AirThread Case - Group 5

1. ***Using the projections given in the case Exhibit 1, compute the forecasted (unlevered) operating free cash flows for the years 2008-2012 (in millions)***

	2008	2009	2010	2011	2012	
Total Revenue	4,509.1	5,140.4	5,782.9	6,361.2	6,806.5	
Total Expenses	1,594.3	1,817.5	2,044.7	2,249.2	2,406.6	
Gross Profit	2,914.8	3,322.9	3,738.2	4,112.0	4,399.9	
EBITDA	1,111.1	1,266.7	1,425.0	1,567.5	1,677.3	
EBIT	405.9	462.7	557.6	645.2	724.4	
Taxes	162.3644327	185.0954533	223.0395247	258.0659123	289.7435316	
NOPAT	243.5	277.6	334.6	387.1	434.6	
Change in Working Capital	0	0	0	0	0	**Total (Millions):**
Unlevered Free Cash Flow (UFCF)	317.5	362.0	334.6	339.4	332.5	**1,685.9**

2. ***Using the comparable companies in Exhibit 7, estimate an unlevered cost of capital for Airthreads Operating Free cash Flows***

AirThread is most comparable to Rocky Mountain Wireless give key financial metrics such as EBIT, EBITDA, and total revenue. Therefore, we will utilize Rocky Mountain Wireless' equity beta of 1.13 in the calculation of unlevered cost of capital, which with a 3% risk free rate of return at 5% market premium (based on the case's recommendation) is calculated to be 9%.

Risk-Free Rate	3%
Market Risk Premium	5%
Beta Equity	1.13
Unlevered Cost of Capital	**9%**

3. ***Compute the present value of free cash flows and present value of the tax shields from debt financing for the intermediate period, 2008, 2012. For the tax shields, use the debt repayment schedule provided in Exhibit 6***

	2008	2009	2010	2011	2012	
	0.0	1.0	2.0	3.0	4.0	
Total Revenue	4,509.1	5,140.4	5,782.9	6,361.2	6,806.5	
Total Expenses	1,594.3	1,817.5	2,044.7	2,249.2	2,406.6	
Gross Profit	2,914.8	3,322.9	3,738.2	4,112.0	4,399.9	
EBITDA	1,111.1	1,266.7	1,425.0	1,567.5	1,677.3	
EBIT	405.9	462.7	557.6	645.2	724.4	
Taxes	162.3644327	185.0954533	223.0395247	258.0659123	289.7435316	
NOPAT	243.5	277.6	334.6	387.1	434.6	
Change in Working Capital	0	0	0	0	0	
Unlevered Free Cash Flow (UFCF)	317.5	362.0	334.6	339.4	332.5	
Total Interest Expense	199	183	166	148	128	
Tax Rate	40%	40%	40%	40%	40%	
Tax Shield	79.6	73.2	66.4	59.2	51.2	
Unlevered Cost of Capital	9%	9%	9%	9%	9%	**Total (Millions):**
PV (Tax Shields)	79.6	67.1559633	55.88755155	45.71326202	36.27137081	**284.6281477**
PV (UFCF)	317.5015026	332.0657917	281.5918585	262.0711482	235.5639616	**1428.794263**

4. ***Assume that after paying off the principal on the loan due at the end of 2012, AirThread will set its capital structure to its long-run target leverage ratio (D/V) and keep this leverage ratio constant in perpetuity***
    a. ***Using the comparable company data in Exhibit 7, determine a long-run target leverage ratio (D/V) that is consistent with the comparable companies***

Using a combination of comparable companies (Figure 4.1) we determine that a suitable long term leverage ratio (Debt / Value) is 27.02%. We used Rocky Mountain Wireless and Big Country Communications to represent the majority of our weights, but included small weights on others to better represent the financial performance metrics of AirThread.

    b. ***Compute a WACC for 2013 and beyond***

Using the weights from part a we determined that an appropriate WACC would be 7.2%, based on the 27.02% D/V ratio. We used 5.5% for the cost of debt, 8.7% as the unlevered cost of capital, along with the forecasted 40% tax rate. (Figure 4.2)

c. Make an assumption on the perpetuity growth rate for FCF

We chose 1.54% for our long term growth rate; by comparing both the long term growth rate of the long term economy and the growth of the Free Cash Flow and choosing the lower of the two. (Figure 4.3)

d. Compare the PV of Operating FCF and tax shields for the intermediary period and the terminal period. What fraction of your total value is from the terminal period? How important is the terminal growth rate assumption to your valuation?

When comparing the intermediate and terminal values of the free cash flows and tax shields, we saw that in both cases the majority of the value in the terminal values are greater than the intermediate period. (Figure 4.4) The present value of the free cash flows in the terminal value are $2,685 greater than those in the intermediate period. Similarly, the terminal values of the taxshields are $207.4 greater than the intermediate period.

e. After paying off its original loan in 2012, what is the dollar amount of debt that Airthread should issue to be at suggested target ratio

Using the target leverage ratio of 27.2% calculated earlier (Figure 4.1),we determined that the terminal value of operations is $6,648.5M and that Airthread's total debt to be issued should be $1,796.5 (Figure 4.5).

5. What is the total value of Airthread Operations, including tax shields as of the end of 2007, that you have computed?

With the present value Airthread operations at the end of 2007 is $5400 Million, and the Present Value of the Tax Shield at $752M, with both the terminal and 2008-2012 discounted tax shields, the total value of Airthread operations is estimated to be $6.1Billion dollars.

1	Total Value of AirThread Operations		$M	Source
		PV (Operations)	$5,400.0	DCF Tab
		Pv (TS)	$752.7	DCF Tab
		Total Value	**$6,152.7**	Sum

The key assumptions in this valuation that is driving this value is the use of forecasted FCF terminal growth rate instead of the US GDP as the terminal growth rate value, as the current forecast has a lower FCF terminal growth rate of 1.54%. Were the US GDP growth rate of 2% used, this would lower the PV of operations forecasted value.

Second, the unlevered cost of capital at 7.24% uses an equity beta calculation 0.85, derived by the average from comparable telecommunications companies. At 0.85 assigns a value which assumes AirThread's equity is less volatile than the overall market. This assumption is highly dependent on the comparables truly being like for like. If for example AirThread proves to be in the future a more volatile stock, as it has smaller product and geographic reach compared to the comparables used to calculate the average market equity beta, then this could be potentially understating the equity beta needed for this calculation.

Finally, the FCF in exhibit 1 is accurate is a key assumption for growth that the discounting is based on. If the future FCF is not met due to sales misses, additional costs to retain clients, etc. or other constraints in the market, then FCF may be overstated.

6. ***Compute the market leverage ratio, D/V, at the end of each year for 2007-2012. For V you can ignore the other assets and assume zero cash as we've done so far.***

By using the same terminal growth rate, ending D/V (27%) and firm valuation identified in the firm's DCF valuation, we can approximate the annual D/V:

Growth Rate Assumption	1.54%	<-- Same terminal growth rate used for DCF valuation				
	2007	**2008**	**2009**	**2010**	**2011**	**2012**
"Base" Debt	1,002.3	1,002.3	1,002.3	1,002.3	1,002.3	1,002.3
Remaining Balance	0	3468	3161	2838	2496	794.2
Total Debt	1,002.3	4,470.3	4,163.3	3,840.3	3,498.3	1796.5
Value	$6,152.7	$6,247.50	$6,343.74	$6,441.46	$6,540.69	$6,641.45
D/V	**16%**	**72%**	**66%**	**60%**	**53%**	**27%**
Notes	Debt at EY2007 Estimated value of AirThreads operations as of 2007	Addition of acquisition debt	No additional debt taken on	No additional debt taken on	No additional debt taken on	Bullet payment made at the end of year 5, per the case (pg. 8) but some debt retained to hit "target" debt ratio

7. ***Compute the free cash flows to equity holders at the end of each year, 2007-2012. For 2012, do this calculation for before the new bond (in question 4) is issued. (In other words, you can ignore the new debt issued in question 4 for the purposes of this calculation). Based on your forecasted free cash flow to equity holders, do you think the proposed amount of debt to be issued in 2007 is sustainable? Explain.***

The free cash flow to equity holders is shown below:

	2005	2006	2007	2008	2009	2010	2011	2012
Free Cash Flow to Equity								
Unlevered Free Cash Flow				$310.60	$358.65	$331.20	$336.36	$330.19
-Post Tax interest	$50.92	$56.20	$50.81	$119.66	$109.85	$99.48	$88.53	$76.96
+ Net Change in Debt		$0.00	$1,002.29	$2,465.33	-$306.28	-$323.55	-$341.80	-$2,495.99
FCFE				**$2,656.28**	**-$57.47**	**-$91.83**	**-$93.97**	**-$2,242.77**

Regarding the sustainability of this debt, we do believe it is sustainable. First, the debt payments in the 2008-2011 timeframe are still considerably lower than the UFCFs in that same timeframe. Usually when debt loads are viewed as ‘unsustainable’, it is because the company’s operations can no longer make the base payments on the debt, which is not true in this case. While it is true that FCFE in those time frames is negative, this is more than made up for in the hugely positive FCFE in 2008. Secondly, the repayment of the debt in 2012 is accomplished with the issue of a bond so while the company itself would not have the cash on hand or available cash flows to make such a bullet payment, the new debt with relatively favorable terms is achievable.

Appendix

Figure 4.1 Comparables Leverage Ratio

			Equity	Net	Debt/	Debt/
		Weight	Market Value	Debt	Value	Equity
Universal Mobile		5.00%	65,173	60,160	48.0%	92.3%
Neuberger Wireless		10.00%	94,735	27,757	29.3%	41.4%
Agile Connections		10.00%	37,942	9,144	19.4%	24.1%
Big Country Communications		30.00%	47,314	15,003	24.1%	31.7%
Rocky Mountain Wireless		45.00%	5,299	2,353	30.7%	44.4%
Average		100.00%			30.3%	46.8%
AirThread						
Recommended					**27.02%**	

Figure 4.2 - Calculation of Long Term WACC

Cost of Capital	
WACC	7.20%
Cost of Debt	5.5%
Cost of Equity	8.7%
Tax Rate	40.0%
Betas	
Asset	0.85
Debt	0.05
Equity	1.04

Figure 4.3 - Terminal Growth Rate

Terminal Growth Rate			
Terminal Growth Rate	**1.54%**	**Choose minimum between options**	
US GDP	2.00%	historical US economy growth	
FCF Growth	1.54%	forecasted FCF growth	

Figure 4.4 - APV Analysis

DCF Analysis								
Unlevered Free Cash Flow				$310.6	$358.6	$331.2	$336.4	$330.2
Discounted Values				$289.6	$311.9	$268.6	$254.4	$232.8
PV(UFCF)			$1,357.3					
PV(Terminal Value)			$4,042.7					
Total Value of Operations			**$5,400.0**					
Tax Shields								
Interest				$199.4	$183.1	$165.8	$147.5	$128.3
Value of Tax Shield				$79.8	$73.2	$66.3	$59.0	$51.3
Discounted Tax Shields				$74.4	$63.7	$53.8	$44.6	$36.2
PV Tax Shields (UFCF)			$272.7					
PV Tax Shields (Terminal Value)			$480.09					

Figure 4.5 - Terminal Capital Structure (2012 Dollars)

Terminal Value (2012 Dollars)			
Terminal Value of Operations	$5,942.7		
Terminal Value of Tax Shields	$705.7		
Total Firm Value	**$6,648.5**		
Debt	**$1,796.5**		
Equity	**$4,851.9**		
Interest Payments	$89.8		
Interest Rate	5.00%		
Interest Tax Shield	$35.9		
Terminal Tax Rate	40.00%		
Levered Cost of Capital at Terminal Value			
WACC	6.63%		
Ending Interest Rate	5.00%		
Debt Beta	0.05		
Cost of Equity	7.24%	calc in Unlevered Cost of Capital Table	
Terminal Leverage Ratio	27.02%	WACC Tab	