Valuation Analysis

PERSONAL NOTE

THIS IS WHAT I LEARNED OVER 34 YEARS VALUING COMPANIES

- *Valuing a company is highly subjective*
- *There is a lot of interpretation of the data used for the valuation methods*
- *Although there are several methods to value a company, the valuation is both art and science.*
- *There is some judgement that goes in choosing the data*
- *For all the successful start-ups started with convincing storytelling. A good story is simple, credible and persuasive.*
- *Naturally, the buyer has a different perspective than the seller and therefore the valuation assessment could be derived differently*
- *Final Thought: We can spend hours and days analyzing the value of the company but at the end of the day* ***the value of anything is what someone is willing to pay.***

Valuation Analysis Overview

METHOD	DESCRIPTION	TYPE	TECHNICAL/ FUNDAMENTAL
1	Using the current stock price as a basis of valuation	Market	Technical
2	Intrinsic value and Capital Asset Pricing Model (CAPM)	Market	Technical
3	Dividend Discount Model (DDM)	Market	Technical
4	Comparable method using trading EBITDA multiples	Market	Fundamental
5	Comparable method using acquisition EBITDA multiples	Market	Fundamental
6	Discount cash flow method (DCF)	Income	Fundamental
7	Leveraged buyout private equity expectation model (LBO)	Income	Fundamental
8	Black-Scholes option pricing model	Options	Fundamental

Valuation of Publicly Traded Companies.

Testing the current Stock Price

CASE STUDY:
HYATT HOTELS CORPORATION (H)

Methods 1-6 - Summary:

Putting All the Values Together

ENTERPRISE VALUATION ANALYSIS								
	EV (000's)	Debt (000's)	Cash (000's)	Eq Value (000's)	Shares Outs (000's)	Stock Price	Recommend	(-10%/ +10%)
METHOD #1 - Market Value / Using the Stock Pri	17,038,107	3,056,000	896,000	14,878,107	**103,970**	**$143.10**		
METHOD #2- Intrinsic Value	16,745,533	3,056,000	896,000	14,585,533	103,970	$ 140.29	Sell	-1.97%
METHOD #3- Dividend Discount Model (DDM)	7,566,050	3,056,000	896,000	5,406,050	103,970	$ 52.00	Sell	-63.66%
METHOD #4 -Average EBITDA Industry Trading	14,615,563	3,056,000	896,000	12,455,563	103,970	$ 119.80	Sell	-16.28%
Method #4 using direct Competitors EBITDA x	20,192,277	3,056,000	896,000	18,032,277	103,970	$ 173.44	Buy	21.20%
METHOD #5 - Using Averge EBITDA Transaction	14,765,257	3,056,000	896,000	12,605,257	103,970	$ 121.24	Sell	-15.28%
METHOD #6 - Discount Cash Flow Valuation Ana	18,989,621	3,056,000	896,000	16,829,621	103,970	$ 161.87	Buy	13.12%
METHOD #7 - LBO Cash Flow Valuation Analysis	14,060,409	3,056,000	896,000	11,900,409	103,970	$ 114.46	Sell	-20.01%
Average of other methods	**15,479,050**			**13,319,050**		**$ 128.10**	Sell	-10.48%

Methods 1-6: Valuation of Public Traded Companies

- **Method 1: Using the Stock Price as the Basis of Valuation**
  - The formula to value the firm or the enterprise value (EV) is as follows:

    EV = MVE + D – C

    where EV is enterprise value, MVE is the market value of the equity, D is the total debt outstanding, and C is the cash and cash equivalents of the company.

  - The stock price that represents the market value of each share when multiplied by the shares outstanding will give us the market value of the equity.

    MVE = (SP . SO)

    where MVE is the market value of the equity, SP is the stock price and SO is the shares outstanding.

Methods 1-6: Valuation of Public Traded Companies

Method 1: Using the Stock Price as the Basis of Valuation

METHOD #1 - Market Value / Using the Stock Price							
Company	Symbol	Stock Price 8/16/2024	Stocks Outstanding ($000) 8/16/2024	Equity Value ($000) 8/16/2024	Debt (ST&LT) ($000) 12/31/2023	Cash ($000) 12/31/2023	Enterprise Value ($000) 8/16/2024
Hyatt	H	$ 143.10	103,970	14,878,107	3,056,000	896,000	17,038,107

Methods 1-6: Valuation of Public Traded Companies

- **Method 2: Intrinsic Value and CAPM**

  The expected return is calculated by applying the capital asset pricing model (CAPM):

  $E_r = Rf_r + \beta\ (M_r - Rf_r)$ or k

where E_r is the expected return, Rf_r is the risk-free rate, β is the beta of the company that is analyzed, and M_r is market return.

The formula for today's intrinsic value is

$$v_0 = \frac{D_1 + \rho_1}{1 + k}$$

where D_1 is the dividend expected to receive within a year, P_1 is the expected stock price a year from now, and k is the discount rate or expected rate of return.

Methods 1-6: Valuation of Public Traded Companies

- Method 2: Intrinsic Value and CAPM (k)
  - $v_0 = \frac{D_1 + \rho_1}{1+k}$

METHOD #2- Intrinsic Value			
Using CAPM = k = Rf + (Beta * Premium)		Intrinsic Value = V0 = [E(D1) + E (P1)] / (1+k)	
Risk Free (10-year Tresury) =	4.63%	D1=	$0.60
Beta =	1.50x		
Market Premium=	5.50%	Exp (P1)=	$157.75 (Avg Target by Analysts for 12/24)
Market Return (Rf + Premium)=	10.13%	k=	12.88%
Expected Equity Return using C	12.88%	Stock Val=	$ 140.29

$$E_r = Rf_r + \beta\,(M_r - Rf_r)$$

Methods 1-6: Valuation of Public Traded Companies

- **Method 3: Dividend Discount Model (DDM)**

To calculate such value using the DDM method, the analyst needs the expected price of the stock a year from the date of the analysis, the expected dividend per share paid within the year, and a discount rate, which derived using the capital asset pricing model (CAPM).

- $$V = \frac{D1}{k-g}$$

where D_1 is the expected dividend, k is the discount rate, and g is the expected growth rate.

Methods 1-6: Valuation of Public Traded Companies

- **Method 3: Dividend Discount Model (DDM)**
- $V = \frac{D1}{k-g}$

METHOD #3- Dividend Discount Model (DDM)

Constant-Growth DDM (Gordon Model) V0 = D1 / (k-g)			**Expected HPR = E 9r) = [E (d1) + (E(p1) - P0) / P0**	
D1 =	$0.60		Dividend (d1)	$0.60
Expected Equity Return (k)=	12.88%		P1 = P0+D	$143.70
Expected Growth (g) =	**11.59%**	90%	P0	$ 143.10
Stock Val =	**$ 52.00**		**Exp. HPR=**	**0.84%**

Methods 1-6: Valuation of Public Traded Companies

- Method 4: Using Comparable Trading EBITDA Multiples

METHOD #4 -Average EBITDA Industry Trading Multiples

Company	Symbol	Stock Price 8/16/2024	Stocks Outstanding ($000) 8/16/2024	Equity Value ($000) 8/16/2024	Debt (ST&LT) ($000) 12/31/2023	Cash ($000) 12/31/2023	Enterprise Value ($000) 8/16/2024	EBITDA ($000) 12/31/2023	EBITDA Multiple 8/16/2024	Beta 8/16/2024
Choice Hotels International	CHH	$123.70	47,210	5,839,877	1,980,000	150,860	7,669,017	465,410	16.48x	1.24x
Hilton Worldwide Holdings	HLT	$212.46	246,430	52,356,518	10,960,000	731,000	62,585,518	2,490,000	25.13x	1.31x
Intercontinental Hotel	IHG	$96.27	158,820	15,289,601	3,630,000	858,000	18,061,601	1,010,000	17.88x	1.00x
Marcus Corporation	MCS	$13.32	32,170	428,504	374,480	39,650	763,334	74,830	10.20x	1.51x
Marriott International	MAR	$220.56	281,520	62,092,051	13,970,000	349,000	75,713,051	4,270,000	17.73x	1.60x
Park Hotels & Resorts Inc.	PK	$14.35	208,920	2,998,002	4,800,000	449,000	7,349,002	630,000	11.67x	2.03x
Wyndham Worldwide	WH	$75.39	78,980	5,954,302	2,430,000	70,000	8,314,302	602,000	13.81x	1.36x
Hyatt	H	$ 143.10	103,970	14,878,107	3,056,000	896,000	17,038,107	942,108	18.09x	1.50x

EBITDA * Average Multiple Indu	942,108	15.51x	Stock Val=	$ 119.80	Average	16.13x	1.44x
EBITDA * Average Multiple (Hilt	942,108	21.43x	Stock Val=	$ 173.44	Average (less outliers)	15.51x	

Hyatt's Enteprise Value	14,615,563

Methods 1-6: Valuation of Public Traded Companies

- Method 5: Using Comparable Acquisition EBITDA Multiples

METHOD #5 - Using Averge EBITDA Transaction Multiples (M&A Comparable Method)

Target	Acquirer	Acquisition Price /Share	Shares Outstanding	Equity Value ($mm)	Total Net Debt ($mm)	Enterprise Value (EV)	EBITDA (last reported)	EBITDA Multiple
Wyndham Hotel & Resorts	Choice Hotels	$ 90.00	82,960,000	$ 7,466	$ 2,081	$ 9,547	$ 573.0	16.66x
Extended Stay America	Blackstone Group	$ 19.50	177,560,000	$ 3,462	$ 2,303	$ 5,766	$ 356.4	16.18x
WoodSpring Suites (spin-off	Blackstone Group	Private				$ 1,500	$ 82.0	18.29x
Starwood Hotels	Marriott Hotels	$ 72.08	154,000,000	$ 11,100	$ 1,090	$ 12,190	$ 980.0	12.44x
Hilton Hotels	Blackstone Group	$ 47.50	390,400,000	$ 18,544	$ 6,180	$ 24,724	$ 1,680.0	14.72x
Four Seasons*	Kingtom Hotels Int'l	$ 82.00	33,078,000	$ 2,712	$ 279	$ 2,991	$ 93.8	31.90x
Fairmont/Rafles	Kingtom Hotels Int'l	$ 45.00	73,335,000	$ 3,300	$ 124	$ 3,424	$ 187.2	18.29x
Hilton International	Hilton Hotels Corp.			$ 5,578	$ -	$ 5,578	$ 504.0	11.07x
Starwood Hotels	Host Marriott					$ 4,096	$ 315.1	13.00x
La-Quinta Corp	Blackstone Group	$ 12.22	203,000,000	$ 2,481	$ 926	$ 3,406	$ 229.7	14.83x
Wynham Int'l	Blackstone Group	$ 1.15	172,053,000	$ 198	$ 2,682	$ 2,880	$ 245.0	11.75x
John Q. Hammons Hotels	JQH Acquisition LLC	$ 24.00	19,583,000	$ 470	$ 765	$ 1,235	$ 85.0	14.53x
Boca Resorts	Blackstone Group	$ 24.00	40,284,000	$ 967	$ 217	$ 1,184	$ 90.1	13.15x
Prime Hospitality	Blackstone Group	$ 12.25	44,808,000	$ 549	$ 244	$ 792	$ 55.1	14.38x
Extended Stay	Blackstone Group	$ 19.93	95,077,000	$ 1,895	$ 1,232	$ 3,126	$ 224.9	13.90x
							Average	15.67x

Haytt's Enteprise Value	14,765,257	Stock Val=	$ 121.24	Using LTM EBITDA=	942,108

Method 6: DCF Valuation Analysis

To value the company using the DCF method the analyst needs to derive the following four items:

- Setting up a stream of cash flows
- Identifying an exit year
- Calculating the value at exit year (terminal value)
- Using the appropriate discount rate to value the present value of the firm

Method 6: DCF Valuation Analysis

To value the company using the DCF method the analyst needs to derive the following four items:

- Setting up a stream of cash flows

	HISTORICAL													PROJECTED					
	Dec 31	Dec 31	Dec 31	Dec 31	Dec 31	Dec 31	Dec 31	Dec 31	Dec 31	Dec 31	Dec 31	Dec 31	Dec 31	Dec 31	Dec 31	Dec 31	Dec 31	Dec 31	Dec 31	Dec 31	Dec 31	Dec 31
($000's)	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
Total Revenue	**3,738,000**	**3,837,000**	**3,330,000**	**3,527,000**	**3,698,000**	**3,949,000**	**4,184,000**	**4,415,000**	**4,328,000**	**4,265,000**	**4,462,000**	**4,454,000**	**5,020,000**	**2,066,000**	**3,028,000**	**5,891,000**	**6,667,000**	**7,333,700**	**8,433,755**	**9,277,131**	**10,204,844**	**11,225,328**	**12,347,861**
Revenue Growth		*2.6%*	*-13.2%*	*5.9%*	*4.8%*	*6.8%*	*6.0%*	*5.5%*	*-2.0%*	*-1.5%*	*4.6%*	*-0.2%*	*12.7%*	*-58.8%*	*46.6%*	*94.6%*	*13.2%*	*10.0%*	*15.0%*	*10.0%*	*10.0%*	*10.0%*	*10.0%*
Cost of Revenue	2,847,000	2,934,000	2,751,000	2,864,000	2,957,000	3,121,000	3,283,000	3,433,000	3,377,000	3,356,000	3,477,000	3,475,000	4,077,000	2,067,000	2,603,000	4,603,000	5,350,000	5,909,801	6,796,271	7,475,898	8,223,488	9,045,836	9,950,420
Gross Profit	891,000	903,000	579,000	663,000	741,000	828,000	901,000	982,000	951,000	909,000	985,000	979,000	943,000	(1,000)	425,000	1,288,000	1,317,000	1,423,899	1,637,484	1,801,233	1,981,356	2,179,491	2,397,441
Gross profit	*23.8%*	*23.5%*	*17.4%*	*18.8%*	*20.0%*	*21.0%*	*21.5%*	*22.2%*	*22.0%*	*21.3%*	*22.1%*	*22.0%*	*18.8%*	*0.0%*	*14.0%*	*21.9%*	*19.8%*	*19.4%*	*19.4%*	*19.4%*	*19.4%*	*19.4%*	*19.4%*
Total Operating Expenses	506,000	539,000	530,000	555,000	588,000	669,000	668,000	703,000	628,000	641,000	725,000	647,000	746,000	631,000	698,000	874,000	995,000	1,094,500	1,258,675	1,384,543	1,522,997	1,675,296	1,842,826
EBIT (Operating Income or Loss)	385,000	364,000	49,000	108,000	153,000	159,000	233,000	279,000	323,000	268,000	260,000	332,000	197,000	(632,000)	(273,000)	414,000	322,000	**329,399**	**378,809**	**416,690**	**458,359**	**504,195**	**554,614**
Interest Expense	-	-	-	21,000	23,000	23,000	17,000	11,000	8,000	28,000	110,000	28,000	25,000	30,000	28,000	44,000	74,000						
EBT & other Income/Expenses	385,000	364,000	49,000	87,000	130,000	136,000	216,000	268,000	315,000	240,000	150,000	304,000	172,000	(662,000)	(301,000)	370,000	248,000						
Other Income/Expenses Net	385,000	364,000	49,000	88,000	141,000	140,000	225,000	279,000	326,000	271,000	196,000	314,000	166,000	(631,000)	(290,000)	364,000	249,000						
EBT	-	-	-	(1,000)	(11,000)	(4,000)	(9,000)	(11,000)	(11,000)	(31,000)	(46,000)	(10,000)	6,000	(31,000)	(11,000)	6,000	(1,000)						
Income Tax Expense	474,000	204,000	(51,000)	88,000	83,000	95,000	321,000	525,000	194,000	282,000	722,000	951,000	1,006,000	(960,000)	44,000	363,000	310,000						
Net Income	(474,000)	(204,000)	51,000	(89,000)	(94,000)	(99,000)	(330,000)	(536,000)	(205,000)	(313,000)	(768,000)	(961,000)	(1,000,000)	929,000	(55,000)	(357,000)	(311,000)						
Depreciation	214,000	249,000	269,000	279,000	305,000	353,000	345,000	354,000	320,000	326,000	348,000	327,000	329,000	310,000	310,000	426,000	397,000	612,709	704,616	775,077	852,585	937,843	1,031,628
Working Capital	**47,000**	**(179,000)**	**(82,000)**	**70,000**	**35,000**	**(67,000)**	**(31,000)**	**24,000**	**25,000**	**(36,000)**	**125,000**	**(79,000)**	**(13,000)**	**(424,000)**	**388,000**	**167,000**	**203,000**	**(26,574)**	**(30,560)**	**(33,616)**	**(36,978)**	**(40,675)**	**(44,743)**
Capital Expenditure	-	(258,000)	(216,000)	(310,000)	(331,000)	(301,000)	(232,000)	(253,000)	(269,000)	(211,000)	(298,000)	(297,000)	(369,000)	(122,000)	(111,000)	(201,000)	(198,000)	(447,635)	(514,780)	(566,258)	(622,884)	(685,172)	(753,690)
Current Portion of Long Term Debt	-	-	-	-	-	-	-	-	-	-	-	11,000	11,000	260,000	10,000	660,000	751,000						
Long Term Debt	794,000	1,874,000	1,620,000	1,516,000	1,221,000	1,229,000	1,289,000	1,381,000	1,042,000	1,445,000	1,440,000	1,623,000	1,612,000	2,984,000	3,968,000	2,453,000	2,305,000						
Total Debt	**794,000**	**1,874,000**	**1,620,000**	**1,516,000**	**1,221,000**	**1,229,000**	**1,289,000**	**1,381,000**	**1,042,000**	**1,445,000**	**1,440,000**	**1,634,000**	**1,623,000**	**3,244,000**	**3,978,000**	**3,113,000**	**3,056,000**	**2,960,200**	**2,807,400**	**2,654,600**	**2,501,800**	**2,349,000**	**2,196,200**

Method 6: DCF Valuation Analysis

To value the company using the DCF method the analyst needs to derive the following four items:

- Setting up a stream of cash flows

OPERATING ASSUMPTIONS	Dec 31 2007	Dec 31 2008	Dec 31 2009	Dec 31 2010	Dec 31 2011	Dec 31 2012	Dec 31 2013	Dec 31 2014	Dec 31 2015	Dec 31 2016	Dec 31 2017	Dec 31 2018	Dec 31 2019	Dec 31 2020	Dec 31 2021	Dec 31 2022	Dec 31 2023	Dec 31 2024	Dec 31 2025	Dec 31 2026	Dec 31 2027	Dec 31 2028	Dec 31 2029
EBITDA ($ 000's)	**599,000**	**613,000**	**318,000**	**387,000**	**458,000**	**512,000**	**578,000**	**633,000**	**643,000**	**594,000**	**608,000**	**659,000**	**526,000**	**-322,000**	**37,000**	**840,000**	**719,000**	**942,108**	**1,083,425**	**1,191,767**	**1,310,944**	**1,442,038**	**1,586,242**
Revenue Growth		2.6%	-13.2%	5.9%	4.8%	6.8%	6.0%	5.5%	-2.0%	-1.5%	4.6%	-0.2%	12.7%	-58.8%	46.6%	94.6%	13.2%	10.0%	15.0%	10.0%	10.0%	10.0%	10.0%
Cost of Revenue as % of Revenue	76.2%	76.5%	82.6%	81.2%	80.0%	79.0%	78.5%	77.8%	78.0%	78.7%	77.9%	78.0%	81.2%	100.0%	86.0%	78.1%	80.2%	80.6%	80.6%	80.6%	80.6%	80.6%	80.6%
Operating Expense as % of Revenu	13.5%	14.0%	15.9%	15.7%	15.9%	16.9%	16.0%	15.9%	14.5%	15.0%	16.2%	14.5%	14.9%	30.5%	23.1%	14.8%	14.9%	14.9%	14.9%	14.9%	14.9%	14.9%	14.9%
Working Capital as % of Revenues	-1.3%	4.7%	2.5%	-2.0%	-0.9%	1.7%	0.7%	-0.5%	-0.6%	0.8%	-2.8%	1.8%	0.3%	20.5%	-12.8%	-2.8%	-3.0%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%
Capex % Revenue	0.0%	6.7%	6.5%	8.8%	9.0%	7.6%	5.5%	5.7%	6.2%	4.9%	6.7%	6.7%	7.4%	5.9%	3.7%	3.4%	3.0%	6.1%	6.1%	6.1%	6.1%	6.1%	6.1%
Depreciation % Revenue	5.7%	6.5%	8.1%	7.9%	8.2%	8.9%	8.2%	8.0%	7.4%	7.6%	7.8%	7.3%	6.6%	15.0%	10.2%	7.2%	6.0%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%
Total Debt	**794,000**	**1,874,000**	**1,620,000**	**1,516,000**	**1,221,000**	**1,229,000**	**1,289,000**	**1,381,000**	**1,042,000**	**1,445,000**	**1,440,000**	**1,634,000**	**1,623,000**	**3,244,000**	**3,978,000**	**3,113,000**	**3,056,000**	**2,960,200**	**2,807,400**	**2,654,600**	**2,501,800**	**2,349,000**	**2,196,200**
Debt Reapayment $																		152,800	152,800	152,800	152,800	152,800	152,800
Estimated Debt Repayment % starting 12/2023 outstanding Debt																		5.0%					

Method 6: DCF Valuation Analysis

To value the company using the DCF method the analyst needs to derive the following four items:

- Using the appropriate discount rate to value the present value of the firm
  - WACC for Firm Value
  - CAPM for Equity Value

Cost of Equity Calculation	
Risk Free Rate (5 year)	4.63%
Premium based on MC =	5.50%
Hyatt Beta =	1.50x
Expected Equity Return =	12.88%

Cost of Debt Calculation	
Avg Debt	3,084,500
Interest	74,000
Rate	2.399%

WACC Calc:	Amount	% Cap	RoR	AT RoR	WACC
Total Debt	3,056,000	17.0%	2.399%	1.871%	0.319%
MV Equity	14,878,107	83.0%	12.877%	12.877%	10.682%
Total Cap	17,934,107	100.0%		WACC=	11.001%

WACC (Firm Valuation Discount Rate)	11.001%
CAPM (Equity Valuation Discount Rate)	12.877%

Method 6: DCF Valuation Analysis

METHOD #6 - Discount Cash Flow Valuation Analysis

			year =	1	2	3	4	5	6
	HISTORICAL			PROJECTED				EXIT YEAR	
	2021	2022	2023	2024	2025	2026	2027	2028	2029
Revenues	3,028,000	5,891,000	6,667,000	7,333,700	8,067,070	8,873,777	9,761,155	10,737,270	11,810,997
Revenue Growth		94.6%	13.2%						
Cost of Revenues (CoGS)	(2,603,000)	(4,603,000)	(5,350,000)	(5,866,960)	(6,453,656)	(7,099,022)	(7,808,924)	(8,589,816)	(9,448,798)
Operating Expenses (Excl. Non-	(698,000)	(874,000)	(995,000)	(880,044)	(968,048)	(1,064,853)	(1,171,339)	(1,288,472)	(1,417,320)
EBIT	(273,000)	414,001	322,000	586,696	645,366	709,902	780,892	858,982	944,880
Less Taxes (tax rate x of EBIT)	22.00%			(129,073)	(141,980)	(156,178)	(171,796)	(188,976)	(207,874)
Plus Depreciation				586,696	645,366	709,902	780,892	858,982	944,880
Less Working Capital				(29,335)	(32,268)	(35,495)	(39,045)	(42,949)	(47,244)
Less Capex				(440,022)	(484,024)	(532,427)	(585,669)	(644,236)	(708,660)
Cash Flow				**574,962**	**632,458**	**695,704**	**765,275**	**841,802**	**925,982**
EBITDA			719,000					1,717,963	
Debt (assuming 5% reduction of intial principal per year)			3,056,000					2,349,000	
Terminal Value	**Assumptions**		**Growth**						
EBITDA Multiple Method	15.51x				Exit year's EBITDA x Trading Multiple			26,651,919	
Perpetuity Method	11.00%	**WACC**	8.00%		Next Year's CF / (WACC - growth)			30,853,148	
Average								28,752,534	
Less Debt Outstanding (at Exit)								(2,349,000)	
Equity Value at Terminal								26,403,534	
Equity Cash Flows	12.88%			**574,962**	**632,458**	**695,704**	**765,275**	**27,245,336**	
Hyatt's EquityValue			$16,829,621						
		Stock Price	$ 161.87						

= NPV(CAPM,CF1,CF2,CF3,CF4,CF5)

Method 7: Using the Leveraged Buyout Model (LBO) Method

- While the DCF analysis is used for determining today's value of the company based on future cash flows, **the value of the company using this LBO method is determined based on investor expectation, which means return determines the acquisition price of the firm**.
  - **Building the Transactions Sources and Uses**
  - **Setting up the Debt Schedules**
  - **Calculating the Expected Equity Return**
  - **Running Projections**
  - **Determining the Terminal Value**
  - **Determining the Value of the Firm**

Method 7: Using the Leveraged Buyout Model (LBO) Method

METHOD #7 - Leveraged Buyout (LBO) Valuation Analysis

LBO Transaction Sources	Debt Capacity	Amount	% cap	LBO Transaction Uses	Price	Outstanding	Amount $
Bank Debt	3.5x	3,297,380	18%	Purchase Common Stock	$143.10	103,970	$14,878,107
Corporate Bonds	2.5x	2,355,271	13%	Refinancing Total Debt			3,056,000
Total Debt	6.0x	5,652,651	31%	Fees & Expesnes	3.00%		538,023
Equity	13.6x	12,819,479	69%				
Total		18,472,130	100%	Total			$18,472,130

Improvements										
Operating Expenses	60%			9%	9%	9%	9%	9%	9%
			Year	1	2	3	4	5	6
	HISTORICAL			PROJECTED				EXIT YEAR	
	2021	2022	2023	2024	2025	2026	2027	2028	2029
Revenues	3,028,000	5,891,000	6,667,000	7,333,700	8,067,070	8,873,777	9,761,155	10,737,270	11,810,997
Revenue Growth		94.6%	13.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cost of Revenues (CoGS)	(2,603,000)	(4,603,000)	(5,350,000)	(5,866,960)	(6,453,656)	(7,099,022)	(7,808,924)	(8,589,816)	(9,448,798)
Operating Expenses (Excl. Non-I	(698,000)	(874,000)	(995,000)	(656,700)	(722,370)	(794,607)	(874,068)	(961,474)	(1,057,622)
EBIT	(273,000)	414,001	322,000	810,040	891,044	980,148	1,078,163	1,185,980	1,304,578
Interest	8.00%			(64,803)	(71,284)	(78,412)	(86,253)	(94,878)	(104,366)
EBT				745,237	819,760	901,737	991,910	1,091,101	1,200,211
Less Taxes (tax rate x of EBIT)	16.00%			(119,238)	(131,162)	(144,278)	(158,706)	(174,576)	(192,034)
Plus Interest				64,803	71,284	78,412	86,253	94,878	104,366
Plus Depreciation				586,696	645,366	709,902	780,892	858,982	944,880
Less Working Capital				(29,335)	(32,268)	(35,495)	(39,045)	(42,949)	(47,244)
Less Capex				(440,022)	(484,024)	(532,427)	(585,669)	(644,236)	(708,660)
Cash Flow				**808,141**	**888,955**	**977,851**	**1,075,636**	**1,183,200**	**1,301,520**
EBITDA			**719,000**	-	-	-	-	**1,717,963**	-
Debt	**1.00%**		**5,652,651**	**5,596,124**	**5,539,598**	**5,483,071**	**5,426,545**	**5,370,018**	**5,370,018**

Terminal Value	Assumptions		Growth					
EBITDA Multiple Method	15.51x			Exit year's EBITDA x Trading Multiple				26,651,919
Perpetuity Method	11.00%	**WACC**	8.00%	Next Year's CF / (WACC - growth)				43,365,823
Average								35,008,871
Less Debt Outstanding (at Exit)								(5,370,018)
Equity Value at Terminal	**Target**	**IRR**						29,638,853
Equity Unlevered				**808,141**	**888,955**	**977,851**	**1,075,636**	**1,183,200**
Less Interest				(64,803)	(71,284)	(78,412)	(86,253)	(94,878)
Less Principal		**1.00%**		(56,527)	(56,527)	(56,527)	(56,527)	(56,527)
Equity Cash Flows	**25.00%**	23%	**(12,819,479)**	**686,812**	**761,145**	**842,913**	**932,857**	**30,670,647**
Hyatt's EquityValue			**$11,900,409**					
		Stock Price	**$ 114.46**					

= NPV(CAPM,CF1,CF2,CF3,CF4,CF5)

Methods 1-7 - Summary:

Putting All the Values Together

ENTERPRISE VALUATION ANALYSIS	EV (000's)	Debt (000's)	Cash (000's)	Eq Value (000's)	Shares Outs (000's)	Stock Price	Recommend	(-10%/ +10%)
METHOD #1 - Market Value / Using the Stock Pri	17,038,107	3,056,000	896,000	14,878,107	**103,970**	**$143.10**		
METHOD #2- Intrinsic Value	16,745,533	3,056,000	896,000	14,585,533	103,970	$ 140.29	Sell	-1.97%
METHOD #3- Dividend Discount Model (DDM)	7,566,050	3,056,000	896,000	5,406,050	103,970	$ 52.00	Sell	-63.66%
METHOD #4 -Average EBITDA Industry Trading	14,615,563	3,056,000	896,000	12,455,563	103,970	$ 119.80	Sell	-16.28%
Method #4 using direct Competitors EBITDA	20,192,277	3,056,000	896,000	18,032,277	103,970	$ 173.44	Buy	21.20%
METHOD #5 - Using Averge EBITDA Transaction	14,765,257	3,056,000	896,000	12,605,257	103,970	$ 121.24	Sell	-15.28%
METHOD #6 - Discount Cash Flow Valuation Ana	18,989,621	3,056,000	896,000	16,829,621	103,970	$ 161.87	Buy	13.12%
METHOD #7 - LBO Cash Flow Valuation Analysis	14,060,409	3,056,000	896,000	11,900,409	103,970	$ 114.46	Sell	-20.01%
Average of other methods	**15,479,050**			**13,319,050**		**$ 128.10**	Sell	-10.48%

Valuation of Private Companies

Applying methods 6-8

Method 6: Discount Cash Flow Method (DCF)

- One of the most effective ways to value a private company is to dive into the company's projections and change the assumptions based on the investor's view of how the revenue will grow and at what cost.
- Since there is no stock price that trades, which gives the investor a direct indication of what the company is worth (market value), an important method used by professionals is the discount cash flow (DCF) method, which measures the company's intrinsic value.
- The conduction of this method is to calculate the first the equity cash flows, identify the exit year, estimate the terminal value in the exit year, and use the expected equity return as the discount rate.

Valuation Analysis – Celerity Technology Inc

Celerity Technogy Inc. ("CTI")
Discount Cash Flow Valuation Method (000's)

			PROJECTED				
						EXIT YEAR	
	Year -1	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Revenues	960,000	1,110,000	1,228,140	1,344,200	1,442,919	1,529,268	1,605,161
Cost of Revenues	(345,000)	(420,000)	(463,078)	(506,823)	(544,053)	(576,709)	(605,474)
Operating Expenses	(230,000)	(257,000)	(271,501)	(289,448)	(306,442)	(322,900)	(338,999)
EBITDA	**385,000**	**433,000**	**493,561**	**547,928**	**592,424**	**629,659**	**660,688**
Less Depreciation & Amortization	(60,000)	(65,000)	(73,688)	(80,652)	(86,575)	(91,756)	(96,310)
EBIT	325,000	368,000	**419,872**	**467,276**	**505,849**	**537,902**	**564,378**
Less Taxes			(129,769)	(147,070)	(156,960)	(158,461)	(162,851)
EAT			**290,103**	**320,206**	**348,889**	**379,441**	**401,527**
Plus Depreciation & Amortization			73,688	80,652	86,575	91,756	96,310
Less Working Capital			2,870	(4,548)	(3,869)	(3,384)	(2,974)
Less Capital Expenditures and Investments			(193,626)	(211,923)	(227,487)	(241,101)	(253,066)
Cash Before Financing Payments			**173,036**	**184,386**	**204,109**	**226,713**	**241,796**
Less Debt Service (Principal + Interest)			(125,450)	(129,600)	(153,450)	(201,750)	(237,250)
Free Cash Flow			**47,586**	**54,786**	**50,659**	**24,963**	**4,546**
TERMINAL VALUE (TV)		**TV Assumptions**					
Terminal Value using EBITDA Multiple Method		EBITDA Multiple = **7.5x**				4,722,439	
Terminal Value using Perpetuity Method		Discount Rate = **10%**				4,835,926	
Average Terminal Value		Growth = **5%**				4,779,182	
Less Debt						(1,030,000)	
Equity Value at Exit Year						3,749,182	
Equity Cash Flows		Equity Expected Return = **20%**	47,586	54,786	50,659	3,774,145	
Present Value of Equity		1,927,111	39,655	38,046	29,316	1,820,093	
Plus Debt		1,190,000					
Less Cash		(65,800)					
Firm Enterprise value		**3,051,311**					
Enteprise Value / EBITDA		7.0x					

Figure 17.10

Method 7: Leveraged Buyout (LBO) Method for Private Companies

Celerity Technogy Inc. ("CTI")
LBO Method (000's)

TRANSACTION SOURCES & USES

Sources	Capacity EBITDA x	Amount	% Capital	Inter. / Exp. Ret.	WACC	Uses		Purchase EBITDA Multiple	Amount
Bank Loan	3.5x	1,515,500	33.8%	5.0%	1.1%	Purchase Enteprise Value		10.0x	4,330,000
Corporate Bonds	2.5x	1,082,500	24.2%	8.0%	1.2%	Fees (% EV)	3.50%		151,550
Total Debt	6.0x	2,598,000	58.0%		0.0%				
Equity		1,883,550	42.0%	25.0%	10.5%				
Total Sources		4,481,550	100.0%		**10.5%**				4,481,550

Tax Rate = 36%

DEBT SCHEDULES

	Years	Interest	Year 0	Year 1	Year 2	Year 3	EXIT YEAR Year 4	Year 5
Bank Loal - Outstanding	5	5.0%	1,515,500	1,363,950	1,212,400	1,060,850	909,300	-
Bank Loan - Principal Incr./Decr.				151,550	151,550	151,550	151,550	909,300
Bank Loan - Interst Payment				75,775	68,198	60,620	53,043	45,465
Bonds - Outstanding	10	8.0%	1,082,500	1,082,500	1,082,500	1,082,500	1,082,500	1,082,500
Bonds - Principal Incr./Decr.				-	-	-	-	-
Bonds - Interst Payment				86,600	86,600	86,600	86,600	86,600

CASH FLOW PROJECTIONS

	Year -1	Year 0	Year 1	Year 2	Year 3	EXIT YEAR Year 4	Year 5
Revenues	960,000	1,110,000	1,228,140	1,344,200	1,442,919	1,529,268	1,605,161
Cost of Revenues	(345,000)	(420,000)	(463,078)	(506,823)	(544,053)	(576,709)	(605,474)
Operating Expenses	(230,000)	(257,000)	(271,501)	(289,448)	(306,442)	(322,900)	(338,999)
EBITDA	**385,000**	**433,000**	**493,561**	**547,928**	**592,424**	**629,659**	**660,688**
Less Depreciation	(60,000)	(65,000)	(73,688)	(80,652)	(86,575)	(91,756)	(96,310)
Less Amortization			(30,310)	(30,310)	(30,310)	(30,310)	(30,310)
EBIT	325,000	368,000	**389,562**	**436,966**	**475,539**	**507,592**	**534,068**
Less Taxes			(140,242)	(157,308)	(171,194)	(182,733)	(192,265)
EAT			**249,320**	**279,658**	**304,345**	**324,859**	**341,804**
Plus Depreciation & Amortization			103,998	110,962	116,885	122,066	126,620
Less Working Capital			2,870	(4,548)	(3,869)	(3,384)	(2,974)
Less Capital Expenditures and Investments			(193,626)	(211,923)	(227,487)	(241,101)	(253,066)
Cash Before Financing Payments			**162,563**	**174,149**	**189,874**	**202,441**	**212,383**
Less Debt Service (Principal + Interest)			(125,450)	(129,600)	(153,450)	(201,750)	(237,250)
Free Cash Flow			**37,113**	**44,549**	**36,424**	**691**	**(24,867)**

TERMINAL VALUE (TV)	**TV Assumptions**					
Terminal Value using EBITDA Multiple Method	EBITDA Multiple =	**10.0x**				6,296,585
Terminal Value using Perpetuity Method	Discount Rate =	**10.5%**				3,856,429
Average Terminal Value	Growth =	**5.0%**				5,076,507
Less Debt						(1,030,000)
Equity Value at Exit Year						4,046,507
Equity Cash Flows	Equity Expected Return =	**25%**	37,113	44,549	36,424	4,047,197
Present Value of Equity	1,734,583		29,690	28,511	18,649	1,657,732
Plus Debt	2,598,000					
Less Cash	-					
Firm Enterprise value	**4,332,583**					
Enteprise Value / EBITDA	10.0x					

Figure 17.11

Method 8: Valuation of Distress Firms

- **Option Pricing Model Framework**
  - In option pricing and specifically in call options the payoff formula or intrinsic value of the option is

    Option payoff = Max (o, S – X)

    where S is the stock price and X is the exercise price.
  - To calculate the enterprise value

    EV = E + D – C or EV = E + net D

    where EV is the enterprise value of the firm, E is the equity value, D is the debt and C is cash. The net D is referred to as debt minus cash implied that the current debt could be paid with cash on hand.
  - Solving for equity:

    E = EV – net D

    where E is the equity, EV is the enterprise value and net D is the net debt.

Method 8: Valuation of Distress Firms

- **Option Pricing Model Framework**

The Black-Scholes formula is

$$\text{C option payoff} = \text{Se}^{-\delta.t} \,.\, \text{N}\,(\text{d1}) - \text{Xe}^{-\text{i}.t}.\,\text{N}\,(\text{d2})$$

where S is the stock price, δ is the dividend yield, t is time until expiration, X is the option exercise price, i is the risk-free interest rate, and N is the normal distribution.

$$\mathbf{d1} = \frac{\left[\ln\left(\frac{\mathbf{S}}{\mathbf{X}}\right) + \left(\mathbf{i} - \boldsymbol{\delta} + \frac{\boldsymbol{\sigma}^2}{2}\right).\mathbf{t}\right]}{\boldsymbol{\sigma}\sqrt{\mathbf{t}}} \textit{ and } \mathbf{d2} = \mathbf{d1} - \boldsymbol{\sigma}\sqrt{\mathbf{t}}$$

where S is the current stock price, X is the contractual exercise price, i is the risk-free interest rate, δ is the dividend yield, σ is the standard deviation, and t is time to expiration.

Method 8: Valuation of Distress Firms

Input:

- S = Value of the firm = $1 billion
- X = Exercise price = debt value = $1,200 million
- σ = Standard deviation of the asset = 20%
- t = Time = term of the bond = 5 years
- i = Risk-free rate = 3%
- δ = Dividends = cash flow paying the equity = $0
- C = Equity value = E =?

Formulas and output:

Using the formula to determine the deviations d1 and d2:

$$\boldsymbol{d1 = \frac{\left[ln\left(\frac{S}{X}\right)+\left(i-\delta+\frac{\sigma^2}{2}\right).t\right]}{\sigma\sqrt{t}}} \text{ and } \boldsymbol{d2 = d1 - \sigma\sqrt{t}}$$

$d1 = .7671 \text{ and } N(d1) = .7785$

$d2 = .5678 \text{ and } N(d2) = .7149$

Using the Black Sholes formula:

$$C = Se^{-\delta.t}.N(d1) - Xe^{-i.t}.N(d2)$$

$$C = \$152.0 \text{ million}$$

Valuation Analysis of Distress Company – AB Air Co.

- AB Air Co., an airline company that entered bankruptcy in 1990. At the time of the filing, the debt outstanding, representing the exercise price X, was at $600 million with a remaining life or duration of 5 years. To establish the value of equity, the enterprise value needs to be calculated. The management put together a business plan including 5 years of projections. In the first year, the company is planning to spend more money, representing restructuring costs and downsizing. Based on the 5 years' projection, the equity analyst could calculate the present value of the future cash flows, an estimated terminal value, and an assumed discount rate using the weighted average cost of capital of 10.5%.
  - The DCF analysis yields an enterprise value or the value of S of $934 million. Obviously with S = $934 million and X = $600 million the equity is in the money. Using the Black-Scholes option pricing model the equity or the call option C is calculated at $575 million after taking into consideration the combined variance for both debt and equity using the following formula:

$$\sigma sb^2 = s^2.\sigma s^2 + b^2.\sigma b^2 + 2\,(Ws.Wb.\sigma s.\sigma b).\rho$$

where σsb^2 is the combined variance of bonds and stocks, Ws is the percentage of stocks to total capitalization, σs^2 is the stock price variance prior to bankruptcy, Wb is the bond outstanding as percentage of total capitalization, σb^2 is the bond price variance prior to bankruptcy, and ρ is the correlation between the stock and bond prices.

Valuation Analysis of Distress Company – AB Air Co.

CASE STUDY: AB Air Co.

File for Bankruptcy 1990

DEBT ASSUMPTIONS			VALUE ASSUMPTIONS (Pre-bankrupcy)	
Debt Outstanding =	600		Stock Montly Var. (1985 - 1990) =	3.15%
Weighted Average Duration=	5	years	Bonds Monthly Var. (1985 - 1990) =	2.16%
Weighted Average maturity=	8.7	years	Correlation between Stock/Bond	0.25
WACC=	10.0%		Debt proportion (1987 - 1991) =	88.30%
Tax Rate =	36.0%			

Discount Cash Flow Analysis ($ millions)		1991	1992	1993	1994	1995
Revenue		1,250.0	1,137.5	1,114.8	1,159.3	1,205.7
CoGS		(980.0)	(810.0)	(668.0)	(695.6)	(723.4)
Oper. Exp.		(720.0)	(210.0)	(205.8)	(214.0)	(222.6)
EBIT		**(450.0)**	**117.5**	**241.0**	**249.7**	**259.7**
EBIT (t)		**(162.0)**	**42.3**	**86.8**	**89.9**	**93.5**
EBIT (i-t)		**(288.0)**	**75.2**	**154.2**	**159.8**	**166.2**
Less Maintenance Capex (offset by Depreciation)		-	-	-	-	-
Less W/C (assumiung $0)		-	-	-	-	-
Cash Flow		(288.0)	75.2	154.2	159.8	166.2
Terminal Value assumption	5.0x EBIT					1,298.5
EV (PV) of the firm	**$934.8**	**(288.0)**	**75.2**	**154.2**	**159.8**	**1,464.7**

Step 1 - Find the annualized in stock and bond prices:

Annualized Variance in Stock Price σ^2 =	0.37812 (annual)	St. Dev.=	0.6149146
Annualized Variance in Bond Price σ^2 =	0.2592 (annual)	St. Dev.=	0.5091169

Step 2 - Find the annualized variance in firm value

$$(we^2 \times \sigma e^2) + (wb^2 \times \sigma b^2) + 2.(we \times wd \times ped \times \sigma e \times \sigma d).C$$

We=	11.70%	C=	0.25
Wd=	88.30%		

Annualized Variance in firm value 0.211314

The five-year bond rate (corresponding to the weighted average duration of 5.1 years) is 6.0%

Stet 3 - Find the value of call based upon the following parameters of equity as a call option

Value of the underlying asset = S = Value of the firm =	$934.8	
Exercise Price = X = Face Value of outstanding debt =	$600.0	
Life of the option = t = Weighted average duration of debt=	5	years
Variance in the value of the underlying asset = σ^2 =	0.2113143	
Riskless Rate = I = T-Bond for option life =	6.00%	

d1=	1.23721	N (d1) =	0.8919954
d2=	0.209313	N (d2) =	0.5828981

Value of the call (Equity) = 574.5364

Figure 17.12