

Solution to Quiz

<b>Fall 1998</b>									
<b>Problem 1</b>									
Dividends on Index = 3% of 1050 = 31.50									
Value = 1050 = 31.50 (1.06)/(r-.06)									
Solving for r,									
r = 9.18%									
Implied Risk Premium = 9.18% - 6.5% = 2.68%									
If you assumed that the dividend yield was based on next year's dividends,									
Value = 1050 = 31.50/(r-.06)									
Solving for r,									
r = 9.00%									
Implied Risk Premium = 9% - 6.5% = 2.5%									
This answer can also be obtained by adding the dividend yield to expected growth									
and subtracting out the risk free rate									
[This is how we got cost of equity for Southwestern Bell in the notes.]									
<b>Problem 2</b>									
Net Income	\$ 100.00	(1000 * .10 = Normal Net Income)							
- (Net Cap Ex	\$ 10.50	(Capital Expenditures: \$ 80 mil; Depreciation = \$ 60(1.1) = \$ 66; D/(D+E) = 500/(500+1500))							
- Chg in WC *	\$ 15.75	(WC this year = .10 * 1500 = 150; WC next year = .095 * 1800 = 171; Chg in WC = 21)							
= FCFE	\$ 73.75								
<b>Problem 3</b>									
Expected Growth Rate in Operating Income = 10%(.5) =						5%			
Expected FCFF next year									
EBIT (1-t)	\$ 105.00								
Reinvestment	\$ 52.50								
FCFF	\$ 52.50								
<b>Spring 1998: Quiz 1</b>									
<b>Problem 1</b>									
Note that the value of a firm is the Cash flow discounted back at a discount rate.									
For investors who are not diversified (REITs, Venture cap funds), the discount rate will always be lower than it is for									
investors who are not diversified (Specialized venture capitalists, private real estate investors). For the latter to have									
more value, then, they have to have the capacity to generate higher cash flows than the diversified investor. For specialized									
venture capit_lists this may come from knowing a particular sector well, having localized information on that sector and									
providing management expertise to firms in that sector. Similarly, for real estate investors, it may come from knowing the									
local real estate market well.									
<i>A. Firms where information about the firm is easily available to all,</i>									
<i>and which have good management in place</i>									
Specialized investors gain an advantage through their access to private and localized									

Solution to Quiz

information and by providing management support to the companies that they provide capital to.						
While firms which require more capital may seem like a logical choice, note that this will have to come at the expense of diversification.						
<i>B. Real estate value is being driven less by localized information and more by market forces.</i>						
The question that has to be addressed here is the change over the last decade. While it is true that investors want to be want to be diversified in real estate, why would that need be greater today than it was 10 years ago? (REITs have been around for 25 years.) REITs have tax advantages over corporations but not over individual real estate investors, since the income flows through, because of the dividend payment restriction, to the investors in these firms, who get taxed at their individual tax rates anyway.						
<b>Problem 2</b>						
<i>Sector</i>	<i>Beta</i>	<i>D/E Ratio</i>	<i>Unlevered Beta</i>			
Steel	1.18	30%	1			
Financial Serv	1.14	70%	0.8028169			
Unlevered Beta for the company = $0.7(1) + 0.3(.8) = 0.94$						
Levered Beta for the company = $0.94(1 + (1-.3)(1.5)) =$				<b>1.93</b>		
Cost of Equity for the Company = $12\% + 1.93(5.5\% + 2\%) =$				<b>26.48%</b>		
<b>Problem 3</b>						
Expected Operating Income next year = $235 * 1.10 =$				258.5		
- Reinvestment Needed = $.40 * 258.5 =$				103.4		
FCFF next year =				<b>155.1</b>		
Return on Capital = $235/940 = 25\%$						
Expected Growth Rate = Reinvestment Rate * Return on Capital						
$10\% = \text{Reinvestment Rate} * 25\%$						
Reinvestment Rate = $10\%/25\% = 0.40$						
<b>Fall 1998: Quiz 1</b>						
<b>Problem 1</b>						
Spread Based on Bond Rating =		3%				
Equity SD/ Indonesian Bond SD		4				
Country Risk Premium =		12%				
Beta for the firm		0.75				
Lambda (for country risk) =		0.25		(Proportion from non-dollar sources for paperfirm =	0.2	
				Proportion from non-dollar sources for average firm =	0.8	
				Exposure to country risk = $0.20/0.80 = 25\%$		

Solution to Quiz

Cost of Equity for Firm = $15\% + 0.75 (5.5\%) + 0.25 (12\%) =$	<b>22.125%</b>							
<b>Problem 2</b>								
Unlevered Beta for Entertainment	1.42							
Beta for Cash =	0							
Beta for InfoSoft = $1.41 (0.8)$	1.13				I also gave full credit if you used a net debt ratio of -20%, leading to a beta of 1.25.			
<b>Problem 3</b>								
Year	1	2	3	4				
Expected Growth	12%	10%	8%	6%				
EPS	\$ 2.24	\$ 2.46	\$ 2.66	\$ 2.82				
- (Cap Ex - Depreciation)	\$ 0.90	\$ 0.75	\$ 0.60	\$ 0.45				
- Change in Working Capital	\$ 0.36	\$ 0.34	\$ 0.30	\$ 0.24	(WC numbers slightly different: rounding error)			
FCFE	\$ 0.98	\$ 1.38	\$ 1.77	\$ 2.13				
Terminal Price			\$ 47.36		(Terminal Price = $\$2.13 / (.105 - .06) = \$47.36$ )			
Present Value	\$ 0.87	\$ 1.08	\$ 34.83					
Value Per Share	\$ 36.78	[Value = $\$0.98 / 1.1325 + \$1.38 / (1.1325 * 1.1215) + (\$1.77 + \$47.36) / (1.1325 * 1.1215 * 1.1105)$ ]						
<i>This is how I got the numbers for each year:</i>								
Cap Ex - Depreciation	1.2	1	0.8	0.6				
Change in Working Capital	\$ 0.48	\$ 0.45	\$ 0.39	\$ 0.32				
Revenues per share	\$ 22.40	\$ 24.64	\$ 26.61	\$ 28.21				
Beta	1.5	1.3	1.1	1				
Cost of Equity	13.25%	12.15%	11.05%	10.50%				
<b>Spring 1999</b>								
<b>Problem 1</b>								
Unlevered Beta = $(0.60) (1.25) + 0.25 (0.8) + 0.15 (0) =$					0.95			
Levered Beta = $0.95 (1 + (1-.3)(1.5)) =$					1.9475			
Country risk premium for Indonesia = $3\% (3.0) =$					9%			
Cost of Equity = $5\% + 1.95 (6\% + 9\%) =$					0.3425			
<b>Problem 2</b>								
EBIT = Net Income + Interest Expenses = $-50 + 100 =$					\$ 50.00	! No taxes since firm is losing money		
Capital expenditures = $100 * 2 =$					\$ 200.00			
FCFF = $50 - (200 - 100) =$					\$ (50.00)			
<b>Problem 3</b>								
Return on Equity = $25 / 125 =$					20%			

Solution to Quiz

Retention Ratio = $20/25 =$		80%	! Note that book value of equity increased by \$ 20 million and firm had net income of 25 million
Expected Growth in EPS = $0.8 * 20\% =$		16%	
<b>Spring 2000</b>			
	<i>Riskfree Rate</i>	<i>Beta</i>	<i>Risk Premium</i>
Soft-drink: US	6.50%	0.7	6%
Soft-drink: Mexic	6.50%	0.7	13.60%
Consumer Produ	6.50%	0.9	6%
Consumer Produ	6.50%	0.9	13.60%
a. Operating Income from soft drinks: $0.6*1.5 + 0.5*1 = 1.4$			
Operating Income from consumer products = $0.4*1.5+0.5*1 = 1.1$			
Unlevered beta for the firm = $0.7(1.4/2.5) + 0.9 (1.1/2.5) =$		0.788	
b. Beta for US operations = $0.6*.7+0.4*.9 =$		0.78	! Business mix is different in two
Cost of equity for US operations = $6.5\% + 0.78 (6\%)$		11.18%	countries
c. Beta for Mexican operations = $0.5*.7+0.5*.9=$		0.8	
Cost of equity for Mexican operations = $6.5\% + 0.8(6\% + 2*3.8\%) =$		17.38%	
<b>Problem 2</b>			
<i>If we assume that amortization is not tax deductible</i>			
EBIT + EBITDA - Depreciation = $500 - 80 = 420$			
EBIT (1 - tax rate) =		252	
Capital Expenditures = Cap Ex + Acquisitions = $120 + 150$			
EBIT (1-t)		252	
- Net Cap Ex = $270 - 80 =$		190	! If you do not subtract out amortization to get to
- Chg in Working Capital =		50	do not add it back. If you get this answer, and this
FCFF		12	you ignored amortization, let me know and I will giv
<i>If we assume that amortization is tax deductible</i>			
EBIT = EBITDA - Depreciation - Amortization = $500 - 80 - 40 =$		380	
EBIT (1 - tax rate) =		228	
Capital Expenditures = Cap Ex + Acquisitions = $120 + 150 =$		270	
FCFF			
EBIT (1-t) =		228	
- Net Cap Ex = $270 - 120 =$		150	

Solution to Quiz

- Chg in Working Capital =	50					
FCFF	28					
<b>Problem 3</b>						
Return on Equity = $150/1200 =$	12.50%					
Retention Ratio = $1-(60+15)/150 =$	50.00%					
a. Expected Growth Rate = $.125*.5 =$	6.25%					
b. If ROE increases to 15%,						
Expected growth = $.5*15%+ (.15-.125)/.125 =$	27.50%					
<b>Spring 2001</b>						
<b>Problem 1</b>						
a. Implied Equity Risk Premium						
Expected dividend next year = $.05 (800) (1.10) =$	44					
$800 = 44 / (r - .10)$						
Solving for r,						
r =	15.50%					
Implied risk premium =	6.50%	! 15.5% - 9%				
b. Unlevered beta for retailers = $1.20/(1 + (1-.4) (.45)) =$						
				0.94488189		
Debt to Equity Ratio for Baklak Stores =				0.25		
Levered beta = $0.94 (1 + (1-.4) (.25)) =$				1.08661417		
Cost of Equity = $9% + 1.09 (6.5%) =$				16.09%		
c. Cost of capital = $16.09% (2400/3000) + 11% (1-.4) (600/3000) =$						
				14.19%		
<b>Problem 2</b>						
a. PV of Operating leases =	\$335.50					
Adjusted Operating Income =	\$176.84	! Added .08*335.50 as imputed in				
Adjusted Return on capital =	12.70%					
b. Reinvestment rate =						
		78.74%	! Growth rate/ ROC			
Expected cash flow next year:						
EBIT (1-t)	\$116.71	! $176.84 *(1-.4)*1.10$				
- Reinvestment =	\$91.90	! Reinvestment rate * EBIT (1-t)				
FCFF	\$24.81					