Leveraged buyout

GRA6538 - Applied Valuation

Executive Summary

In November 1990 MediMedia International finds themself in a peculiar situation of overwhelming bureaucracy and a lost feeling of being the management's company. To regain the connection between the company and the management, the management decided to buy the company in a leveraged buyout (LBO). As stated in the case, the managers happily oversubscribed the targeted contribution by $2m. The question arises ***if the optimistic view of the management as investors about the returns including the appropriate risk perspective is justified or if it is doomed to fail from the beginning***. We analyzed this burning question in valuing the company with the Adjusted Present Value (APV), peer group and LBO method supported by an appropriate risk analysis as well as a strategic positioning in a SWOT analysis. Our thesis suggests that we share the positive outlook for MediMedia with the managers as investors and can recommend the procedure of the management buyout (MBO), given the continuous monitoring of the risk associated with the LBO.

Equity Valuation

To separate the financing effects of the valuation we decided to value MediMedia using the Adjusted Present Value (APV) approach. We started by estimating the present value of the free cash flows, discounted by the cost of equity. The risk-free rate is set at 7.92% based on the 10-year US Treasury Yield in February 1991. The market risk premium of 4.48% is calculated as a revenue weighted average across US and UK, where UK serves as a proxy for EU. When examining the peer group, we found that the average company asset beta is 0.97, demonstrating that the assets are slightly less volatile than the equity, which has a beta of 1.11. By applying the Capital Asset Pricing Model (CAPM), the cost of equity (COE) is determined to be 12.87%. We then proceeded to estimate the present value of the tax shields by discounting the annual tax reduction by the average cost of debt. The average cost of debt of 8.04% is calculated as a weighted average across the different debt segments, indicating the average interest rate the company pays on its borrowing. We calculated the Enterprise Value (EV) by adding the present value of the cash flows ($116.63 millions), and the tax shield ($14.69 millions). The terminal value (TV) in both cases was calculated using a forward-looking average GDP growth of 3.33% as the long-term growth rate. The equity value of $72.19 millions was then estimated by subtracting the total amount of debt of $59.13 millions from the EV value of $131.32 millions. With an EV value of $131.32 millions, the investors will get a positive return on their investment. It is important to note that the valuation's accuracy is greatly affected by fluctuations in the COE and the long-term growth rate, with the COE playing a predominant role in stock price movements. This relationship is shown in the sensitivity analysis in exhibit 7.

To put the intrinsic value from the APV method in perspective, we also conducted a market approach with the relative valuation and an LBO analysis with different debt schedules. For the multiples, we used the EV/EBITDA multiple against a comparable peer group of 13 companies. The drill down of the peer group selection process can be found in exhibit 11. The reason for using the EV/EBITDA multiple is because it provides a clear comparison of companies' value by neutralizing the effects of different capital structures and taxation level. We found that the EV/EBITDA multiple for comparable companies was 10.5x. By multiplying the EBITDA ($20.36 mill) in 1994 by the EV/EBITDA multiple for the industry, we arrived at a value of $214 million for MediMedia for 1994. And by discounting this value, we find that MediMedia's value, based on their peers, is valued at 148.83 million in 1991. For the LBO analysis we chose to critically review their debt schedule, since they have a high cash accumulation. Therefore, we recreated the debt schedule as well as the interest payments assuming a 100% cash sweep following the seniority of the debt instruments for the years without penalties on early prepayments. By comparing

the IRR of exhibit 14 and 15, we don't see a high impact of the different debt repayment approaches on the returns, especially in our view the most likely occurring IRRs (marked in green) from a year of exit (usually 5-7 years) and the EV/EBITDA multiple expansion opportunity. Integrating our SWOT analysis into the valuation reveals MediMedia's strong global presence and impressive profit margins as significant strengths. These factors suggest a rapid growth in EBITDA and that the company is well positioned to service the leverage taken on in a buyout due to stable and predictable cash flows. The SWOT analysis also reveals the vulnerabilities, such as limited tangible assets and intense market competition. Both these vulnerabilities may affect MediMedia's ability to uphold debt commitments in a leveraged scenario, and gives important insights in evaluation the resilience of the cash flows and potential for value creation. To assess risks, as well as the likelihood and impact of the current risk, we have identified the following five risk factors, ranked from highest impact to lowest: Interest rate, Currencies, Variable costs, Tax, and Management as owners. Heatmap is available in exhibit 1.

Debt valuation

Upon evaluating the market value of debt in relation to the internal rates of return (IRR) for various instruments, we begin with an analysis of the revolving debt facility. The IRR for this instrument stands at a solid 8.40%, showcasing the expensiveness of a flexible credit line and an attractive return over the standard benchmarks. Moving on to the senior debt component, we observe an IRR of 6.84%. This rate, though lower than that of riskier instruments, exceeds common benchmarks, underlining the debt's competitive market value. The mezzanine financing, carrying an IRR of 29.27%, includes additional complexities due to the embedded warrant, which requires a nuanced valuation approach including option pricing, on which we will deep dive in the option chapter. The total value of the warrant is $9.19 million from exhibit 3. Finally, the subordinated vendor note, with an IRR of 7.75%, is comparatively low given its subordination, suggesting favorable terms for MediMedia. The note's interest rate is modestly above the yields of U.S. Treasury Debt Securities, highlighting the low premium over the riskfree rate. Sensitivity analysis reveals a direct correlation between the call option price and the stock price, with increases in the latter leading to rises in the former. Variations in the strike price have a minimal impact on the option price, indicating low sensitivity to these changes. Crucially, the analysis highlights the significant sensitivity of the option price to stock price fluctuations, emphasizing the critical role of stock movements in determining option values.

Options

To calculate the warrant in the Mezzanine debt, we employed the Black-Scholes model to receive the call option price. The interest rate used was the 10Y government bond yield, representing the riskfree rate, since the Black-Scholes model assumes a riskfree world. We used a volatility of 34.27%, which represents an average from MediMedias peers in 1991. The options can be exercised at any time before 1998. The values of the call and put options are respectively 5.57 and 0, which means that the call option is highly in-the-money and likely to be exercised, while the put is far out-of-the-money. In order to adjust for the dilutive effect of the warrant, where new shares are issued by the company, we adjusted the call price for the 15% dilution. Since the equity value serves as both, as function of stock price, warrant price and number of stocks as well as an input for the warrant price calculation via the Black-Scholes formula, the calculation of the warrant price would need an iterative approach to be solved. Plugging in the equity value calculated with the APV approach solves the circularity issue of calculating the warrant price, since the equity value can be seen as given.

Exhibits

Exhibit 1: Risk heatmap

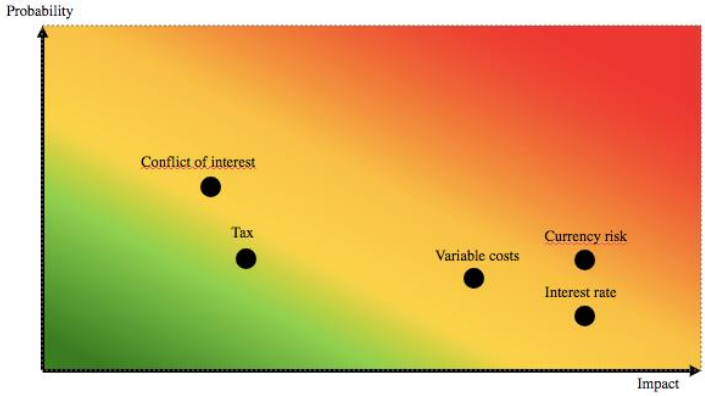

Exhibit 2: Option Pricing

Diluted share price calculation	
Shares outstanding	in m
Shares outstanding	11
Shares from warrants	1.94
Totally diluted shares outstand	12.94
Equity value	
Equity value from APV	72.19
Totally diluted shares outstand	12.94
Share price	5.58

Exhibit 3: Option Pricing

Black-Scholes Model inputs	
Stock price	5.58
Strike price	0.01
Volatility	34.27%
Risk-free interest rate (discrete time)	7.92%
Risk-free interest rate (continuous time)	7.62%
Time to maturity	7
d1	8.02
d2	7.11
N(d1)	1.00
N(d2)	1.00
Call value	5.57
15% dilution	0.84
Adjusted call	4.74
Shares	12.94
Value	61.30
Warrant total value	9.19
Put value	0

Exhibit 4: Relative Valuation

Relative valuation	
EV/EBITDA- multiple peers	10.5x
EBITDA 1994-MediMedia	20.36
EV MediMedia-EBITDA	**214**
EV/EBIT- multiple peers	14.4x
EBIT 1994- MediMedia	18.25
EV MediMedia-EBIT	**262.3**

Exhibit 5: SWOT-analysis of MediMedias strategical landscape

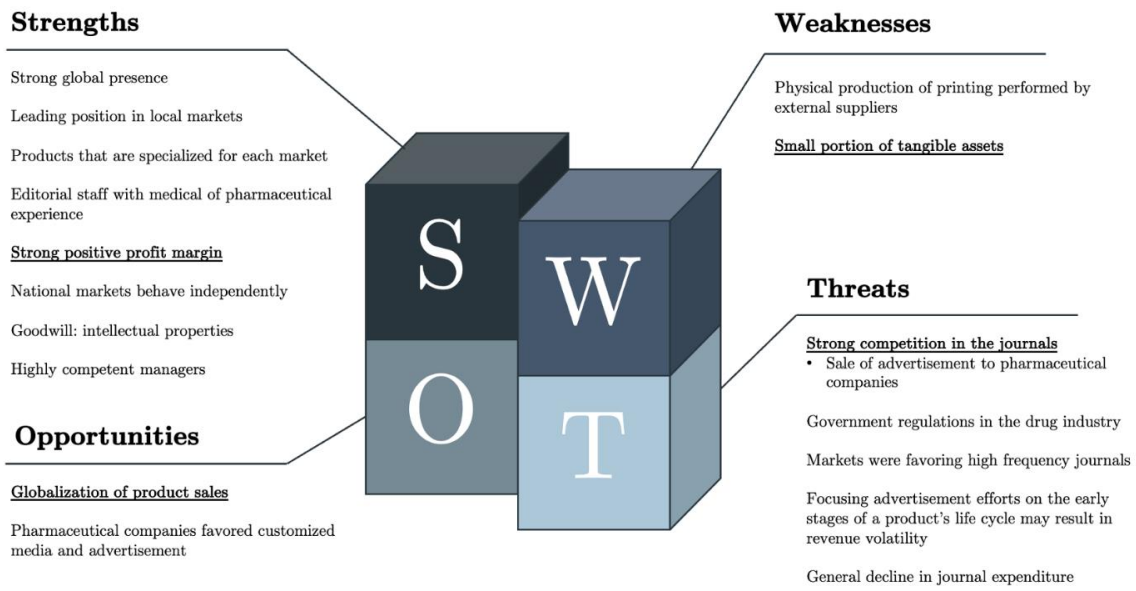

Exhibit 6: Sensitivity analysis of the adjusted call price

		Strike price					
		0,005	0,0075	0,01	0,015	0,02	0,03
Stock Price	3,58	$ 3,04	$ 3,04	$ 3,04	$ 3,04	$ 3,03	$ 3,03
	4,58	$ 3,89	$ 3,89	$ 3,89	$ 3,89	$ 3,88	$ 3,88
	5,58	$ 4,74	$ 4,74	$ **4,74**	$ 4,74	$ 4,73	$ 4,73
	6,58	$ 5,59	$ 5,59	$ 5,59	$ 5,59	$ 5,58	$ 5,58
	7,58	$ 6,44	$ 6,44	$ 6,44	$ 6,44	$ 6,43	$ 6,43

Exhibit 7: Sensitivty of the stock price

		Growth				
		2,50%	3%	3,33%	3,60%	4%
COE	11%	$ 7,15	$ 7,63	$ 7,99	$ 8,30	$ 8,82
	12%	$ 5,92	$ 6,30	$ 6,57	$ 6,81	$ 7,20
	12,9%	$ 5,05	$ 5,36	$ **5,58**	$ 5,77	$ 6,09
	14%	$ 4,12	$ 4,36	$ 4,54	$ 4,69	$ 4,94
	15%	$ 3,44	$ 3,64	$ 3,79	$ 3,92	$ 4,13

Exhibit 8: WACC calculation components

Assumptions		
LTGR	3,33%	GDP Growth f275
US MRP	3,89%	Average GDP Growth (forward-looking 1989-2022)
UK MRP (Proxy for EU)	4,61%	Damodaran: Implied premium 3,89% (S&P 1990)
		Damodaran: Historical premium (UK 1990)

WACC computation			
riskfree rate	7,92%	x	Case: 10y US Treasury Yield 7,92%
MRP	4,48%	x	MRP per main market of MediMedia weighted by its revenue split
Asset Beta Peer Group	0,97		Peer Group Average
Beta equity	1,11		
COE	12,87%		
Beta debt	0,09	x	Peer Group Average
Average cost of debt	8,04%		Average across debt segments
Target D/V ratio	13,57%	x	Comp average
Target D/E ratio	15,70%		(in line with the long term projection of the balance sheet)
Tax rate	30%		Historical average
WACC	**11,9%**		

Exhibit 9: EV and equity component break-down

Enterprise Value		
Sum of PV(FCF)	52,03	*40%*
PV TV	64,60	*49%*
Sum of PV (TS)	14,69	*11%*
Enterprise Value	131,32	*100%*

EV to EQ bridge		
Enterprise Value	131,32	*100%*
Debt	-59,13	*45%*
Equity Value	**72,19**	55%

Totally diluted shares outstar	12,94
Share price	5,58

Exhibit 10: APV method and EV to equity bridge

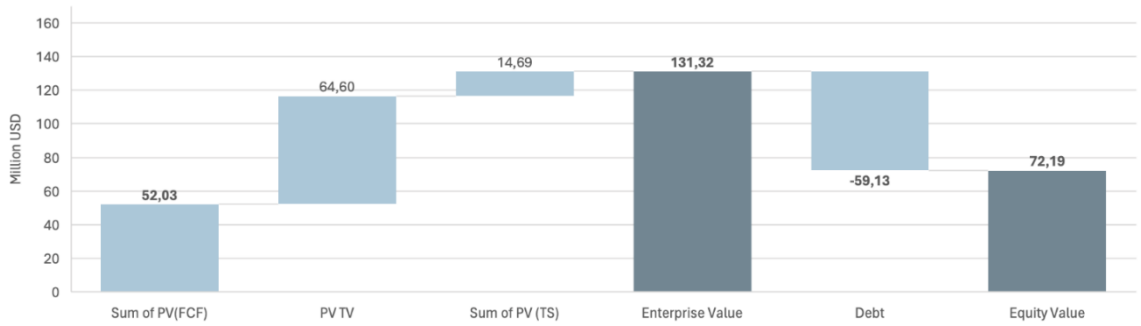

Exhibit 11: Peer selection process

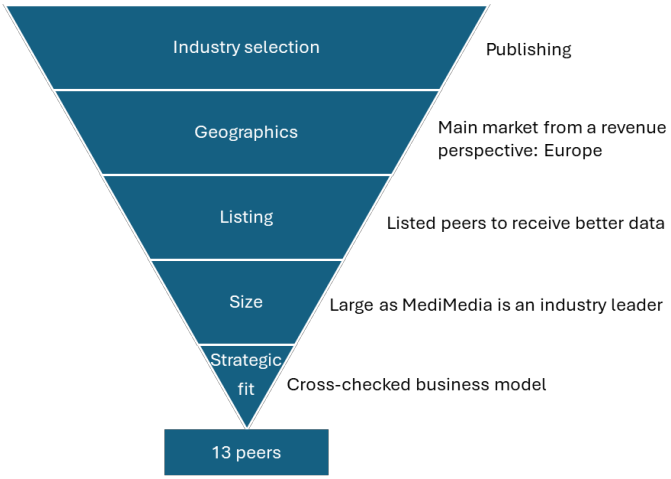

Exhibit 12: Present value of tax shield

Annual tax reduction	**0,88**	**1,67**	**1,66**	**1,58**	**1,39**	**1,15**	**0,87**	**0,62**	**0,65**
Terminal Value									13,85
Discount Factor	0,93	0,86	0,79	0,73	0,68	0,63	0,58	0,54	
PV (TS)	**0,82**	**1,43**	**1,32**	**1,16**	**0,94**	**0,72**	**0,51**	**0,34**	**7,46**

Exhibit 13: Present value FCF

Free Cash Flow	**7,38**	**9,94**	**9,63**	**10,75**	**11,84**	**12,84**	**13,93**	**15,10**	**16,23**
Terminal Value									170,15
Discount Factor	0,89	0,78	0,70	0,62	0,55	0,48	0,43	0,38	
PV (FCF)	**6,53**	**7,81**	**6,70**	**6,62**	**6,46**	**6,21**	**5,97**	**5,73**	**64,60**

Exhibit 14: IRR from potential exit of LBO with debt schedule as planned

Exit multiple range	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**
4.9x	-3%	72%	65%	55%	49%	44%	40%	37%
5.9x	179%	128%	92%	71%	59%	51%	46%	42%
6.9x	360%	173%	113%	83%	68%	58%	51%	46%
7.9x	542%	212%	130%	94%	75%	63%	55%	49%

Exhibit 15: IRR from potential exit of LBO with 100% cash sweep

Exit multiple range	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**
4.9x	-14%	75%	69%	58%	49%	45%	40%	37%
5.9x	167%	131%	95%	73%	60%	52%	45%	41%
6.9x	349%	176%	115%	85%	68%	58%	50%	45%
7.9x	531%	214%	132%	95%	75%	63%	54%	48%

Exhibit 16: Weighted average cost of debt

Debt items listed by seniority	**Value ($m)**	**Percentage of total debt**	**Average interest per debt instrument**	**Weighted average cost of debt**
Revolving debt facility	1.7	2.8%	7.75%	8.03%
Senior term debt	32	53.2%	7.75%	
Mezzanine financing	15	24.9%	8.75%	
Subordinated vendor note	11.47	19.1%	7.92%	
Total debt	60.17			