

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:

	<i>Mexico</i>	<i>United States</i>
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 in Mexican pesos. (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:

<i>Loan Type</i>	<i>Face Value</i>	<i>Interest Rate</i>	<i>Remaining Maturity</i>
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 been on the books for at least a year. 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:

<i>If interest coverage ratio is</i>			
<i>></i>	<i>≤ to</i>	<i>Rating is</i>	<i>Spread is</i>
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...)
- 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?
 - There will be no effect on earnings.
 - The reported earnings for all these firms will increase
 - The reported earnings for all these firms will decrease
 - The reported earnings will increase for firms that have seen R&D expenses increase over time
 - The reported earnings will increase for firms that have seen R&D expenses decrease over time.
 - 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?
 - The book value of assets and the book value of debt will increase
 - The book value of assets and the book value of equity will increase
 - The book value of assets and the book value of debt will decrease
 - The book value of assets and the book value of equity will decrease
 - 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

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)

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)

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)

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 valuation, 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)

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	<i>Unlevered Beta for business</i>
Food Processing (Value of business)	\$ 1,000	\$0	0.90
Groceries (Value of Business)	\$ 500	\$1,000	0.60
<i>Government Bond rate (in US \$)</i>	4.00%	2.50%	
<i>Government Bond rate (in Pesos)</i>	6.00%	NA	
<i>Marginal tax rate</i>	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 $\frac{1}{2}$ 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%

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:

	<i>Most recent year</i>	<i>Next year</i>
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.

	<i>Currency</i>	<i>Govt Bond Rate (in local currency)</i>	<i>Govt Bond Rate (in Euros)</i>	<i>Passenger Revenues (in millions)</i>	<i>Freight Revenues (in millions)</i>
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)