon global samples of comparable firms. The US T Bond rate is 2%, the Brazilian nominal Reai ($R) rate is 12% and the Brazilian US $ denominated bond rate is 3.5%. You can assume that the default risk in the reai denominated bond is the same as in the Brazilian US $ bond. The standard deviation of Brazilian equities is 25% and the standard deviation of the Brazilian government bond is 15%. The equity risk premium for mature markets (like the US) is 6%.
   a. Estimate a dollar cost of equity for Lester's software business. (2 points)
   b. Estimate a nominal Reai ($R) cost of equity for Lester's Brazilian businesses (2 points)

3. You have been asked to review the free cash flow to the firm computation made by an analyst for Stark Stores Inc., a small publicly traded retail company.

Analyst's computation

	Last year (in millions)	Notes
Revenue	$1,200.00	
- Operating Expenses	$600.00	Includes $ 100 million in operating lease expenses. The firm has $ 80 million in lease commitments each year for the next 5 years and a pre-tax cost of debt of 5%.

Operating Income	$600.00	
- Interest Expenses	$150.00	
Taxable Income	$450.00	
- Taxes	$157.50	Paid marginal tax rate on taxable income
Net Income	$292.50	
+ Depreciation	$100.00	
- Cap Ex	$200.00	Did not include stock based acquisition of $50 million.
- Increase in Working Capital	$50.00	Includes an increase in the cash balance of $ 10 million
Free cash flow to firm	$142.50	

Estimate the correct free cash flow to the firm. (3 points)

Fall 2013 Name:

Quiz 1: Valuation

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

1. You are reviewing the valuation of Ramos Inc., a publicly traded Chilean company. The analyst claims to have done the valuation in US dollar terms, discounting the expected cash flows in US dollars at a US dollar cost of capital of 12% to arrive at a value of $1.2 billion. As you review the valuaton, though, you believe that the analyst has estimated the expected cash flow and cost of capital correctly in US dollars but she has assumed a constant US dollar price (no inflation) after that and a real growth rate of 2%. The ten-year US T.Bond rate is 2.75%% and the US TIPs (Inflation indexed bond) rate is 1.25%. Estimate the correct value for Ramos Inc. today. (3 points)
2. Nexus Inc., a US-based corporation, is in the steel and technology businesses, with US and Latin American operations (composed of Brazil and Argentina). The company has provided you information on the revenues (in millions of US dollars) in the most recent year from different businesses and regions (with the unlevered beta of the businesses in the last column):

	US	Brazil	Argentina	Unlevered Beta
Steel	$500	$400	$200	0.90
Technology	$2,000	$600	$300	1.50

You have collected information on government bond rates in US, Argentina and Brazil and they are reported below:

	US	Brazil	Argentina
In US$	2.75%	4.00%	8.75%
In local currency	2.75%	11.00%	20.00%

You can also assume that equities are 1.5 times more risky than government bonds in both Brazil and Argentina and that their local currency ratings match their foreign currency ratings. You can assume an equity risk premium for mature markets (like the US) of 5.75% and that Nexus is all equity funded.

a. Assume that Nexus plans to sell its Latin American operations and wants a US dollar cost of equity for just these operations. What total equity risk premium would you use in this computation? (2 points)

b. What beta would you use in your US dollar cost of equity computation for just the Latin American operations? (1 point)

c. What is your estimate of the US$ cost of equity for the Latin American operations of Nexus? (1 point)

3. You are trying to estimate the free cash flow to the firm for Wadhwa Inc. and are looking at its most recent financial filings: the annual report for the last fiscal year and its most recent quarterly report for the first three quarters of the current year.

	Last fiscal year (2012)	3rd Qtr, 2013	3rd Qtr, 2012	First 3 Qtrs, 2013	First 3 Qtrs, 2012
Revenues	$1,200	$400	$325	$1,100	$850
EBITDA	$400	$120	$95	$350	$300

Depr & Amort (DA)	$100	$30	$25	$90	$75
EBIT	$300	$90	$70	$260	$225
Interest expenses	$75	$25	$15	$70	$55
Taxable Income	$225	$65	$55	$190	$170
Taxes	$68	$26	$22	$57	$51
Net Income	$158	$39	$33	$133	$119
Cap Ex	$150	$45	$35	$130	$110
Non---cash WC (End of period)	$70	$80	$100	$80	$100

Estimate the free cash flow to the firm over the most recent twelve months. (3 points)

Fall 2014 Name:

Quiz 1: Valuation

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

1. Gios Inc. is a German infrastructure company, specializing in building toll roads across Germany. It is considering building a toll road in India.

- The investment is expected to generate net income of 150 million Rupees next year, growing at 4% a year (in rupee terms), in perpetuity. Once the toll road has been built, there will be no need for additional capital expenditures or working capital investments, but all depreciation will have to be reinvested back in the road to maintain it in working condition.
- Gios has a beta of one, a cost of equity of 8% and a cost of capital of 6.5%, in Euro terms. The country risk premium for India is 3% (in Euro terms) and the expected inflation rate in India is 5%; the expected inflation rate in the Euro is 1%. Estimate the most in equity that Gios should be willing to invest in building the toll road. (3 points)

2. You have been given the task of estimating the cost of capital for a Valdez Inc., a Colombia-based company that operates in two businesses – food processing and grocery retail- and in two countries – the United States and Colombia. The estimated values of the businesses is broken down in the table below (with the values in millions of US dollars):

	Colombia	**US**	*Unlevered Beta for business*
Food Processing (Value of business)	$ 1,000	$0	*0.90*
Groceries (Value of Business)	$ 500	$1,000	*0.60*
Government Bond rate (in US $)	*4.00%*	*2.50%*	
Government Bond rate (in Pesos)	*6.00%*	*NA*	
Marginal tax rate	*25.00%*	*40%*	

The company has $500 million in debt, all in its US operations, but is unrated> you have estimated a synthetic rating of BBB, based on its interest coverage ratio; the default spread for US companies with that rating is 1.25%. (You can assume that the company is fairly priced and has no cash. You can also assume that Colombia equities are twice as risky as the Colombian Government bond. You can use any reasonable estimate for the mature market ERP.)

a. Estimate the (levered) beta that you would use for Valdez Inc. (2 points)

b. Estimate the cost of equity in US dollars. (2 points)

c. Estimate the after-tax cost of debt in US dollars. (1 point)

3. The following multiple-choice questions all relate to cash flow or growth rate estimation (Each one is worth ½ point. Please pick only one answer.)
   a. Yuma Inc. is a company with a history of losing money and has a net operating loss carried forward of $400 million. It expects to generate $1 billion in taxable income next year and the marginal tax rate is 40%. How much will the company pay in taxes next year?
      i. $160 million
      ii. $240 million
      iii. $400 million
      iv. None of the above
   b. Siago Pharmaceuticals is a mature company that has seen its R&D expenses decrease from $400 million five years ago to $200 million in the most recent year. The company reported operating income of $500 million in the most recent year. If you capitalize R&D expenses, which of the following would you expect to see happen to your adjusted numbers?
      i. Operating income will increase, FCFF will decrease
      ii. Operating income will decrease, FCFF will decrease
      iii. Operating income will increase, no change in FCFF
      iv. Operating income will decrease, no change in FCFF
      v. Operating income will increase, FCFF will increase
      vi. Operating income will decrease, FCFF will increase
   c. Civitas Inc. is a manufacturing company. Last year, the company generated $80 million in EBITDA and reported $20 million in depreciation and amortization. The company also had $50 million in capital expenditures and reported that non-cash working capital increased from $15 to $25 million. If the tax rate is 25%, what is the reinvestment rate for the company?
      i. 50%
      ii. 66.67%
      iii. 75.00%
      iv. 88.89%
      v. 133.33%
   d. Exim Inc. reported a return on capital of 12% on its existing assets and a reinvestment rate of 60% in the most recent year. It expects to improve its return on capital to 15% next year on both its existing and new investments, while maintaining its existing reinvestment rate. What will the expected growth rate be next year?
      i. 7.2%
      ii. 9.0%
      iii. 29.0%
      iv. 32.2%
      v. 34.0%

Spring 2015 Name:

Quiz 1: Valuation

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

1. Romero Inc. is a Brazil-based publicly traded company in the chemical business that is considering buying a Dietz Inc, a privately held German chemical company. You have been provided with the following expected cash flow for next year, in Euros, for Dietz:

	Most recent year	*Next year*
Revenues	1,000.0€	1,015.0€
Operating Income after taxes	200.0€	203.0€
--- Reinvestment	80.0€	81.2€
FCFF	120.0€	121.8€

You have also been told that Dietz gets all of its revenues in Germany and that the expected growth rate in this cash flow is 1.5% (in Euro terms) in perpetuity. While you don't have a cost of capital for Dietz, you do know that neither Romero nor Dietz has any debt and that Romero's cost of equity, in nominal $R (Brazilian Reais) terms, is 20%. The expected inflation rate is 8% in nominal $R and 1% in Euros and the country risk premium for Brazil is 3%; Germany has no country risk. Estimate the value of Dietz. (3 points)

2. Slavic Air is an East European airline that is growing rapidly and you have been asked to compute its cost of capital. The company derives its revenues in three countries and has two businesses: passenger and freight traffic. The breakdown of revenues in the most recent year is in the table below, with information about government bond rates in the three countries.

	Currency	*Govt Bond Rate (in local currency)*	*Govt Bond Rate (in Euros)*	*Passenger Revenues (in millions)*	*Freight Revenues (in millions)*
Poland	Zloty	6.00%	2.25%	PLN 500.00	PLN 250.00
Hungary	Forint	5.00%	2.50%	PLN 250.00	PLN 250.00
Germany	Euros	1.00%	1.00%	PLN 250.00	PLN 500.00

While value is proportional to revenues in both businesses, the passenger traffic business is more risky, with an unlevered beta of 1.25, than the freight traffic business, with an unlevered beta of 0.75. Slavic has a market capitalization of $1 billion, debt outstanding of $500 million and faces a marginal tax rate of 25%.

a. Estimate the levered beta for Slavic Air. (1 point)

b. Estimate the cost of equity in Euros for Slavic Air. (The mature market equity risk premium is 6% and Germany is a mature market with a Aaa rating. You can assume that equity is 1.5 times more volatile than government bonds in both Poland and Hungary) (2 points)

c. Estimate the after-tax cost of debt (in euros) for Slavic Air. You don't have a bond rating for Slavic Air but you have computed a synthetic rating of Baa3 for the company, with a default spread of 2%. (1 point)

3. Taco Shell Inc. is a restaurant with operating lease commitments of $30 million a year for the next 8 years. It has a cost of capital of 8%, a cost of equity of 10%, a pre-tax cost of debt of 4% and an after-tax cost of debt of 2.5%. Which of the following is the debt value of operating leases? (1 point)
   i. $ 160.05 million
   ii. $ 172.40 million
   iii. $ 201.98 million
   iv. $ 215.10 million
   v. $ 240.00 million

4. TeleMedia is a technology firm that reported an operating loss of $15 million in the most recent year (just ended), after R&D expenses of $100 million. If R&D has a 3-year life and the company's R&D expenses in the last three years have been $30 million (3 years ago), $ 60 million (2 years ago) and $90 million (last year) respectively, what is the "corrected" operating income that TeleMedia would have reported if R&D had been capitalized? (2 points)

Quiz 1: Valuation

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

1. Jenway, a publicly traded entertainment company is considering an acquisition of MZ Enterprises, a technology company. MZ Enterprises is a mature company and you have been provided the following estimate for expected cash flows next year for the company:

	MZ Enterprises - Next year (in millions)
Taxable Income	$350
- Taxes	$105
+ Depreciation	$105
- Cap Ex	$130
+ Debt Issued	$130
- Debt Repaid	$100
Cash Flow	$250

The table below gives costs of equity and capital for Jenway, MZ Enterprises and the combined company:

	Jenway	MZ Enterprises	Merged firm
Cost of equity	8.00%	10.00%	8.75%
Cost of capital	7.00%	8.50%	7.50%

Estimate how much value you would attach to the expected cash flows in the table, if you expect them to grow 2.0% a year forever. (2 points)

2. Caraway Corp. is an all equity funded, UK-based retail company with substantial European operations, with the following revenue breakdown for the most recent year, with key numbers for its two European markets as well.

Country	*Revenues (in millions of GBP)*	*Sovereign Default Spread*	*Govt Bond rate in local currency*	*Relative Equity Market Volatility*[b]
UK	600	0.75%	2.00% (GBP)	NA
Germany	200	0.00%	0.50% (Euros)	2.00
Turkey	300	4.00%	8.50% (Liras)	1.25

Caraway is considering spinning of its non-UK operations (Germany & Turkey) into a separate entity and has asked you to estimate the cost of equity for those operations in Turkish Lira. (You can assume a mature market premium of 6%, that Germany is a mature market and that the unlevered beta for retail companies is 1.20. You can also assume that Turkey's local currency default risk = foreign currency default risk.) (3 points)

3. Golem Inc. is a social media company that generates revenues from two businesses, advertising and entertainment. The revenue breakdown and the data on comparable firms is provided below:

		Comparable Firms	
Business	Fair Value of Business (in millions)	Levered Beta	D/E Ratio
Advertising	$600	1.20	0.00%
Entertainment	$1400	1.04	50.00%

If the marginal tax rate for all firms is 40%, Golem has $500 million in debt outstanding and the company is trading at it's fair value, estimate the levered beta for the company. (You can assume that the cash balance is negligible.) (2.5 points)

4. You have been asked to compute the effect of capitalizing recruiting and training expenses at a consulting firm. You are told that the company generated $20 million in pre-tax operating income in the most recent year, after $30 million in recruiting and training expenses. Employees stay with the firm, on average, for 3 years and you are given the following information on recruiting and training expenses for the last three years (prior to the most recent year).

Year	*Recruiting and training expenses*
-1	$24 million
-2	$18 million
-3	$12 million

   a. Assuming that you capitalize recruiting and training expenses, estimate the corrected pre-tax operating income this year. (1.5 points)

   b. If you capitalize recruiting and training expenses, what effect will it have on your free cash flow to the firm for this year? (1 point)
      a. It will increase free cash flow to the firm
      b. It will decrease free cash flow to the firm
      c. It will leave free cash flow to the firm unchanged
      d. Any of the above