



COST OF CAPITAL STUDY

**YIELD CAPITALIZATION
2020 ASSESSMENT YEAR**

APPENDIX C

WIRELESS

EQUITY RATE						8.75%	
CAPITAL ASSET PRICING MODEL							PAGE
	CAPM Ex Ante		6.68%				6
DIVIDEND GROWTH MODELS (Single Stage)							
	Value Line, based on Dividends Growth		7.75%				7
	Value Line, based on Earnings Growth		11.00%				8
	Value Line, based on Return on Equity		10.50%				9
FCFE GROWTH MODEL (Multi Stage)							10
					RANGE	6.675% - 13.5%	
DEBT RATE						4.00%	11
SECURED DEBT (LEASE) RATE						3.25%	11
MARKET CAPITAL STRUCTURE							
	Equity	60%	x	8.75%	=	5.25%	3
	Debt	40%	x	4.00%	=	1.60%	3
	Marginal Tax Rate	24%	=	(1-.24)	x	1.60%	3
						<u>1.22%</u>	

WEIGHTED AVERAGE COST OF CAPITAL **6.5%**

rounded

SUPPORT FOR GUIDELINE COMPANIES

WASHINGTON STATE DEPARTMENT OF REVENUE

2020 ASSESSMENT YEAR

WIRELESS

Capital Structure at Book Value

Company	Ticker	Beta	Fin'l Strength	Operting Margin	Trailing P/E	Div'd Yield	Common Stock	%	Preferred Stock	%	Long Term Debt	%	Total Debt & Equity
AT&T Inc	T	0.75	A++	n/a	10.1	5.39%	182,122,470,000	9.0%	-	0.0%	151,309,000,000	45.4%	333,431,470,000
Verizon	VZ	0.70	A++	n/a	11.6	4.06%	62,865,117,600	38.4%	-	0.0%	100,712,000,000	61.6%	163,577,117,600
Sprint Corp	S	1.10	C++	32.3%	nmf	0.00%	25,490,878,400	43.2%	-	0.0%	33,507,000,000	56.8%	58,997,878,400
US Cellular	USM	1.10	B+	17.5%	21.2	0.00%	4,210,052,760	73.7%	-	0.0%	1,502,000,000	26.3%	5,712,052,760
T-Mobile	TMUS	0.90	B++	27.4%	22.2	0.00%	28,792,915,200	50.2%	20,000,000	0.0%	28,526,000,000	49.7%	57,338,915,200
Mean		0.91	B++	26%	16.3	1.89%	60,696,286,792	42.9%		0.0%	63,111,200,000	48.0%	
Weighted Mean							303,481,433,960	49.0%	20,000,000	0.00%	315,556,000,000	51.0%	619,057,433,960
Median		0.90			16.4	0.00%		43.2%		0.0%		49.7%	
Std Dev		0.19				2.63%		23.3%		0.0%		13.6%	
Coeff Var		0.21				139.17%		54.3%		2.236068		28.4%	
Max		1.10				5.39%		73.7%		0.0%		61.6%	
Min		0.70				0.00%		9.0%		0.0%		26.3%	
Harmonic Mean		0.88						25.81%				43.85%	

Say **0.90**

**SUPPORT FOR CAPITAL STRUCTURE
MARKET VALUE**

WASHINGTON STATE DEPARTMENT OF REVENUE
2020 ASSESSMENT YEAR
WIRELESS

Capital Structure at Market Value

Company	Ticker	Stock Price	Common Shares	Common Stock	%	Preferred Stock	%	0	%	Total Debt & Equity
AT&T Inc	T	38.56	7,173,000,000	276,590,880,000	59.8%	-	0.0%	185,851,000,000	40.2%	462,441,880,000
Verizon	VZ	60.77	4,135,863,000	251,336,394,510	66.0%	-	0.0%	129,200,000,000	34.0%	380,536,394,510
Sprint Corp	S	5.21	4,111,432,000	21,420,560,720	34.2%	-	0.0%	41,286,000,000	65.8%	62,706,560,720
US Cellular	USM	36.23	86,148,000	3,121,142,040	62.1%	242,170	0.0%	1,905,000,000	37.9%	5,026,384,210
T-Mobile	TMUS	78.42	856,932,000	67,200,607,440	72.2%		0.000%	25,845,000,000	27.8%	93,045,607,440
			Mean		58.9%		0.0%		41.1%	
			Weighted Mean	619,669,584,710	61.7%	242,170	0.00%	384,087,000,000	38.3%	1,003,756,826,880
			Median		62.1%		0.00%		37.9%	
			Harmonic Mean		54.9%		7%		37.9%	
			Std Dev		14.6%		0.00%		14.6%	
			Coeff Var		24.8%		223.61%		35.5%	
			Max		72.2%		0.0%		65.8%	
			Min		34.2%		0.0%		27.8%	

Source:

Stock Price: Yahoo

Market Value Debt: Bond Analysis

Say

60%

0%

40%

SUPPORT FOR MARKET MULTIPLES

WASHINGTON STATE DEPARTMENT OF REVENUE

2020 ASSESSMENT YEAR

WIRELESS

Company	Ticker	Stock Price	Revenues	Multiple	Cash Flow	Multiple	Earnings	Multiple	Book Value	Multiple
AT&T Inc	T	38.56	24.98	1.5	7.52	5.1	3.58	0.1	25.39	1.5
Verizon	VZ	60.77	31.88	1.9	8.90	6.8	4.81	12.6	15.20	4.0
Sprint Corp	S	5.21	7.80	0.7	2.15	2.4	(0.20)		6.20	0.84
US Cellular	USM	36.23	46.69	0.78	9.62	3.8	1.44	25.2	48.87	0.7
T-Mobile	TMUS	78.42	52.51	1.5	11.77	6.7	4.02	19.5	33.60	2.33
		Mean		1.3		5.0		14.3		1.9
		Median		1.5		5.1		16.1		1.5
		Harmonic Mean		1.1		4.3		0.4		1.3
		Max		1.9		6.8		25.2		4.0
		Min		0.67		2.4		0.1		0.74
		Std Dev		0.5		1.9		10.8		1.3
		Coefficient of Variation		0.4		0.4		0.8		0.7
		Harmonic Mean		1.1		4.3		0.4		1.3
		Percentile .25		0.8		3.8		9.5		0.8
		Percentile .75		1.5		6.7		20.9		2.3
		Say		1.50		5.00		16.00		2.30

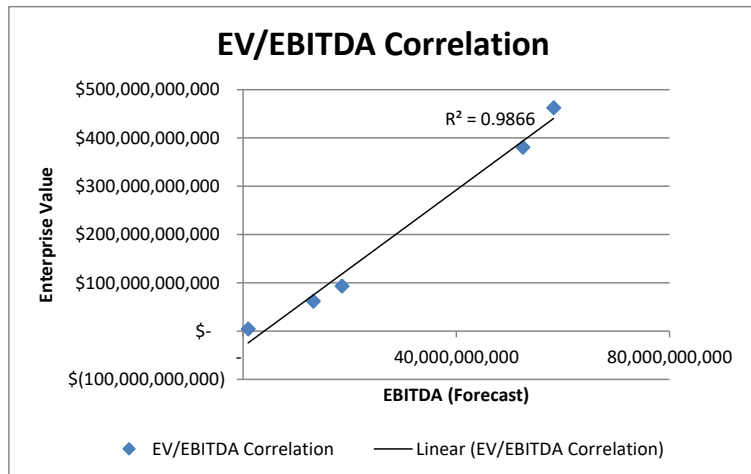
ENTERPRISE VALUE MULTIPLES

WASHINGTON STATE DEPARTMENT OF REVENUE

2020 ASSESSMENT YEAR

WIRELESS

Guideline Companies	Ticker	Enterprise Value	EBITDA	EV /	One Year	EBITDA	EV /	Revenue	EV/Sales	Cash Flow	Debt Service	EV / CF
				EBITDA	Cash Flow		Change VL					
			historic	historic	forecast	forecast	forecast	9%	Forecast	Forecast	Forecast	
AT&T Inc	T	\$ 462,441,880,000	57,630,000,000	8.02	1.1%	58,243,085,106	7.94	183,040,000,000	2.53	54,340,000,000	7,434,040,000	7.49
Verizon	VZ	\$ 380,536,394,510	51,898,000,000	7.33	1.1%	52,481,123,596	7.25	133,795,168,050	2.84	37,260,000,000	5,168,000,000	8.97
Sprint Corp	S	\$ 61,930,560,720	13,164,000,000	4.70	0.0%	13,164,000,000	4.70	32,069,169,600	1.93	9,030,000,000	1,651,440,000	5.80
US Cellular	USM	\$ 4,203,384,210	956,856,000	4.39	-1.2%	944,920,166	4.45	4,104,952,200	1.02	817,000,000	76,200,000	4.71
T-Mobile	TMUS	\$ 93,045,607,440	17,038,000,000	5.46	8.8%	18,529,005,947	5.02	46,959,873,600	1.98	10,969,600,000	1,033,800,000	7.75
		Mean					5.87		2.06			6.94
		Median					5.02		1.98			7.49
		Max					7.94		2.84			8.97
		Min					4.45		1.02			4.71
		Std Dev					1.60		0.69			1.69
		Coefficient of Variation					0.27		0.34			0.24
		Harmonic Mean					5.55		1.82			6.59
		Say					5.00		2.00			7.50



4.75 put in income direct excluding IPP
7.00 put in income direct including IPP

Forecast EV/EBITDA By Rank

Guideline Companies	EV/EBITDA forecast	
US Cellular	4.45	4.72 Low Average
Sprint Corp	4.70	4.70 Low Median
T-Mobile	5.02	4.75 Say
Verizon	7.25	6.74 Average
AT&T Inc	7.94	7.25 Median
		7.00 Say

SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT CAPITAL ASSET PRICING MODEL

WASHINGTON STATE DEPARTMENT OF REVENUE

2020 ASSESSMENT YEAR

WIRELESS

Ex Ante

$$K_e = R_f + B (R_p)$$

Ke = Cost of Equity **6.68%**

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Rm =	rate of return	7.15%
Rf =	risk free rate	2.40%
Rp =	risk premium	4.75%
B =	Beta	0.90

Rp = Risk Premium **4.75%**

to above

Shannon Pratt and Roger Grabowski	3.5 - 6%	
Cost of Capital, Applications and Examples, Fifth Edition, 2014		
Dr. Aswath Damodaran	5.20%	chart page 15
http://pages.stern.nyu.edu/~adamodar/	4.72%	adjusted for Rf
2019 Implied Premium		
John Graham and Campbell Harvey	6.81%	10 year expected real return
Duke CFO magazine Global Business Outlook survey - U.S. 4th Quarter - Dec 2019 pg 38	6.30-7.32%	95% Interval 10 year expected
	6.23%	adjusted for Rf
	1.82%	Rf rate used in survey

Rf = Risk Free Rate **2.40%**

Value Line Investment Survey, Selected Yields January 10, 2020, page 1313
as of 12-31-19

US Treasury Securities year end data	
5 year	1.69%
10 year	1.92%
30 year	2.39%
30 year Zero	2.42%

Federal Reserve Statistical Release (<http://www.federalreserve.gov/Releases/H15/Current/>)
January 2, 2020 as of 12-31-19

Treasury Constant Maturities		
5 year	1.69%	
10 year	1.92%	
20 year	2.25%	
30 year	2.39%	
20 year TIPS	<u>0.39%</u>	1.86%
30 year TIPS	<u>0.58%</u>	1.81%

TIPS inflation indication

Inflation **2.00%**

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Value Line Investment Survey, Economic Series January 3, 2020, page 1500	
Consumer Price Index Annual Rate of Change 2022-2024	2.50%
The Livingston Survey December 13, 2019, page 4, 10	
Inflation median (measured by the Consumer Price Index) over next 10 y	2.22%

Gross Domestic Product (GDP) **3.90%**

Federal Reserve Projected Long Run Real GDP Growth
Median Projection Value From Dec 11, 2019 Report 1.90%
<https://www.federalreserve.gov/monetarypolicy/files/fomcprojetabl20191211.pdf>

Congressional Budget Office Real GDP Economic Projections
The Budget and Economic Outlook 2020-2030 Table B-1, pg 75
Average Percentage Change Year To Year 1.80%
<http://www.cbo.gov/publication/56020> 2020-2024
2025-2035 1.65%

Federal Reserve Bank of Philadelphia
The Livingston Survey, December 13, 2019, page 4, 10 2.00%
Average Annual Real GDP Growth Rate for Next 10 Years
<https://www.philadelphiafed.org/research-and-data/real-time-center/livingston-survey>

SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

WASHINGTON STATE DEPARTMENT OF REVENUE
2020 ASSESSMENT YEAR
WIRELESS

Based on Dividend Growth

$$K_e = (D_1 / P_0) + G_D$$

Ke = Cost of Equity
D1 = Expected Dividends
P0 = Current Stock Price
GD = Sustainable Growth -- Dividend
assumption Sustainable growth can not exceed inflation plus real GDP

Company	Ticker	Stock Price (Po)	Expected Dividend (D1)	Dividend Yield (D1/Po)	Dividend Growth (GD) VL	Ke	Forecast Dividend Growth	Ke Forecast Growth	Sustainable Dividend Growth	Ke Sustainable Growth
AT&T Inc	T	38.56	2.08	5.39%	4.50%	9.89%	5.04%	10.43%	3.90%	9.29%
Verizon	VZ	60.77	2.47	4.06%	2.00%	6.06%	2.10%	6.17%	2.10%	6.17%
Sprint Corp	S	5.21	0.00		0.00%				3.90%	
US Cellular	USM	36.23	0.00		0.00%				3.90%	
T-Mobile	TMUS	78.42	0.00		0.00%				3.90%	
			Mean	4.73%		7.98%				7.73%
			Median	4.73%		7.98%				7.73%
			Harmonic Mean	4.64%		7.52%				7.41%
			Std Dev	0.94%		2.71%				2.21%
			Coeff Var	19.88%		33.94%				28.60%
			Max	5.39%		9.89%				9.29%
			Min	4.06%		6.06%				6.17%

Source: Value Line Projections 15-17 to 21-23

8.00%

7.75%

Say

7.75%
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**SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT
DIVIDEND GROWTH MODEL**

WASHINGTON STATE DEPARTMENT OF REVENUE

2020 ASSESSMENT YEAR

WIRELESS

Based on Earnings Growth

9.0%

$$K_e = (D_1 / P_0) + G$$

- Ke = Cost of Equity
- D1 = Expected Dividends
- P0 = Current Stock Price
- G = Sustainable Growth -- Earnings

assumption: Sustainable growth can not exceed inflation plus real GDP

Company	Ticker	Stock Price (Po)	Expected Earnings (D1)	Yield (D1/Po)	Earnings Growth (G) VL	Ke	Forecast Earnings Growth	Ke Forecast Growth	Sustainable Earnings Growth	Ke Sustainable Growth
AT&T Inc	T	38.56	3.65	9.47%	5.50%	14.97%	6.31%	15.78%	3.90%	13.37%
Verizon	VZ	60.77	4.95	8.15%	4.00%	12.15%	4.42%	12.57%	3.90%	12.05%
Sprint Corp	S	5.21	-0.15		0.00%				3.90%	
US Cellular	USM	36.23	1.50	4.14%	15.00%	19.14%	21.88%	26.02%	3.90%	8.04%
T-Mobile	TMUS	78.42	4.85	6.18%	14.00%	20.18%	19.92%	26.10%	3.90%	10.08%
			Mean			16.61%				10.88%
			Median			17.05%				11.07%
			Harmonic Mean			15.94%				10.49%
			Std Dev			3.73%				2.33%
			Coeff Var			22.48%				21.37%
			Max			20.18%				13.37%
			Min			12.15%				8.04%

Source: Value Line Projections 15-17 to 21-23

17.00%

11.00%

Say

11.00%

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SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

WASHINGTON STATE DEPARTMENT OF REVENUE

2020 ASSESSMENT YEAR

WIRELESS

Based on Return on Equity

Ke = (D1 / Po) + G
Ke = Cost of Equity
D1 = Expected Dividends
E1 = Expected Earnings
Po = Current Price
G = Sustainable Growth
b = Retained Earnings % (plowback)
ROE = Return on Equity

Company	Ticker	Stock Price (Po)	Expected Dividend (D1)	Dividend Yield (D1/Po)	b (1-payout ratio)	ROE	Growth (G) (b*ROE)	Ke Dividends	Expected Earnings (E1)	Ke Earnings	
AT&T Inc	T	38.56	2.08	5.39%	43.0%	9.47%	4.070%	9.46%	3.65	13.54%	
Verizon	VZ	60.77	2.47	4.06%	50.0%	8.15%	4.073%	8.14%	4.95	12.22%	
Sprint Corp	S	5.21	0.00		100.0%	nmf	nmf		(0.15)		
US Cellular	USM	36.23	0.00		100.0%	4.14%	4.140%		1.50	8.28%	
T-Mobile	TMUS	78.42	0.00		100.0%	6.18%	6.185%		4.85	12.37%	
								Mean	8.80%		11.60%
								Median	8.80%		12.29%
								Harmonic Mean	8.75%		11.19%
								Std Dev	0.94%		2.29%
								Coeff Var	10.66%		19.75%
								Max	9.46%		13.54%
								Min	8.14%		8.28%
									8.75%		12.25%

Say

10.50%

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SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT FREE CASH FLOW TO EQUITY MODEL

Washington State Department of Revenue
2020 ASSESSMENT YEAR

Based on Earnings Growth

$$K_e = (FCFE / P) + G$$

K_e = Cost of Equity
 $FCFE$ = Free Cash Flow to Equity
 P = Current Price
 G = Sustainable Growth

Company	Ticker	Stock Price	Expected Earnings	P/E	Payout Ratio	ROE	Ke
AT&T Inc	T	38.56	3.65	10.56	57.00%	14.00%	14.91%
Verizon	VZ	60.77	4.95	12.28	50.00%	37.00%	11.86%
Sprint Corp	S	5.21	-0.15	nmf	0.00%	nmf	15.19%
US Cellular	USM	36.23	1.50	24.15	0.00%	3.00%	5.84%
T-Mobile	TMUS	78.42	4.85	16.17	0.00%	13.00%	13.43%
Mean				15.79	21.40%	16.75%	12.25%
Harmonic Mean				14.32		7.86%	10.80%
Median				14.22	0.00%	13.50%	13.43%
Max				24.15	57.00%	37.00%	15.19%
Min				10.56	0.00%	3.00%	5.84%
Std Dev				6.05	29.41%	14.38%	3.82%
Coefficient of Variation				0.38	137.42%	85.88%	31.20%

Say

13.50%

SUPPORT FOR DEBT RATING AND DEBT YIELD RATE

WASHINGTON STATE DEPARTMENT OF REVENUE

2020 ASSESSMENT YEAR

WIRELESS

Company	Ticker	Mergent's Ratings	S&P Ratings	WAYTM	S&P YTM (avg)	Mergent's Ratings	S&P Ratings	Mergent's	S&P	
AT&T Inc	T	Aa3	BBB	3.36%	3.49%	6	11	Aaa1	AAA+	1
Verizon	VZ	Baa1	BBB+	3.19%	3.34%	10	10	Aaa2	AAA	2
Sprint Corp	S	Baa1	B	2.11%	4.47%	10	17	9%	AAA-	3
US Cellular	USM	Baa2	BB	6.70%	5.56%	11	14	Aa1	AA+	4
T-Mobile	TMUS		BB+	5.11%	2.65%		13	Aa2	AA	5
Overall Average Debt Rating		A3	BB+	4.09%		9.3	13.0	Aa3	AA-	6

3.46%

All issues 20+ year maturities

Guideline Companies, All Ratings

3.29% 4.00%

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A1	A+	7
A2	A	8
A3	A-	9
Baa1	BBB+	10
Baa2	BBB	11
Baa3	BBB-	12
Ba1	BB+	13
Ba2	BB	14
Ba3	BB-	15
B1	B+	16
B2	B	17
B3	B-	18
Caa1	CCC+	19
Caa2	CCC	20

Mergent's Bond Record January 2020

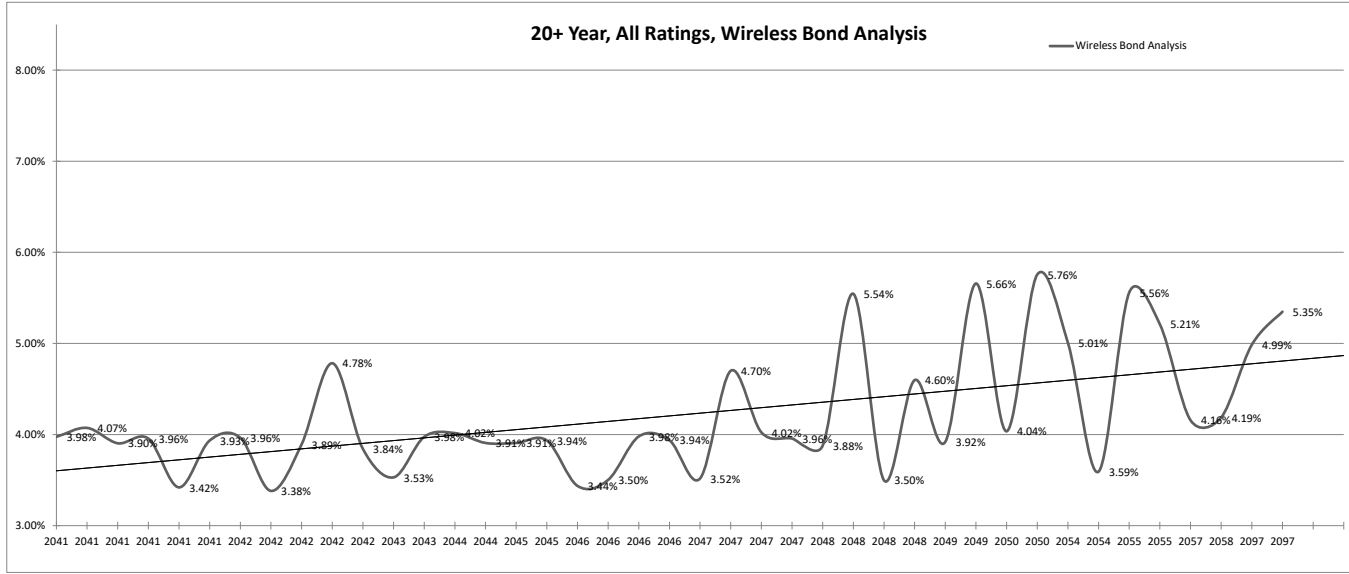
Corporate	Aaa	Aa	A	Baa
October	3.01%	3.13%	3.37%	3.93%
November	3.06%	3.16%	3.40%	3.94%
December	3.01%	3.11%	3.36%	3.88%
4th Qtr Average	3.03%	3.13%	3.38%	3.92%
2019 Average	3.39%	3.53%	3.77%	4.38%
Public Utilities	Aaa	Aa	A	Baa
October		3.24%	3.39%	3.72%
November		3.25%	3.43%	3.76%
December		3.22%	3.40%	3.73%
4th Qtr Average		3.24%	3.41%	3.74%
2019 Average		3.61%	3.77%	4.19%
Industrials	Aaa	Aa	A	Baa
October	3.01%	3.01%	3.35%	4.12%
November	3.06%	3.06%	3.37%	4.12%
December	3.01%	3.00%	3.32%	4.03%
4th Qtr Average	3.03%	3.02%	3.35%	4.09%
2019 Average	3.39%	3.45%	3.76%	4.55%

Debt Yield Rate **4.00%**

Cost of Secured Debt (Operating Lease) Rate **3.25%**

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20+ Year, All Ratings, Wireless Bond Analysis



12/31/2020

Wireless Bond Analysis

Company	type	Call	coupon	maturity	Price 12/16	Issued / Book	current yield	yield to maturity	Weighted Ave Rating	Mkt Val	Mkt : Book	Embedded Ral Debt Service	WAYTM	WAYTM	Finra YTM			
AT&T Inc	Fix Rt Sr Nt		6.375	2041	133.22	984,000,000	4.785%	3.98%	0.01% BBB	\$ 1,310,884,800	133.22%		62,730,000	0.00013487	0.0288%	4.026		
AT&T Inc	Fix Rt Nt		5.375	2041	117.87	447,305,000	4.07%	4.07%	0.01% BBB	\$ 527,238,404	117.87%		24,042,644	0.00006281	0.0134%	4.123		
AT&T Inc	Fix Rt Nt		5.550	2041	122.93	2,000,000,000	4.515%	3.90%	0.03% BBB	\$ 2,458,600,000	122.93%		111,000,000	0.00026922	0.0576%	3.96		
AT&T Inc	Fix Rt Nt		6.250	2041	131.82	521,724,000	4.741%	3.96%	0.01% BBB	\$ 687,736,577	131.82%		32,607,750	0.00007115	0.0152%	4.009		
Verizon Communications	Notes		4.750	2041	119.37	750,000,000	3.98%	3.42%	0.01% BBB+	\$ 895,275,000	119.37%		35,625,000	0.00008844	0.0202%	3.476		
Verizon Communications	Notes		6.000	2041	128.70	1,000,000,000	4.66%	3.93%	0.01% BBB+	\$ 1,287,000,000	128.70%		60,000,000	0.00013565	0.0309%	3.984		
AT&T Inc	Fix Rt Sr Nt		4.900	2042	113.37	394,320,000	4.322%	3.96%	0.01% BBB	\$ 447,040,584	113.37%		19,321,680	0.00005390	0.0115%	3.992		
Verizon Communications	Notes		3.850	2042	107.08	1,250,000,000	3.60%	3.38%	0.01% BBB+	\$ 1,338,500,000	107.08%		48,125,000	0.00014573	0.0332%	3.395		
AT&T Inc	Fix Rt Sr Nt		5.150	2042	118.09	1,209,000,000	4.361%	3.89%	0.02% BBB	\$ 1,427,708,100	118.09%		62,263,500	0.00016226	0.0347%	3.921		
AT&T Inc	Fix Rt Nt		4.300	2042	93.60	1,956,149,000	4.594%	4.78%	0.03% BBB	\$ 1,831,014,148	93.60%		84,114,407	0.00032257	0.0690%	4.724		
AT&T Inc	FR partially		4.300	2042	106.62	1,955,000,000	4.033%	3.84%	0.03% BBB	\$ 2,084,421,000	106.62%		84,065,000	0.00025897	0.0554%	3.856		
Verizon Communications	Fix Rt Nt		6.550	2043	146.36	15,000,000,000	4.48%	5.53%	0.18% BBB+	\$ 21,954,000,000	146.36%		982,500,000	0.00182554	0.4163%	3.618		
AT&T Inc	Fix Rt Nt		5.350	2043	120.20	436,339,000	4.45%	3.98%	0.01% BBB	\$ 524,479,478	120.20%		23,344,137	0.00005980	0.0128%	4.027		
AT&T Inc	Fix Rt Nt		4.650	2044	109.53	470,656,000	4.25%	4.02%	0.01% BBB	\$ 515,509,517	109.53%		21,885,504	0.00006517	0.0139%	4.025		
AT&T Inc	Fix Rt Nt		4.800	2044	113.56	2,000,000,000	4.23%	3.91%	0.03% BBB	\$ 2,271,200,000	113.56%		96,000,000	0.00026946	0.0576%	3.921		
AT&T Inc	Fix Rt Nt		4.350	2045	106.90	3,044,000,000	4.07%	3.91%	0.04% BBB	\$ 3,254,036,000	106.90%		132,414,000	0.00041008	0.0877%	3.914		
AT&T Inc	Fix Rt Nt		4.850	2045	114.22	795,686,000	4.25%	3.94%	0.01% BBB	\$ 908,832,549	114.22%		38,590,771	0.00010795	0.0231%	3.95		
Verizon Communications	Fix Rt Nt		4.125	2046	111.57	1,500,000,000	3.70%	3.44%	0.02% BBB+	\$ 1,673,550,000	111.57%		61,875,000	0.00017773	0.0405%	3.456		
Verizon Communications	Notes		4.862	2046	122.69	4,500,000,000	3.96%	3.50%	0.05% BBB+	\$ 5,521,050,000	122.69%		218,790,000	0.00054335	0.1239%	3.539		
AT&T Inc	Fix Rt Nt		4.750	2046	112.21	3,500,000,000	4.23%	3.98%	0.05% BBB	\$ 3,927,350,000	112.21%		166,250,000	0.00048018	0.1027%	3.988		
AT&T Inc	Fix Rt Nt		5.150	2046	119.30	1,749,602,000	4.32%	3.94%	0.02% BBB	\$ 2,087,275,186	119.30%		90,104,503	0.00023750	0.0508%	3.963		
Verizon Communications	FR Sr Nt		5.500	2047	133.80	1,500,000,000	4.11%	3.52%	0.02% BBB+	\$ 2,007,000,000	133.80%		82,500,000	0.00018195	0.0415%	3.551		
AT&T Inc	Fix Rt Gbl Nt		4.900	2047	103.00	207,017,000	4.76%	4.70%	0.00% BBB	\$ 213,227,510	103.00%		10,143,833	0.00003354	0.0072%	3.55		
AT&T Inc	Fix Rt Gbl Nt		5.450	2047	122.98	2,000,000,000	4.43%	4.02%	0.03% BBB	\$ 2,459,600,000	122.98%		109,000,000	0.00027748	0.0593%	4.034		
AT&T Inc	Fix Rt Sr Nt		5.650	2047	127.50	1,500,000,000	4.43%	3.96%	0.02% BBB	\$ 1,912,500,000	127.50%		84,750,000	0.00020461	0.0437%	3.967		
AT&T Inc	Fix Rt Sr Nt		4.500	2048	110.40	4,498,000,000	4.08%	3.88%	0.06% BBB	\$ 4,965,792,000	110.40%		202,410,000	0.00060146	0.1286%	3.883		
AT&T Inc	FR Global Notes		4.500	2048	85.43	4,500,000,000	5.27%	5.54%	0.09% BBB	\$ 3,844,350,000	85.43%		202,500,000	0.00086028	0.1839%	5.494		
Verizon Communications	Sr Notes		4.522	2048	117.90	5,000,000,000	3.84%	3.50%	0.06% BBB+	\$ 5,895,000,000	117.90%		226,100,000	0.00060304	0.1375%	3.525		
Verizon Communications	Sr Notes		5.000	2048	106.21	51,593,000	4.71%	4.60%	0.00% BBB+	\$ 54,796,925	106.21%		2,579,650	0.000030818	0.00019%	3.073		
AT&T Inc	FR Global Notes		4.550	2049	110.70	2,494,000,000	4.11%	3.92%	0.03% BBB	\$ 2,760,850,000	110.70%		113,477,000	0.00033708	0.0721%	3.924		
AT&T Inc	FR Global Notes		4.550	2049	84.50	2,500,000,000	5.38%	5.66%	0.05% BBB	\$ 2,112,500,000	84.50%		113,750,000	0.00048768	0.1043%	5.597		
AT&T Inc	FR Global Notes		4.250	2050	103.66	1,265,000,000	4.10%	4.04%	0.02% BBB	\$ 1,311,299,000	103.66%		53,762,500	0.00017601	0.0376%	flat		
AT&T Inc	FR Global Notes		5.150	2050	91.50	1,694,666,000	5.63%	5.76%	0.03% BBB	\$ 1,690,551,603	91.50%		87,275,299	0.00033630	0.0719%	4.012		
Verizon Communications	Fix Rt Sr Nt		5.012	2054	100.08	5,474,000,000	5.01%	5.01%	0.09% BBB+	\$ 5,478,214,980	100.08%		274,356,880	0.00094504	0.2155%	5.007		
Verizon Communications	Fix Rt Nt		5.012	2054	127.40	5,500,000,000	3.93%	3.59%	0.07% BBB+	\$ 7,007,000,000	127.40%		275,660,000	0.00068125	0.1553%	3.618		
Verizon Communications	Notes		4.672	2055	86.51	5,500,000,000	5.40%	5.56%	0.11% BBB+	\$ 4,758,050,000	86.51%		256,960,000	0.00105419	0.2404%			
Verizon Communications	Fix Rt Notes		4.672	2055	91.45	5,500,000,000	5.11%	5.21%	0.10% BBB+	\$ 5,029,915,000	91.45%		256,960,000	0.00098812	0.2253%	5.198		
AT&T Inc	FR Global Notes		5.700	2057	128.71	1,000,000,000	4.43%	4.16%	0.01% BBB	\$ 1,287,100,000	128.71%		57,000,000	0.00014335	0.0306%	4.165		
AT&T Inc	FR Global Notes		5.300	2058	120.88	643,706,000	4.38%	4.19%	0.01% BBB	\$ 778,111,813	120.88%		34,116,418	0.00009292	0.0199%	4.197		
AT&T Inc	FR Global Notes		7.120	2097	141.79	85,856,000	5.02%	4.99%	0.00% BBB	\$ 121,735,222	141.79%		6,112,947	0.00001476	0.0032%	4.988		
Bell South Capital Funding	deb	Z100	7.120	2097	132.52	500,000,000	5.37%	5.35%	0.01% BBB	\$ 662,600,000	132.52%		35,600,000	0.00009219	0.0197%	5.35		
Total						96,877,619,000				Total	\$ 111,142,903,397		114.73%	5.10%	\$ 4,940,663,422	3.25%	4.075%	4.08

Source: Standard & Poor's Bond Guide, January 2018, 2017 Yr End Prices

Embedded debt rate	5.0999%
Weighted average yield to maturity	3.2483%
Debt service / Market value	4.4453%
Finra YTM	4.08%
	4.00%

SAY

DATA INPUT

WASHINGTON STATE DEPARTMENT OF REVENUE

2020 ASSESSMENT YEAR

WIRELESS

Data entered on this page will flow to the applicable worksheets.

Guideline Companies			Current Year												
Stock Price 12/31/2019		Beta levered	Revenues Per Share	Cash Flow Per Share	Earnings Per Share	Dividends Per Share	Book Value	Common Shares	Long-Term Debt	Capital Spending per share	Trailing P/E Ratio	Average Annual Dividend Yield	Operating Margin	Income Tax Rate	
Name	Ticker	Yahoo	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	
AT&T Inc	T	\$38.56	0.75	\$ 24.98	\$ 7.52	\$ 3.58	\$ 2.04	\$ 25.39	7,173,000	\$ 151,309,000,000	\$ 2.71	10.10	6.00	n/a	18.9%
Verizon	VZ	\$60.77	0.70	\$ 31.88	\$ 8.90	\$ 4.81	\$ 2.42	\$ 15.20	4,135,863	\$ 100,712,000,000	\$ 4.34	11.60	4.20	n/a	25.0%
Sprint Corp	S	\$5.21	1.10	\$ 7.80	\$ 2.15	\$ (0.20)	\$ -	\$ 6.20	4,111,432	\$ 33,507,000,000	\$ 2.60	nmf	n/a	32.3%	nmf
US Cellular	USM	\$36.23	1.10	\$ 46.69	\$ 9.62	\$ 1.44	\$ -	\$ 48.87	86,148	\$ 1,502,000,000	\$ 7.55	21.20	n/a	17.5%	28.1%
T-Mobile	TMUS	\$78.42	0.90	\$ 52.51	\$ 11.77	\$ 4.02	\$ -	\$ 33.60	856,932	\$ 28,526,000,000	\$ 7.46	22.20	n/a	27.4%	24.7%

Value Line March 13, 2020

The harmonic mean is the preferable method for averaging multiples, such as the price/earning ratio, in which price is in the numerator. If these ratios are averaged using an arithmetic mean (a common error), high data points are given greater weights than low data points. The harmonic mean, on the other hand, gives equal weight to each data point.

Note:

Value Line figures are all values in US dollars.

Forecast % Change

% Return on Shareholders' Equity	Projected (Next Year)											Dividends	Earnings	Cash Flow	Revenue	Income
	Revenues Per Share	Cash Flow Per Share	Earnings Per Share	Dividends	Bk Value	Common Shares	Capital Spending per share	% Return on Shareholders' Equity	% Retained to Common Equity	All Dividends to Net Profits	Market to Book	2020-2024	2020-2024	2020-2024	2020-2024	Operating Income
VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	M*
14.3%	\$ 25.60	\$ 7.60	\$ 3.65	\$ 2.08	26.10	7,150,000	2.80	14.0%	6.0%	57.0%	112.7%	4.50	5.50	3.50	2.50	\$29,413,000,000
37.0%	\$ 32.35	\$ 9.00	\$ 4.95	\$ 2.47	15.25	4,140,000	4.25	37.0%	37.0%	50.0%	117.1%	2.00	4.00	2.00	1.50	\$30,470,000,000
nmf	\$ 7.80	\$ 2.15	\$ (0.15)	\$ -	5.95	4,200,000	1.70	nmf	nmf	0.0%	101.1%	0.00	0.00	3.50	nil	\$ 1,084,000,000
3.0%	\$ 47.65	\$ 9.50	\$ 1.50	\$ -	49.40	86,000	11.50	3.0%	3.0%	0.0%	104.7%	0.00	15.00	2.50	2.50	\$ 130,000,000
12.0%	\$ 54.80	\$12.80	\$ 4.85	\$ -	38.50	857,000	8.15	13.0%	13.0%	0.0%	103.6%	0.00	14.00	6.50	3.50	\$ 5,722,000,000

ave 16.8%
 med 13.5%
 har mean 8%
 53.5%

16.6%

Balance Sheet					Cash Flow	Fair Value	Carrying Value	Current Maturity	ROE	All Div'ds to Net Prof
Current Assets	PP & E Gross	Current Liabilities	Long Term Debt	Intangibles (excl. Goodwill)	Depreciation & Amortization	Debt	Debt	Rent expense	5 yr	5 yr
M*	M*	M*	M*	M*	M*	10-K	10-k	10-K	VL	VL
\$ 54,761,000,000	\$ 357,577,000,000	\$ 68,911,000,000	\$ 149,437,000,000	\$ 157,617,000,000	\$ 28,217,000,000	\$ 185,851,000,000	\$ 164,836,000,000	\$ 5,684,000,000	14.0%	58%
\$ 37,473,000,000	\$ 288,428,000,000	\$ 44,868,000,000	\$ 99,932,000,000	\$ 104,557,000,000	\$ 16,682,000,000	\$ 129,200,000,000	\$ 110,373,000,000	\$ 4,746,000,000	40.0%	50%
\$ 12,891,000,000	\$ 41,740,000,000	\$ 12,115,000,000	\$ 35,366,000,000	\$ 44,793,000,000	\$ 9,380,000,000	\$ 41,286,000,000	\$ 40,820,000,000	\$ 2,700,000,000	8.5%	
\$ 1,573,000,000	\$ 9,193,000,000	\$ 750,000,000	\$ 1,502,000,000	\$ 2,471,000,000	\$ 702,000,000	\$ 1,905,000,000	\$ 1,819,000,000	\$ 124,856,000	3.5%	
\$ 9,305,000,000	\$ 68,750,000,000	\$ 12,506,000,000	\$ 24,944,000,000	\$ 36,580,000,000	\$ 6,616,000,000	\$ 25,845,000,000	\$ 24,944,000,000	\$ 4,700,000,000	14.5%	

16.1% 54.0%
8.8% 53.7%
14.0% 54.0%

SUPPORT FOR DIRECT CAPITALIZATION EQUITY COMPONENT

WASHINGTON STATE DEPARTMENT OF REVENUE

2020 ASSESSMENT YEAR

WIRELESS

Company	Ticker	Stock Price	2019		2020		2019		2020	
			Actual Earnings Ratio (EPS/P)		Projected Earnings Ratio (PEPS/P)		Cash Flow Ratio (CF/P)		Projected Cash Flow Ratio (PCF/P)	
AT&T Inc	T	38.56	3.58	9.28%	3.65	9.47%	7.52	19.50%	7.60	19.71%
Verizon	VZ	60.77	4.81	7.92%	4.95	8.15%	8.90	14.65%	9.00	14.81%
Sprint Corp	S	5.21	(0.20)		(0.15)		2.15	41.27%	2.15	41.27%
US Cellular	USM	36.23	1.44	3.97%	1.50	4.14%	9.62	26.55%	9.50	26.22%
T-Mobile	TMUS	78.42	4.02	5.13%	4.85	6.18%	11.77	15.01%	12.80	16.32%
		Mean		6.58%		6.98%		23.40%		23.67%
		Median		6.52%		7.17%		19.50%		19.71%
		Max		9.28%		9.47%		41.27%		41.27%
		Min		3.97%		4.14%		14.65%		14.81%
		stdev		2.45%		2.33%		11.08%		10.77%
		cov		37.25%		33.31%		47.38%		45.53%
		harmean		5.88%		6.33%		20.15%		20.67%
		Say		6.50%		7.25%		19.50%		19.75%

Source:

Actual earnings: Value Line

Estimated Earnings: Value Line

Actual Cash Flow: Value Line

Estimated Cash Flow: Value Line

IMPLIED PREMIUMS FOR US MARKET

Updated January 5, 2020

Source: <http://pages.stern.nyu.edu/~adamodar/>

These implied premiums are calculated using the S&P 500.

Year	Earnings Yield	Dividend Yield	S&P 500	Earnings*	Dividends*	Dividends + Buybacks	Change in Earnings	Change in Dividends	T.Bill Rate	T.Bond Rate	Bond-Bill	Smoothed Growth	Implied Premium	Analyst Growth Estimate	Implied Premium (FCFE)	Implied Premium	ERP/Riskfree Rate
1960	5.34%	3.41%	58.11	3.10	1.98				2.66%	2.76%	0.10%	2.45%					
1961	4.71%	2.85%	71.55	3.37	2.04		8.60%	2.91%	2.13%	2.35%	0.22%	2.41%	2.92%		2.92%		1.24
1962	5.81%	3.40%	63.1	3.67	2.15		8.79%	5.21%	2.73%	3.85%	1.12%	4.05%	3.56%		3.56%		0.92
1963	5.51%	3.13%	75.02	4.13	2.35		12.75%	9.00%	3.12%	4.14%	1.02%	4.96%	3.38%		3.38%		0.82
1964	5.62%	3.05%	84.75	4.76	2.58		15.23%	10.08%	3.54%	4.21%	0.67%	5.13%	3.31%		3.31%		0.79
1965	5.73%	3.06%	92.43	5.30	2.83		11.20%	9.42%	3.93%	4.65%	0.72%	5.46%	3.32%		3.32%		0.71
1966	6.74%	3.59%	80.33	5.41	2.88		2.23%	1.96%	4.76%	4.64%	-0.12%	4.19%	3.68%		3.68%		0.79
1967	5.66%	3.09%	96.47	5.46	2.98		0.85%	3.37%	4.21%	5.70%	1.49%	5.25%	3.20%		3.20%		0.56
1968	5.51%	2.93%	103.86	5.72	3.04		4.81%	2.09%	5.21%	6.16%	0.95%	5.32%	3.00%		3.00%		0.49
1969	6.63%	3.52%	92.06	6.10	3.24		6.66%	6.49%	6.58%	7.88%	1.30%	7.55%	3.74%		3.74%		0.47
1970	5.98%	3.46%	92.15	5.51	3.19		-9.72%	-1.61%	6.53%	6.50%	-0.03%	4.78%	3.41%		3.41%		0.52
1971	5.46%	3.10%	102.09	5.57	3.16		1.15%	-0.74%	4.39%	5.89%	1.50%	4.57%	3.09%		3.09%		0.52
1972	5.23%	2.70%	118.05	6.17	3.19		10.76%	0.71%	3.84%	6.41%	2.57%	5.21%	2.72%		2.72%		0.42
1973	8.16%	3.70%	97.55	7.96	3.61		28.93%	13.24%	6.93%	6.90%	-0.03%	8.30%	4.30%		4.30%		0.62
1974	13.64%	5.43%	68.56	9.35	3.72		17.48%	3.14%	8.00%	7.40%	-0.60%	6.42%	5.59%		5.59%		0.76
1975	8.55%	4.14%	90.19	7.71	3.73		-17.54%	0.30%	5.80%	7.76%	1.96%	5.99%	4.13%		4.13%		0.53
1976	9.07%	3.93%	107.46	9.75	4.22		26.39%	13.10%	5.08%	6.81%	1.73%	8.19%	4.55%		4.55%		0.67
1977	11.43%	5.11%	95.1	10.87	4.86		11.53%	15.07%	5.12%	7.78%	2.66%	9.52%	5.92%		5.92%		0.76
1978	12.11%	5.39%	96.11	11.64	5.18		7.07%	6.60%	7.18%	9.15%	1.97%	8.48%	5.72%		5.72%		0.63
1979	13.48%	5.53%	107.94	14.55	5.97		25.01%	15.23%	10.38%	10.33%	-0.05%	11.70%	6.45%		6.45%		0.62
1980	11.04%	4.74%	135.76	14.99	6.44		3.01%	7.81%	11.24%	12.43%	1.19%	11.01%	5.03%		5.03%		0.40
1981	12.39%	5.57%	122.55	15.18	6.83		1.31%	6.08%	14.71%	13.98%	-0.73%	11.42%	5.73%		5.73%		0.41
1982	9.83%	4.93%	140.64	13.82	6.93		-8.95%	1.58%	10.54%	10.47%	-0.07%	7.96%	4.90%		4.90%		0.47
1983	8.06%	4.32%	164.93	13.29	7.12		-3.84%	2.76%	8.80%	11.80%	3.00%	9.09%	4.31%		4.31%		0.37
1984	10.07%	4.68%	167.24	16.84	7.83		26.69%	9.85%	9.85%	11.51%	1.66%	11.02%	5.11%		5.11%		0.44
1985	7.42%	3.88%	211.28	15.68	8.20		-6.91%	4.74%	7.72%	8.99%	1.27%	7.89%	4.03%	6.75%	3.84%		0.43
1986	5.96%	3.38%	242.17	14.43	8.19		-7.93%	-0.15%	6.16%	7.22%	1.06%	5.54%	3.36%	6.96%	3.58%		0.50
1987	6.49%	3.71%	247.08	16.04	9.17		11.10%	11.99%	5.47%	8.86%	3.39%	9.66%	4.18%	8.58%	3.99%		0.45
1988	8.20%	3.68%	277.72	24.12	10.22		50.42%	11.49%	6.35%	9.14%	2.79%	9.76%	4.12%	7.67%	3.77%		0.41
1989	6.80%	3.32%	353.4	24.32	11.73		0.83%	14.80%	8.37%	7.93%	-0.44%	9.58%	3.85%	7.46%	3.51%		0.44
1990	6.58%	3.74%	330.22	22.65	12.35		-6.87%	5.26%	7.81%	8.07%	0.26%	7.39%	3.92%	7.19%	3.89%		0.48
1991	4.58%	3.11%	417.09	19.30	12.97		-14.79%	5.03%	7.00%	6.70%	-0.30%	6.34%	3.27%	7.81%	3.48%		0.52
1992	4.16%	2.90%	435.71	20.87	12.64		8.13%	-2.59%	5.30%	6.68%	1.38%	4.67%	2.83%	9.83%	3.55%		0.53
1993	4.25%	2.72%	466.45	26.90	12.69		28.89%	0.41%	3.50%	5.79%	2.29%	4.73%	2.74%	8.00%	3.17%		0.55
1994	5.89%	2.91%	459.27	31.75	13.36		18.03%	5.34%	5.00%	7.82%	2.82%	7.23%	3.06%	7.17%	3.55%		0.45
1995	5.74%	2.30%	615.93	37.70	14.17		18.74%	6.00%	3.50%	5.57%	2.07%	5.65%	2.44%	6.50%	3.29%		0.59
1996	4.83%	2.01%	740.74	40.63	14.89		7.77%	5.10%	5.00%	6.41%	1.41%	6.13%	2.11%	7.92%	3.20%		0.50
1997	4.08%	1.60%	970.43	44.09	15.52		8.52%	4.25%	5.35%	5.74%	0.39%	5.45%	1.67%	8.00%	2.73%		0.48
1998	3.11%	1.32%	1229.23	44.27	16.20		0.41%	4.37%	4.33%	4.65%	0.32%	4.60%	1.38%	7.20%	2.26%		0.49
1999	3.07%	1.14%	1469.25	51.68	16.71		16.74%	3.16%	5.37%	6.44%	1.07%	5.75%	1.20%	12.50%	2.05%		0.32
2000	3.94%	1.23%	1320.28	56.13	16.27		8.61%	-2.65%	5.73%	5.11%	-0.62%	3.71%	1.65%	12.00%	2.87%		0.56
2001	3.85%	1.37%	1148.09	38.85	15.74	30.08	-30.79%	-3.24%	1.80%	5.05%	3.25%	3.56%	1.73%	10.30%	3.62%	2.91%	0.72
2002	5.23%	1.83%	879.82	46.04	16.08	29.83	18.51%	2.15%	1.20%	3.81%	2.61%	3.57%	2.29%	8.00%	4.10%	4.73%	1.08
2003	4.87%	1.61%	1111.91	54.69	17.88	31.58	18.79%	11.19%	1.00%	4.25%	3.25%	5.35%	2.12%	11.00%	3.69%	4.74%	0.87
2004	5.58%	1.60%	1211.92	67.68	19.407	40.60	23.75%	8.54%	2.18%	4.22%	2.04%	4.90%	2.02%	8.50%	3.65%	4.86%	0.86
2005	5.47%	1.79%	1248.29	76.45	22.38	61.17	12.96%	15.32%	4.31%	4.39%	0.08%	6.16%	2.20%	8.00%	4.08%	5.22%	0.93
2006	6.18%	1.77%	1418.3	87.72	25.05	73.16	14.74%	11.93%	4.88%	4.70%	-0.18%	5.93%	1.97%	12.50%	4.16%	6.12%	0.89
2007	5.62%	1.89%	1468.36	82.54	27.73	95.36	-5.91%	10.70%	3.31%	4.02%	0.71%	5.03%	2.06%	5.00%	4.37%	4.59%	1.09
2008	7.24%	3.11%	903.25	65.39	28.05	67.52	-20.78%	1.15%	1.59%	2.21%	0.62%	2.11%	4.05%	4.00%	6.43%	6.92%	2.91
2009	5.35%	2.00%	1115.10	59.65	22.31	37.43	-8.78%	-20.46%	0.14%	3.84%	3.70%	0.28%	2.60%	7.20%	4.36%	4.64%	1.14
2010	6.65%	1.84%	1257.64	83.66	23.12	55.53	40.25%	3.63%	0.13%	3.29%	3.16%	3.33%	2.24%	6.95%	5.20%	6.09%	1.58
2011	7.72%	2.07%	1257.60	97.05	26.02	71.28	16.01%	12.54%	0.03%	1.88%	1.85%	2.75%	2.71%	7.18%	6.01%	8.34%	3.20
2012	7.18%	2.13%	1426.19	102.47	30.44	75.90	5.58%	16.99%	0.05%	1.76%	1.71%	2.93%	2.47%	5.27%	5.78%	7.30%	3.28
2013	5.81%	1.96%	1848.36	107.45	36.28	88.13	4.86%	19.19%	0.07%	3.04%	2.97%	5.01%	2.03%	4.28%	4.96%	4.99%	1.63
2014	5.49%	1.92%	2058.90	113.01	39.44	101.98	5.17%	8.71%	0.05%	2.17%	2.12%	2.77%	2.24%	5.58%	5.78%	5.48%	2.66
2015	5.20%	2.11%	2043.94	106.32	43.16	106.10	-5.92%	9.43%	0.21%	2.27%	2.06%	2.96%	2.46%	5.51%	6.12%	5.16%	2.70
2016	4.86%	2.01%	2238.83	108.86	45.03	108.67	2.39%	4.33%	0.51%	2.45%	1.94%	2.64%	2.41%	5.54%	5.69%	4.50%	2.32
2017	4.67%	1.86%	2673.61	124.94	49.73	108.28	14.77%	10.44%	1.39%	2.41%	1.02%	3.22%	2.36%	7.05%	5.08%	4.75%	2.11
2018	5.92%	2.14%	2506.85	148.34	53.61	136.65	18.73%	7.80%	2.37%	2.68%	0.31%	3.24%	2.50%	4.12%	5.96%	5.55%	2.22
2019	5.03%	1.82%	3230.78	162.35	58.80	150.50	9.44%	9.68%	1.55%	1.92%	0.37%	2.57%		3.96%	5.20%	5.06%	2.71

* Earnings and dividends numbers each year reflect the estimated numbers as of the end of the year. These numbers get updated later in the year but I do not update the numbers in this spreadsheet, since I would not have had access to them at the time.

2020 Multi Stage Earnings Growth Model

Wireless Industry

3.90% GDP

16.4 Median Trailing Industry P/E

54.0% Average Target Dividend Payout Ratio (All dividends to net profit)

14.0% Average Target ROE

9%

AT&T

Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
0		13.97%	86.03%	3.58		stock price =	-38.56
1	1.96%	48.92%	51.08%	3.65	1.86		1.86
2	6.85%	45.79%	54.21%	3.90	2.11		2.11
3	6.41%	43.03%	56.97%	4.15	2.36		2.36
4	6.02%	40.58%	59.42%	4.40	2.61		2.61
5	5.68%	38.04%	61.96%	4.65	2.88		2.88
6	5.33%	35.49%	64.51%	4.90	3.16		3.16
7	4.97%	32.95%	67.05%	5.14	3.45		3.45
8	4.61%	30.40%	69.60%	5.38	3.74		3.74
9	4.26%	27.86%	72.14%	5.61	4.05		4.05
10	3.90%	27.86%	72.14%	5.83	4.20	99.27	103.47
11+	3.90%	27.86%	72.14%	6.05	4.37		

Value Line Earnings Growth Rate Ke = 14.91%

Verizon

Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
0		20.79%	79.21%	4.81		stock price =	-60.77
1	2.91%	21.65%	78.35%	4.95	3.88		3.88
2	3.03%	21.01%	78.99%	5.10	4.03		4.03
3	2.94%	20.41%	79.59%	5.25	4.18		4.18
4	2.86%	19.84%	80.16%	5.40	4.33		4.33
5	2.78%	21.44%	78.56%	5.55	4.36		4.36
6	3.00%	23.05%	76.95%	5.72	4.40		4.40
7	3.23%	24.65%	75.35%	5.90	4.45		4.45
8	3.45%	26.25%	73.75%	6.10	4.50		4.50
9	3.68%	27.86%	72.14%	6.33	4.57		4.57
10	3.90%	27.86%	72.14%	6.58	4.74	112.05	116.80
11+	3.90%	27.86%	72.14%	6.83	4.93		

Value Line Earnings Growth Rate Ke = 11.86%

Sprint

Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
0		-178.57%	278.57%	-0.20		stock price =	-5.21
1	-25.00%	-654.76%	754.76%	-0.15	-1.13		-1.13
2	-91.67%	-78.57%	178.57%	-0.01	-0.02		-0.02
3	-1100.00%	7.86%	92.14%	0.13	0.12		0.12
4	110.00%	3.74%	96.26%	0.26	0.25		0.25
5	52.38%	3.05%	96.95%	0.40	0.39		0.39
6	42.68%	2.36%	97.64%	0.57	0.56		0.56
7	32.99%	1.66%	98.34%	0.76	0.75		0.75
8	23.29%	0.97%	99.03%	0.94	0.93		0.93
9	13.60%	27.86%	72.14%	1.06	0.77		0.77
10	3.90%	27.86%	72.14%	1.10	0.80	18.82	19.62
11+	3.90%	27.86%	72.14%	1.15	0.83		

Value Line Earnings Growth Rate Ke = 15.19%

US Cellular

USM	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
	0		0.30%	99.70%	1.44		stock price =	-36.23
	1	4.17%	0.48%	99.52%	1.50	1.49		1.49
	2	6.67%	0.45%	99.55%	1.60	1.59		1.59
	3	6.25%	0.42%	99.58%	1.70	1.69		1.69
	4	5.88%	0.40%	99.60%	1.80	1.79		1.79
	5	5.56%	0.37%	99.63%	1.90	1.89		1.89
	6	5.22%	0.35%	99.65%	2.00	1.99		1.99
	7	4.89%	0.33%	99.67%	2.10	2.09		2.09
	8	4.56%	0.30%	99.70%	2.19	2.19		2.19
	9	4.23%	27.86%	72.14%	2.29	1.65		1.65
	10	3.90%	27.86%	72.14%	2.37	1.71	40.46	42.18
	11+	3.90%	27.86%	72.14%	2.47	1.78		

Value Line Earnings Growth Rate Ke = 5.84%

T-Mobile

TMUS	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
	0		1.47%	98.53%	4.02		stock price =	-78.42
	1	20.65%	0.79%	99.21%	4.85	4.81		4.81
	2	11.08%	0.71%	99.29%	5.39	5.35		5.35
	3	9.98%	0.65%	99.35%	5.93	5.89		5.89
	4	9.07%	0.59%	99.41%	6.46	6.42		6.42
	5	8.32%	0.53%	99.47%	7.00	6.96		6.96
	6	7.43%	0.47%	99.53%	7.52	7.49		7.49
	7	6.55%	0.40%	99.60%	8.01	7.98		7.98
	8	5.67%	0.34%	99.66%	8.47	8.44		8.44
	9	4.78%	27.86%	72.14%	8.87	6.40		6.40
	10	3.90%	27.86%	72.14%	9.22	6.65	157.07	163.72
	11+	3.90%	27.86%	72.14%	9.58	6.91		

Value Line Earnings Growth Rate Ke = 13.43%

Average 12.25%
Median 13.43%